CAMBRIDGE SYSTEMATICS

Frederick County Freight and Freight Dependent Land Use Plan

Frederick County, Maryland

final

report

prepared for

Frederick County as part of the Transportation/Land-Use Connections Program (National Capital Region Transportation Planning Board of the Metropolitan Washington Council of Governments)

prepared by

Cambridge Systematics, Inc.

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www.camsys.com

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Executive Summary

INTRODUCTION

Recognizing the growth of freight and logistics activities within its boundaries, Frederick County, Maryland and the National Capital Region Transportation Planning Board of the Metropolitan Washington Council of Governments (MWCOG) commissioned this study to identify ways to enhance the relationship between freight transportation and land uses in the County. Frederick County is becoming an increasingly important distribution center due to its proximity to Washington-Baltimore and because it possesses direct Interstate access via I-70 and I-270, serving the demands of more than eight million regional residents.

APPROACH

To develop strategies to improve coordination of freight-oriented land use and transportation investments in the County, the study team analyzed traffic, land use, and economic data and conducted extensive outreach with stakeholders. The study team also investigated and recommended best practices observed nationally. Ultimately, the study produced a set of recommendations and a tool-kit of strategies for the County to use in the future.

KEY FINDINGS

Because of its strategic location within the Washington-Baltimore metropolitan area and because of its growing population and economy, Frederick County, Maryland is becoming a hub for freight-oriented businesses serving the region. Continued growth will place greater demands on the existing transportation system and will require coordinated planning. The following findings summarize the existing conditions report and inform the strategies and recommendations for the Freight and Land Use Plan.

- The population of Frederick County increased by over 30 percent the last 10 years and is expected to continue to grow at a much higher rate between 2010 and 2030 (34 percent) than the State average (10 percent).
- Overall freight tonnage is expected to increase by nearly 115 percent to over 400 million tons by 2035. Inbound and internal flows are expected to increase the greatest proportion of 238 and 244 percent, respectively.
- There are nearly 1,000 freight-oriented businesses in the County according to the Office of Economic Development Database, including: manufacturing, mining, transportation operations, wholesale trade, agriculture/forestry, and

contractors/sanitation. The businesses are clustered within the Cities of Frederick and the unincorporated urbanized areas south of Frederick along MD 85 and I-270, and north of Frederick along U.S. 15 and U.S. 40.

- Truck parking is a major issue throughout the County, both due to the overall number of trucks and the lack of parking areas, including rest and truck stops, weigh stations, and other facilities.
- There is very good transportation access in the County for north-south roadways; however there are limited numbers of east-west connections other than I-70, causing truck mobility issues and conflicts on smaller local roads as well as congestion on major freight facilities.
- In several locations, major industrial facilities abut residential or commercial land uses, creating potential conflicts with noise and air quality complaints and access and safety issues for both trucks and passenger vehicles.
- Rail access is limited to a large number of industrial properties due in part to high-infrastructure costs and lack of demand.
- Only two percent of Frederick County land is zoned for industrial use and much of it is already utilized. Relatively few new industrial developments are available for expansion, but include Stanford Properties near Adamstown and the Intercoastal Development off I-70 near New Market which will continue to drive the need for expansion of freight transportation facilities.

RECOMMENDATIONS

Frederick County should explore the implementation of the low cost recommendations from the "freight and land use toolbox" including: priority ranking of freight-supportive projects in County plans, tracking, and promotion of industrial corridors within the County, and exploration of industrial access funding programs for rail-adjacent properties. By identifying those solutions that are most feasible the County will be able to leverage existing efforts and promote cooperation with other interested parties. Other recommendations include:

- Creation of a freight task force in the County to recommend the "medium and high cost" strategies for implementation.
- Development of a system for updating the Freight and Freight Dependent Land Use Plan with the methodology framework identified in this report. The plan should be updated concurrent with the existing comprehensive plan or master transportation plan update and made available to other organizations doing regional freight planning (i.e. MDOT, MWCOG).
- Continue efforts to promote industrial land, including exploring the expansion of industrial zoning in the County to accommodate future growth. Incorporate industrial land use demand findings from this plan into the County's Community and Corridor Planning Process, especially related to

mismatches between existing industrial land and industrial land demand.[1] Many of the existing Community Plan areas, such as Buckeystown and Point of Rocks have been identified by this study as potential areas for future industrial development.

- During future updates of the development review processes for Frederick County, explore strategies to integrate truck parking strategies (i.e., shared use) and industrial land buffer zones. Updates of the long range plan also will provide opportunities to designate industrial corridors and identify appropriate parcels for zoning changes to promote clustering around major transportation facilities.

[1] http://www.frederickcountymd.gov/documents/Planning/Comprehensive%20Plans/Community%20Corridor%20Plans/CommCorrPlanProcess.PDF.

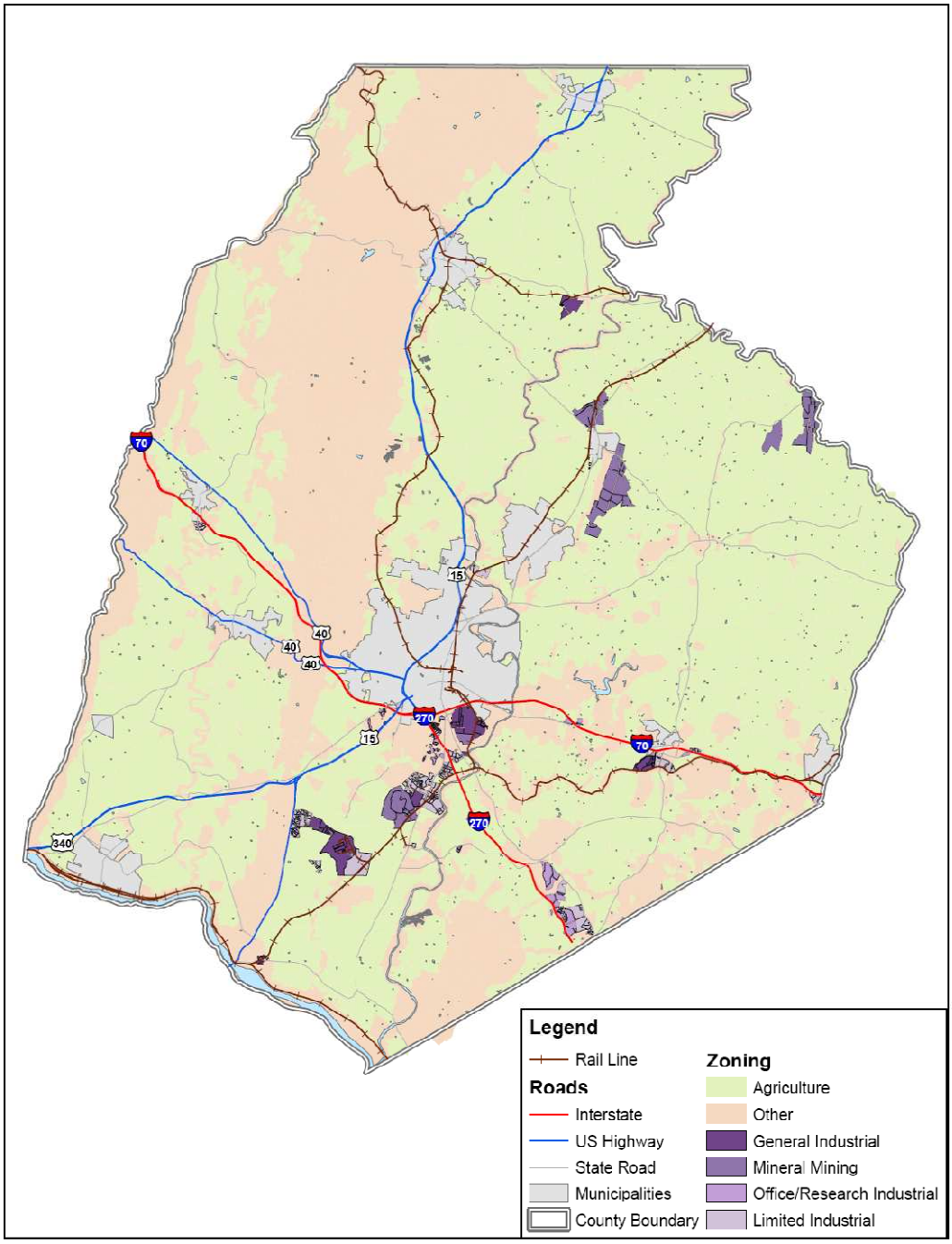
1.0 Introduction

1.1 BACKGROUND AND STUDY AREA

Frederick County, Maryland, in collaboration with the National Capital Region Transportation Planning Board of the Metropolitan Washington Council of Governments, initiated this study to identify both transportation and land use strategies to improve the way in which the County prepares for the future growth of freight transportation. The goal of the study was to provide the County with transportation infrastructure recommendations and a set of land use tools to improve the coordination between freight-related land uses and the multimodal transportation system of the County (e.g. highway, rail, aviation). To that end, the study team worked closely with the County and stakeholders to develop appropriate recommendations for County-wide application and also for incorporation into upcoming small area and corridor plans, and local and regional transportation plans.[2] Figure 1.1 displays the study area with major transportation facilities and freight-oriented land use clusters that were examined as part of this study.

[2] MWCOG TLC web site.

Figure 1.1 Industrial Land Use Within Frederick County



Study Resources

This study was funded through the Transportation/Land-Use Connections Program (TLC) of the National Capital Region Transportation Planning Board (TPB), which is intended to help support local governments explore linkages and

integration between transportation and land use in their communities. The program started in 2007 with a funding level of $100,000 and has grown to provide roughly $320,000 annually in funding for projects in TPB member jurisdictions. Although most of the planning projects funded by the program to date have focused on transit oriented development (TOD) and bicycle and pedestrian access projects, Frederick County received a grant in 2010 to study transportation and land use connections for freight transportation.

Methodology and Work Steps

The freight and land use plan analysis and findings were developed utilizing three major sources of information:

- Traffic, land use, and economic data;
- Survey and public outreach, including an online survey, stakeholder meeting, site visit, and nearly 20 interviews with representatives from local industry, trucking companies, and the railroads; and
- Literature review of best practices for integrating freight transportation and land use planning.

The main tasks in the study included:

Existing Conditions Evaluation *a review of existing conditions of transportation infrastructure, population and economic growth, traffic congestion and existing bottlenecks, safety challenges, commodity flows, and existing land uses.*

Public Outreach *a stakeholder public meeting, web-based survey instrument, phone interviews with industry and infrastructure providers, including shippers, carriers, land developers and other interests, and a site visit Table 1.1 displays the local businesses in Frederick County that participated in the public outreach component of the study.*

Table 1.1 Businesses for Public Outreach

Organization	Type of Business	Location	Interview/Survey
Lehigh Cement	Aggregates/Cement/Stone	Union Bridge	Interview
SW Barrick and Sons	Aggregates/Cement/Stone	Woodsboro	Interview
LaFarge North America	Aggregates/Cement/Stone	Frederick	Interview and Survey
Frederick Grain, LLC	Farm/Food Products	Frederick	Interview
Misty Springs Farm	Farm/Food Products	Woodsboro	Survey
Canam Steel Corporation	Manufacturing	Point of Rocks	Interview
Transtech	Manufacturing	Adamstown	Interview
CSX Maryland	Railroad (Class I)	Frederick/Point of Rocks	Interview and Public Meeting
Maryland Midland Railroad (GWRR)	Railroad (Shortline)	Woodsboro/Union Bridge/Thurmont	Interview
Ramar Moving and Storage	Trucking	Frederick	Interview and Public Meeting
Hahn Transport	Trucking	New Market	Public Meeting
Richard F Kline Construction	Trucking	Frederick	Public Meeting
Costco Wholesale Warehouse	Warehousing/Distribution	New Market	Interview
BlueLinx (construction materials)	Warehousing/Distribution	Frederick	Interview
Toys R Us Distribution Center	Warehousing/Distribution	Frederick	Interview
Probuild (construction materials)	Warehousing/Distribution	Frederick	Interview
FoodPro	Warehousing/Distribution	Frederick	Survey
York Building Products	Warehousing/Distribution	Frederick	Interview and Survey

Note: Warehousing/Distribution category includes wholesale building supply companies.

Opportunities for Freight Facilities *identification of locations of existing and future industrial land demand based on trends and forecasts and comparisons with existing zoning*

Freight Project List *identification and prioritization of existing and potential transportation projects beneficial to improving freight flows within the County based on review of State and local roadway planning efforts*

Freight and Land Use Tools *identification of best practices for accommodating freight and land use connections in Frederick County based on review of existing literature*

Opportunities and Constraints Analysis *identification of the primary opportunities and constraints in the County for accommodating freight and land use connections*

This report explores the existing and future freight transportation and land use supply and demand, summarizes the findings and conclusions from the analyses, and provides a list of immediate and longer term recommendations for accommodating freight transportation and land use connections within the County.

1.2 OPPORTUNITIES AND CONSTRAINTS

The study identified opportunities (i.e., existing positive linkages between freight transportation and land use) and constraints (things that limit the ability to improve linkages between freight transportation and land use). The study team identified the opportunities and constraints through the data analysis and a stakeholder outreach program. The top five opportunities include:

1. **Strategic Location -** Location advantage for shippers and carriers to continue to locate in Frederick County to serve the Baltimore and Washington Metropolitan areas.
2. **Existing Transportation Linkages -** Existing core of highway and rail freight infrastructure in place and potential for existing rail network to accommodate new customers.
3. **Industrial Land Supply -** Current provision of industrial land will accommodate future demand for that land use.
4. **Existing Land Use Tools -** Frederick County currently has planning tools in place that can be used to promote industrial development (i.e., small area and corridor plans, State Priority Funding Areas).
5. **Existing Infrastructure Plans and Programs -** Current infrastructure plans and programs, if implemented, will help accommodate future freight demand on major freight facilities.

Although these **opportunities** represent advantages for Frederick County in the future, the County will need to address a number of **constraints** to meet future demand:

1. **Infrastructure Limitations and Lack of Truck Parking -** Although the County has a strong existing freight transportation system with multiple Interstate, U.S., and Maryland State highways, and multiple rail lines, future capacity is limited and problems related to truck parking are growing more acute. The principal rail challenge is limited capacity on the Brunswick line for freight and passenger operations. Principal road constraints include capacity on I-70 and I-270/U.S. 15 south of MD 26.
2. **Industrial Rail Access -** Many existing industrial properties either lack rail access, have operational or equipment difficulties related to switching, or are unable to pay the costs of rail maintenance.
3. **Industrial Land Use Challenges -** The expansion of existing industrial uses is complicated by residential and commercial encroachment.

4. **Access to Industrial Facilities -** Access to industrial sites can face constraints related to existing highway geometry, bridge clearances, or capacity constraints.
5. **Industrial Property Supply -** Currently, the market for industrial real estate in the County is relatively soft and may lead to a greater proportion of industrially zoned land being consumed by commercial uses over time, leaving less available industrial land.

To address these challenges, this report describes strategies and tools the County might utilize to improve freight transportation and land use coordination.

2.0 Factors influencing Freight Demand and Land Use Connections

2.1 DEMOGRAPHIC AND ECONOMIC TRENDS

Frederick County, Maryland is a fast-growing county of 225,000 residents with a dynamic economic base. Because of its proximity to Washington-Baltimore and direct Interstate access via I-70 and I-270, the County is becoming an increasingly important distribution center serving the demands of more than eight million regional residents. This section describes the "people" factors influencing freight demand and land use in the County, including population growth and economic activity.

Population Growth

Over the past decade, the population of Frederick County has grown at a faster rate than the state as a whole. With a current population of over 250,000 people, the County's population grew by nearly 30 percent between 2000 and 2010 and increased by over two-thirds between 1990 and 2010. The population is projected to increase an additional 16 percent between 2010 and 2030. Population growth is an important driver of freight demand on the County's roadways and rail facilities. The figure below demonstrates the population growth in Frederick County over the last 100 years.

Figure 2.1 Frederick County Historical Population



Note: Projections based on 2000 census data.

Industry Mix/Employment Growth

During the recent economic recession, Frederick County was one of only nine counties in the state that experienced positive job growth, and currently has an unemployment rate nearly one percentage point lower than the state as a whole (about six percent).[3] This is substantially lower than the current U.S. unemployment rate and demonstrates the strength of the diversified economic base of the County.[4] The County has experienced tremendous growth in employment during the last two decades, the civilian labor force increasing by over 45 percent and the number of private, non-farm business establishments in the County, increasing by over 60 percent.[5] The employment within the County is projected to increase substantially by 2030, nearly 34 percent between 2010 and 2030, and almost 50 percent between 2010 and 2040.[6] The forecast employment growth for the County is much higher than the state average (10 percent between 2010 and 2030) and highlights the need for coordinated transportation and land use planning to accommodate future demand. This is compared to an over 26 percent employment growth within the Metropolitan Washington region between 2010 and 2030.[7] Coordinated planning is especially important for freight transportation as freight demand is directly related to the levels of personal consumption of people who live and work in the region.[8]

Businesses in Frederick County employ a large number of employees in freight-generating or goods movement related activities. In 2009, the number of jobs associated with all goods producing industries of natural resources and mining, construction, and manufacturing accounted for 18 percent of the total County jobs. Including trade and transportation services, the proportion of County jobs associated with freight-related industries is nearly 40 percent of the total jobs in the County.[9] Figure 2.2 displays the employment distribution within the County.

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[3] U.S. Census.

[4] At the time of writing the U.S. unemployment rate was nine percent.

[5] USA Counties, Frederick Census Statistics, http://censtats.census.gov/cgi-bin/usac/usatable.pl.

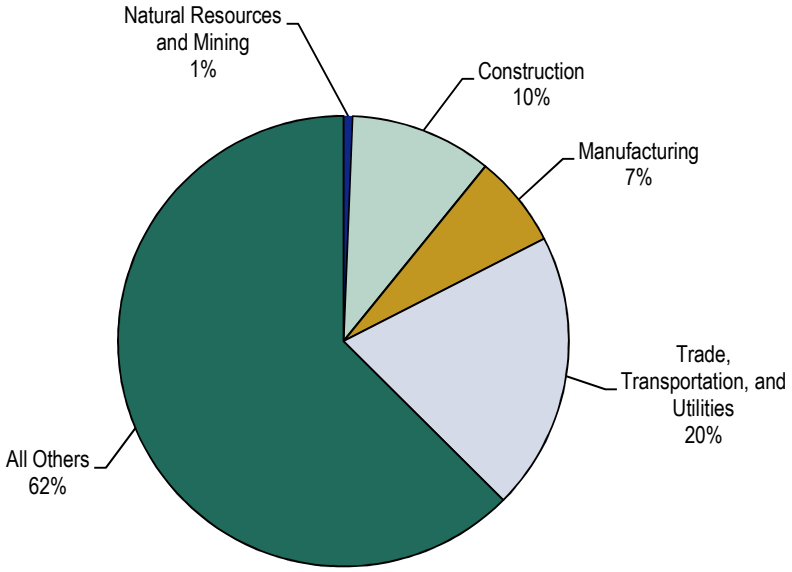
[6] Maryland State Data Center Projections.

[7] Growth Trends to 2030: Cooperative Forecasting in the Washington Region, Fall 2007. https://www.commuterconnections.com/uploads/pub-documents/z1dfVw20080117203640.pdf.

[8] FHWA Quick Response Freight Manual.

[9] Maryland Department of Labor, Licensing, and Regulation.

Figure 2.2 Freight-Oriented Business Proportion of Employment
2009



Freight-Related Employment Outlook

According to the Metropolitan Washington Council of Governments regional traffic model outputs and other forecast information, over the next 25 years, industrial employment in Frederick County is expected to grow substantially (over 37 percent). This is compared to a growth of about 33 percent within the region as a whole.[10] Much of the growth in Frederick County will occur along key freight transportation corridors, including I-70, I-270, and U.S. Route 15 and along the CSX Transportation (CSXT) Mainline rail corridor along the southern border of the County. Based on existing zoning assumptions, much of the growth in industrial employment will remain concentrated in the established industrial areas. However, County-wide growth is expected. In certain areas (e.g., south of Point of Rocks and east of the Town of Thurmont) with more pronounced growth, there is limited existing industrial land currently designated. A closer examination of future freight facilities is contained in Section 4.

Geographic Location and Impact on Freight

Another key driver of freight demand is the location and growth of freight-oriented businesses. Because this evaluation is designed in part to determine the demand for freight-oriented businesses in Frederick County, it is important to differentiate manufacturing, industrial, and transportation firms from retail

[10] Metropolitan Washington Council of Governments Traffic Model.

establishments and other similar businesses. Businesses in Frederick County associated with "freight movement" include manufacturing, mineral extraction, agriculture/forestry, and transportation operations such as trucking, and wholesale trade. Based on the information available from the Frederick County Office of Economic Development business database, there are nearly 1,000 freight-oriented businesses within the County. Most are small businesses with less than 20 employees (83 percent of the total) with a large proportion dedicated to manufacturing (including light manufacturing) at 32 percent of the total and wholesale trade at nearly 40 percent of the total.

Table 2.1 Freight-Oriented Firms in Frederick County

	Types of Freight-Oriented Firms							
Employee Range	Agriculture/ Forestry	Mining	Contractors/ Electric, Gas, Sanitation	Manufac-turing	Trans-portation	Wholesale Trade	Total	Percent Freight-Oriented Firms
<20	4	6	191	225	34	322	782	83%
20-100	0	2	17	58	7	44	128	13%
>100	1	1	3	21	3	8	37	4%
Total	5	9	211	304	44	374	947	100%

Note: List includes extracted firms from Frederick County database and is current as of January 2011. Specific numbers should be confirmed with County Economic Development Staff.

Each of these sectors were identified by the State of Maryland Department of Labor, Licensing and Regulation in their quarterly employment reporting of "goods-producing industries" (natural resources and mining, construction, and manufacturing), and "service-providing industries" of trade, transportation, and utilities. Businesses within these sectors are reliant on the freight transportation system – especially daily truck movement – to support their profitable operations. Within the County, these industries are involved in a wide variety of freight-intensive activities, including the extraction of raw materials (e.g., sand and stone), production of agricultural commodities (e.g., dairy), and the distribution of consumer products and other commodities to locations around the region. As major employers, these businesses play a strong role in the Frederick County economy.

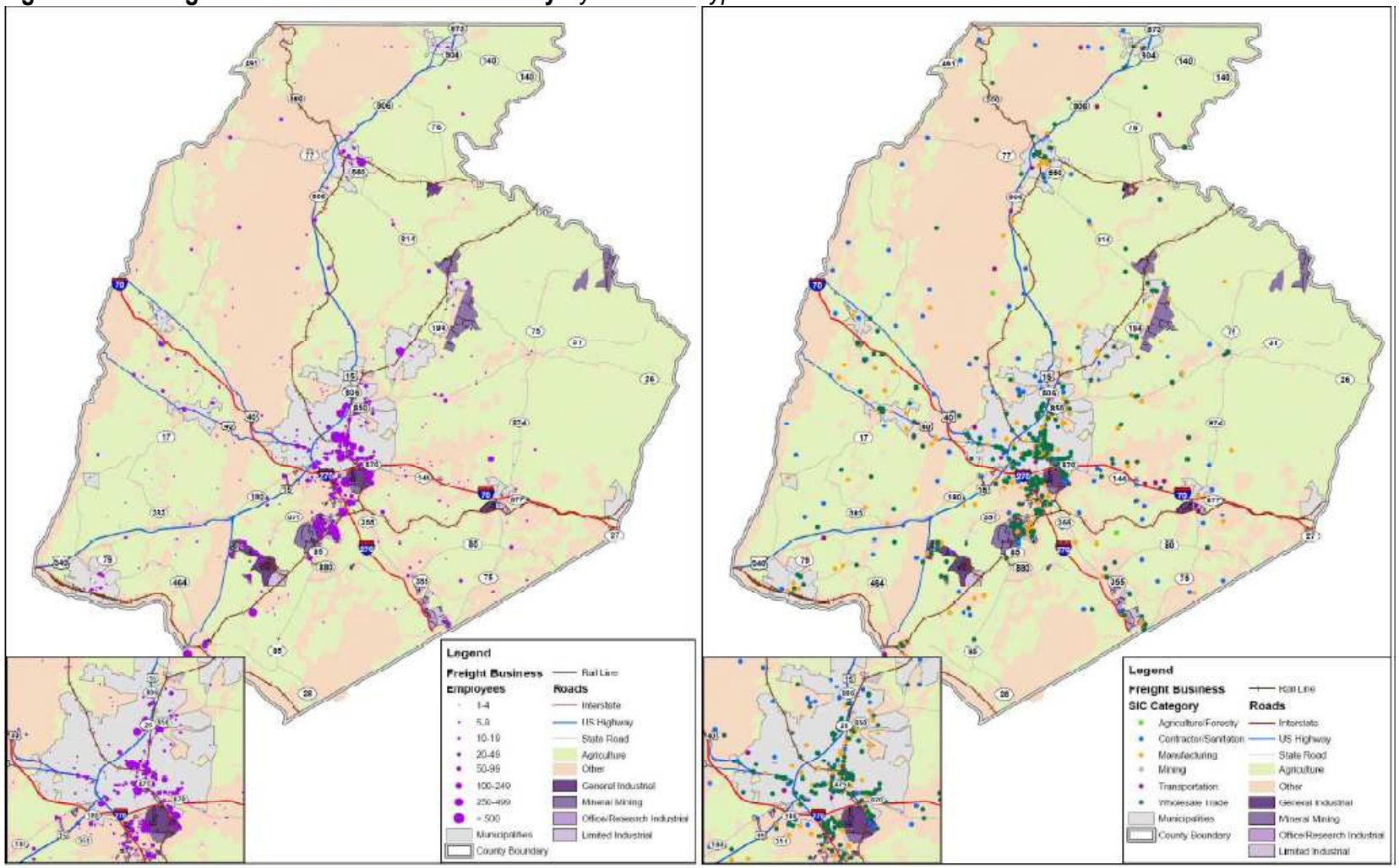
Freight-Oriented Business Clusters

Due to historic development patterns and zoning ordinances, industrial businesses in Frederick County tend to agglomerate in clusters. These clusters are typically concentrated along the major freight corridors within the County, such as I-270, I-70, and U.S. 15. However, there are also large proportions of freight-oriented businesses concentrated near the urban areas of the Cities of Frederick, and Brunswick, and the towns of Walkersville, Thurmont, and New Market. The following map shows concentrations of freight-oriented businesses within the

County, with large number of businesses located within the City of Frederick and along the key highway corridors of I-70, I-270, U.S. 15, and MD 85.

Among the freight-oriented businesses of the County are several major regional distribution centers for big box retailers Costco and Toys R Us; regional trucking companies Ramar Moving, Hahn Transportation, and RF Kline; and mineral mining operations LaFarge and Lehigh Cement that manufacture and ship aggregates and cement products. The following maps illustrate the location of freight-oriented businesses in Frederick County, focusing on wholesale trade, transportation, mineral extraction, and manufacturing (source: Frederick County business database). The maps illustrate the clusters of freight-oriented businesses in the County.

Figure 2.3 Freight Business in Frederick County *By Size and Type*



Disclaimer: While efforts have been made to ensure the accuracy of this map, Frederick County accepts no liability or responsibility for errors, omissions, or positional inaccuracies in the content of this map. Reliance on this map is at the risk of the user. This map is for illustration purposes only and should not be used for surveying, engineering, or site specific analysis. Source: Frederick County Government GIS & Data Services, Frederick County Office of Economic Development, Cambridge Systematics, 2011.

New Developments

In addition to traditional freight traffic generators (i.e., manufacturing, warehousing, and trade), Frederick County is home to a growing cluster of biotechnology firms. These firms, bolstered by the research activities of Fort Detrick, often utilize flex/industrial office and light manufacturing space and will require additional land and space in the future. Data from Frederick County's Office of Economic Development estimates that 73 bioscience companies are currently located in the County, contributing to the development of new businesses with specialization in light manufacturing of pharmaceuticals and genetic development, among other industries.

It is important to note that biotech, pharmaceutical, and other technology firms use the freight transportation system differently than traditional freight traffic generators. These firms typically ship and receive smaller quantities of high-value, time-sensitive, and lower-weight inputs and products. Technology firms use consolidated carriers (e.g. UPS, FedEx) or other premium for-hire services to quickly move materials needed to maintain supply chain continuity. Consequently, these firms are more likely to utilize a premium truck and air cargo than rail for their goods movement needs.

As part of the growth of the County's bioscience cluster, several firms have converted ageing real estate assets into new biotechnology uses. One successful example of this conversion is at the Riverside Corporate Research Park, where the National Cancer Institute (NCI) became an anchor for a research center. West of U.S. Route 15 and South of Maryland Route 26, Worman's Mill and the Frederick Research Park (with 320 acres available) area present an opportunity for near-term commercial industrial growth. This type of development activity further enhances Frederick County's position as a bioscience cluster and may relate to the demand for associated manufacturing facilities.

2.2 COMMODITY FLOWS

In order to further highlight the recent and future trends in freight demand in the County, the consulting team utilized the TRANSEARCH® Insight database developed by IHS Global Insight for the Maryland Department of Transportation to identify freight flows. The database contains freight flows for trucks, rail, water movements, and air cargo movements at major airports. For Frederick County, the team analyzed truck and rail data with a base year of 2006 and a future forecast year of 2035.

Existing Freight Flows

In 2006, motor carriers and railroads moved over 188 million tons of freight over the highways and railways of the County. This represents approximately 29 percent of total Maryland highway and rail tonnage (meaning that 29 percent of freight tonnage in Maryland utilized at least a portion of Frederick County's

transportation network). Trucks move the vast majority of tonnage in the County (84 percent compared to 16 percent for rail). Because trucks are the dominant mode for goods movement in the County, this report focuses attention on land use/transportation strategies to improve the efficiency and safety of truck movements and to nurture and improve rail mode share.

Future Freight Flows

In order to inform land use and transportation planning decisions, the team analyzed future freight flow trends to monitor shifts in commodities, modes, and industries through 2035. Through this analysis, the team found that overall freight tonnage is expected to increase by nearly 115 percent to over 400 million tons by 2035. Inbound and internal flows are expected to increase the greatest proportion of 238 and 244 percent, respectively. Truck tonnage will increase by 119 percent by 2035 and rail tonnage will increase by 88 percent during the same period. Detailed analysis of commodity flows is available in the Existing Conditions Report (Cambridge Systematics, 2010) prepared for this study.

The following table and chart summarizes current and future freight flows in the County.

Figure 2.4 Increase in Total Truck and Rail Flows in Frederick County
2006-2035

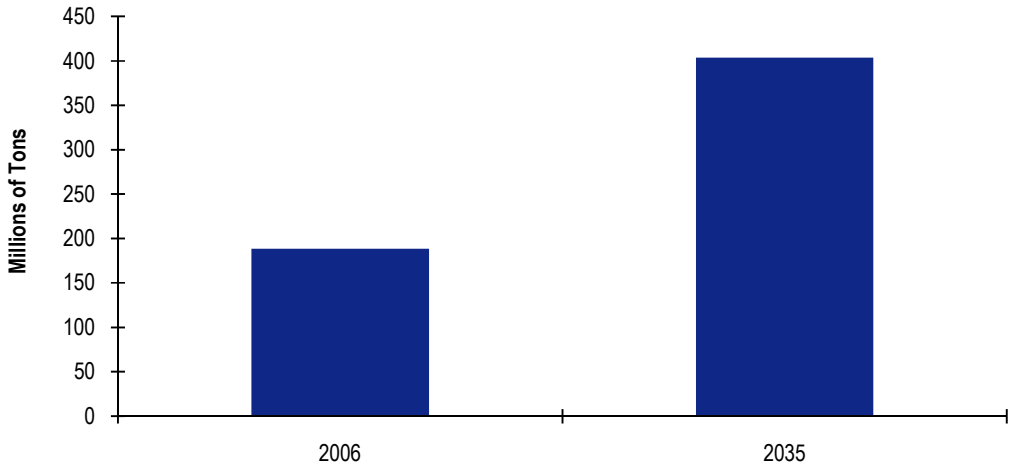


Table 2.2 Frederick County Freight Flows by Direction

Direction	2006 Tons	Percent of Total	2035 Tons	Percent of Total	Percent Increase
Inbound	8,271,590	4%	27,970,126	7%	238%
Internal	320,303	0%	1,101,552	0%	244%
Outbound	8,818,513	5%	18,727,701	5%	112%
Through	171,094,788	91%	356,088,031	88%	108%
Total	188,505,193	100%	403,887,410	100%	114%

Other Key Findings

- Most of the increase in truck and rail tonnage is accounted for in through flows (86 percent of the increase), however inbound tonnage will increase by nearly 20 million tons and outbound by just under 10 million tons.
- The top three major commodities shipped by truck in Frederick County include nonmetallic minerals, secondary traffic (e.g. warehouse and distribution), and food or kindred products, the three accounting for about 45 percent of total truck tonnage and nearly 40 percent of total tonnage, including rail.
- Truck flows in secondary freight traffic (i.e., goods shipped in containers) are expected to increase by nearly 300 percent by 2035.
- Rail flows in coal are expected to increase by over 11 million tons (over 100 percent) by 2035.

Influence on Transportation Facilities and Rail Mode Share

While both truck and rail will experience significant growth, the rail mode share will fall by two percentage points with trucking accounting for 86 percent and rail about 14 percent of the total future tonnage. This growing modal imbalance, in addition to promoting air quality, congestion, and cost benefits associated with rail should lead the County, MPO, and State to work with railroads, shippers, and localities to implement strategies to boost rail mode share.

3.0 Freight Supply (Infrastructure and Industrial Land) Managing Future Freight Demand

3.1 MAJOR FREIGHT CORRIDORS

Major freight transportation facilities serving Frederick County include two Interstate highways (Interstates 70 and 270), three U.S. highways (U.S. 340, 40, Alt. 40 and 15), some major state highways, large County roadways, and Class I and shortline railroad tracks that facilitate the movement of truck and rail freight. The County has sufficient existing capacity on many of its highway and rail facilities, especially during non-commuter peak periods to attract new customers and promote industrial development in the County, although future growth will strain the system in coming years.

Major Trucking Routes and Truck Flows

According to the Maryland State Highway Administration (SHA) three of the primary transportation corridors in the County have moderate to high proportions of truck volumes ranging from 14-18 percent of total traffic on I-70; 10 percent on I-270; and 5-8 percent on U.S. 15.[11] This compares to a statewide average of about 7-8 percent across all roadway types, with nearly 4 percent of the truck traffic



Truck traveling on MD 28

[11] SHA 2008-2010 Truck Volumes.

composed of vehicle Classes 4-7 (single unit), and about 3.5 percent vehicle Classes 8-13 (combination unit).[12] The identification of major freight trucking corridors is substantiated using the Metropolitan Washington Council of Governments (MWCOG) model[13]. According to the model, under existing conditions, the heaviest flows of truck traffic occur on I-70 (greater than 8,000 trucks per day). Two other highways, I-270 and U.S. 15 also experience heavy flows (greater than 5,000 trucks per day). These corridors are among those expected to experience substantial growth in truck volumes between the present day and 2030.[14]

Figure 3.1 displays the existing and future truck flows and growth on major transportation facilities in the County. The heaviest truck flows in the County (depicted in blue bandwidth for 2005 flows) are on Interstates I-70 and I-270, and state highways U.S. 15 and U.S. 340. In the future, truck traffic will continue to be concentrated on these facilities and they will accommodate even greater numbers of trucks (shown in red bandwidth).[15] Truck traffic growth is expected on nearly every major highway facility in the County with some of the largest volume growth on I-70, I-270, and U.S. 15. For freeway segments on I-70 between I-270 and the Washington County Line that currently have the highest truck volumes in the County (greater than 5,000 trucks per day), volumes are expected to increase between 50-70 percent.

Supportive Truck Facilities (Other Highways Serving Major Freight Clusters)

While many of the truck flows are concentrated on the major highways and Interstates, several Maryland state highways carry a large number of trucks, mostly as local access to freight businesses and between manufacturers, other shippers, and mining operations and the Interstate and U.S. highway system. Some of these major highways include Maryland Route 85, south of the City of Frederick, Maryland Route 75 north of New Market to the east of Frederick City, and MD 194 (Woodsboro Pike), northeast of the City of Frederick. Current truck proportions on many of these facilities exceed those on the major freight routes

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[12] SHA Vehicle Classification by Functional Class, 2010. Descriptions based on FHWA classification system: http://www.fhwa.dot.gov/ohim/tmguide/tmg4.htm#tab4a1.

[13] The base year for the MWCOG model is 2005 with a projection out to 2030. Efforts are currently underway through the County Planning Department to refine the traffic analysis zone (TAZ) structure for Frederick County to provide a more detailed assessment of local highway traffic flows.

[14] To forecast future conditions, the traffic model inputs are based on existing and future land use assumptions and employment growth projections, which together are used to determine the generation of vehicle trips.

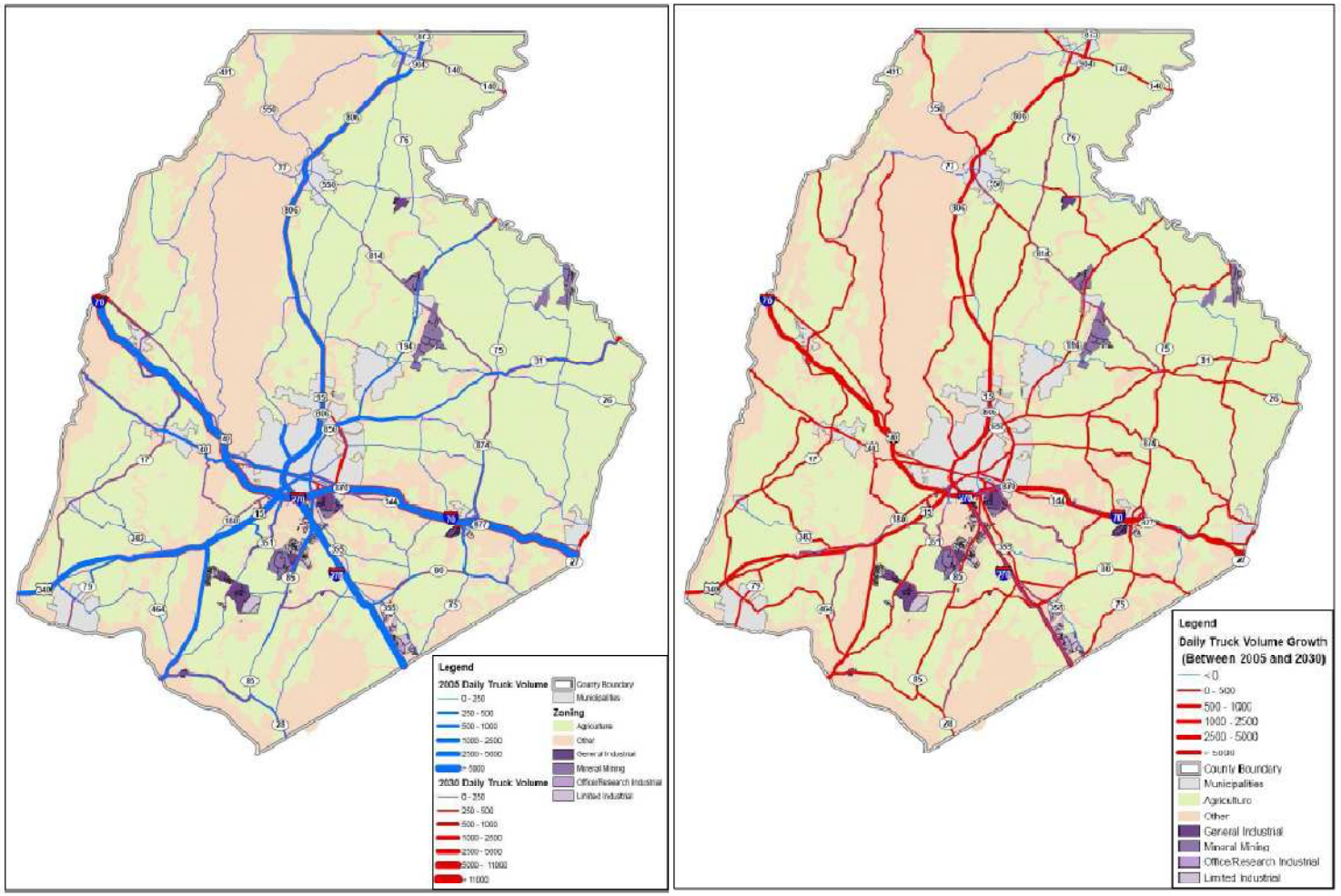
[15] Note the additional volume level of the red bandwidth (2030) of more than 11,000 trucks/day.

of I-70, I-270, and U.S. 15. The current amount of trucks as a proportion of total traffic on MD 85 ranges from about 14-20 percent, on MD 75 (north of I-70) 17-19 percent, and on MD 194 nearly 18 percent.[16]

In addition, connector roadways between major Interstates or U.S. highways are expected to experience substantial growth by 2030 (Figure 3.1). Truck traffic is expected to increase on these smaller highway facilities primarily due to the growth in industrial employment near Walkersville and within the existing MD 355/MD 85 industrial land cluster south of Frederick. The segments with the highest percentage growth include MD 806, connecting MD 850 and U.S. 15, just north of the City of Frederick, and MD 80 connecting MD 85 and I-270. These connectors are expected to increase from relatively low volumes (many cases less than 100 trucks per day) to as many as 500-600 trucks per day. As congestion and delay increase within the urbanized areas in Frederick County, truckers will continue be prompted to use alternate routes.

[16] SHA Truck Volume Map 2008-2010.

Figure 3.1 Existing and Future Truck Flows and Truck Traffic Growth in Frederick County
2005-2030



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Rail Corridors

Freight rail plays a critical role as part of the freight transportation system throughout the United States. The rail mode is most competitive with truck in the movement of bulk commodities, commodities traveling very long distances, or shipments with less-time sensitivity. The exception to these rules of thumb is intermodal traffic, which is becoming increasingly competitive via rail shipment. Overall, rail volumes increased substantially during the 2000s due in part to rising global trade combined with freight railroad expansion into new markets such as intermodal trade. Intermodal rail traffic has quadrupled over the last 25 years and increased by about a third during the past decade.[17] Domestic economic growth during the same period led to increases in consumption of commodities such as coal and bulk food products, key rail commodities.

Freight Rail Infrastructure

Freight rail plays a crucial role in a balanced freight transportation system as one train can carry as much cargo as 280 trucks and remove those trucks from the highways with air quality, congestion, and cost benefits.[18] It can also provide an opportunity for shippers to utilize an alternative mode of transportation for serving their customers. Frederick County is currently served by two freight railroads, CSXT and the Maryland Midland Railway. CSXT has nearly 50 miles of mainline track along the southern and western edge of Frederick County.[19] The CSXT Metropolitan Subdivision line is heavily used and connects Washington D.C. and Chicago through Point of Rocks in Frederick County. This route is currently undergoing significant improvements as part of CSXT's National Gateway project which will ultimately provide double-stack train service from mid-Atlantic ports to freight distribution centers in the Midwest. CSXT also operates the old Main Line between Baltimore and Frederick County, with a connection to the Metropolitan Subdivision at Point of Rocks.

Maryland Midland Railway, a Class III shortline railroad operating 63 miles of track in Frederick and Carroll Counties in Maryland,[20] serves a number of businesses in the state, including customers such as, LaFarge, Congoleum, and Lehigh Cement, which has an ownership stake in the railroad.[21] Currently, Maryland Midland

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[17] AAR: http://www.aar.org/~/media/aar/Background-Papers/An-Overview-of-U.S.-Freight-RRs.ashx.

[18] Ibid.

[19] Ibid.

[20] Maryland Department of Business and Economic Development Freight Rail Facts and Stats.

[21] Maryland Freight Rail Facts: http://www.choosemaryland.org/factsstats/pages/freightrail.aspx.

Railway specializes in bulk freight and there are connections between the Maryland Midland and CSXT at Highfield and Emory Grove, PA.[22] In addition to freight traffic, CSXT also operates the Maryland Area Regional Commuter (MARC) trains serving passenger stations in Brunswick and Point of Rocks in the southwestern part of the County and Monocacy and Downtown Frederick stations via Frederick Junction, just north of the I-270/MD 85 interchange.


CSXT Access Spur to Blue Linx

Figure 3.2 displays the operators and current rail freight volumes in Frederick County. CSXT rail freight flows are by far the heaviest in the County with between 10 and 40 MGT (defined below)on the Old Main Line between Baltimore and Frederick, 40-60 MGT on the Metropolitan Subdivision on the County's southern border, and over 60 MGT once the two CSXT lines merge at Point of Rocks.[23] Although Maryland Midland does serve some key freight customers in Frederick County, the tonnage is marginal compared to CSXT.

Local Freight Rail Operations

Several freight businesses within Frederick County currently utilize rail access for their operations--mostly to move bulk commodity associated with mining and manufacturing. For example, BlueLinx (a construction materials distributor) and Lehigh Cement (a cement manufacturer) are major rail shippers in the County.[24] At this time, the most important intermodal freight producers in the County, including large distribution centers such as Costco and Toys R Us, do not ship by rail (truck-only).

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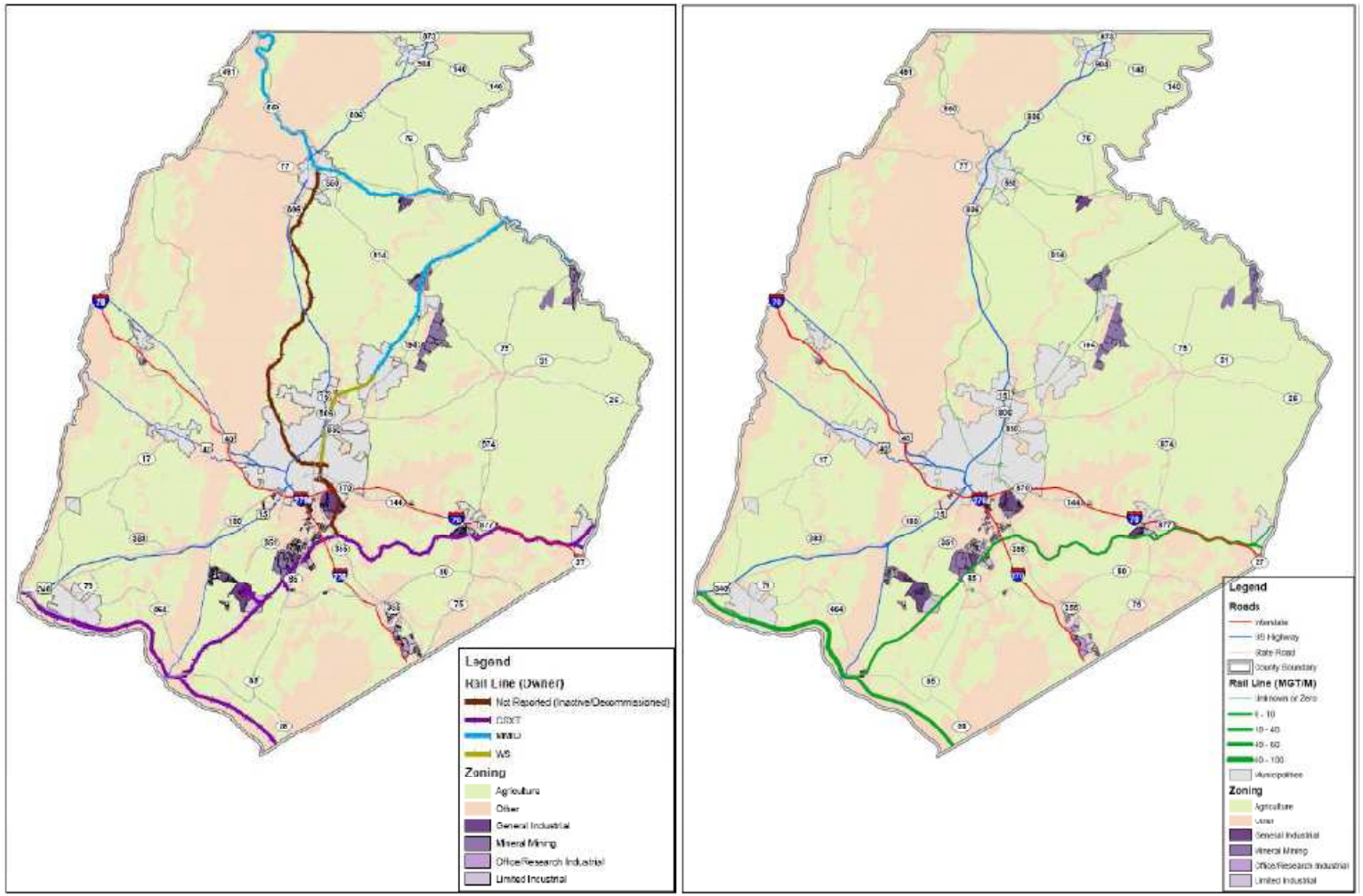
[22] A third railroad in Frederick County, not currently being used for freight is the Walkersville Southern railroad, granted permission by the State to operate a heritage railroad for three miles north of Frederick City towards Walkersville. The line is owned by the Maryland Department of Transportation (MDOT) and WS operates the line under lease from the Maryland Transit Administration (MTA).

[23] Rail freight traffic density is measured in millions of gross tons/mile/year (MGT). U.S. Bureau of Transportation Statistics, National Transportation Atlas Database.

[24] Phone interviews with Canam Steel and Bluelinx in February 2011.

Existing and potential rail shippers in the County face financial and operational hurdles to improved rail access. Local rail shippers depend on access to the rail network via a spur or siding off the main line and some sort of switching mechanism, to transfer the trains back and forth from the mainline track. Customers are typically responsible for improvements to these facilities which can cost hundreds of thousands or even millions of dollars, including construction of a siding (including ballast and several hundred feet of track), manual or electronic switches, signage, and storage areas. Additionally, the business or manufacturer needs to have equipment and personnel trained in the proper way to load or unload cargo from rail cars. Many customers in the County desire the freight shipment flexibility associated with both truck and rail access, but cannot afford the initial capital cost of the improvements.

Figure 3.2 Frederick County Rail Network and Existing Rail Flows



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Air Freight in Frederick County

The Frederick Municipal Airport (FDK), located about two miles from the center of downtown Frederick, is available for air freight service. Designated as a General Aviation reliever airport for BWI, National, and Dulles Airports by the FAA, over 350 businesses utilize the airport on an annual basis.[25] There are a variety of plans, studies, and projects underway to expand the operational capacity of the airport, from the construction of an Air Traffic Control Tower (underway in 2011) to the expansion of runways and improvement of the terminal building. These improvements will provide the opportunity for the airport to capture some future growth in air freight traffic of time-sensitive and very high-value commodities. The Frederick Airport Park, a 160-acre property on the east side of the airport is currently being developed as office, research and development, warehouse, and industrial flex space and may provide additional opportunities for freight-oriented growth and connections between air cargo and trucking.[26] Effective land use planning will be needed to accommodate the growth of the air cargo market and support services, while providing economic benefits from air freight.

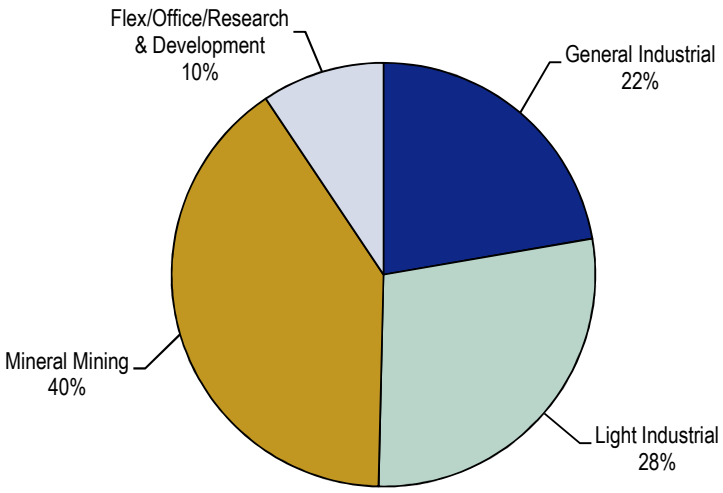
3.2 EXISTING FREIGHT-ORIENTED LAND USE

According to the current zoning for Frederick County, there are currently over 8,700 acres of industrial land in the County (not including municipal lands), representing just over two percent of the total land. The industrial land is divided among four industrial land use designations: Office/Research Industrial; General Industrial; Light Industrial; and Mineral Mining. Of these, mineral mining accounts for the largest volume of existing industrial land in Frederick County. Figure 3.3 displays the existing distribution of industrial land. The maintenance of industrial land is important to the growth of mining and manufacturing employment and output which in turn will require a transportation system that can accommodate those freight flows.

[25] Frederick County Airports http://www.cityoffrederick.com/cms/page/index.php?id=44.

[26] http://www.realtycap.com/fact_sheets/frederick_airport.html.

Figure 3.3 Existing Industrial Land Use Distribution within Frederick County



Trends in Industrial and Manufacturing Land Use

The County has experienced strong industrial growth in recent years. The regional industrial market continues to grow as demand from other types of firms commanding higher rents/prices absorb floor space that otherwise would be used by manufacturers driving relocation in some cases. The existing industrial sites located in older business parks around the Baltimore and Washington Metropolitan region often serve long-time owners and operators of industrial operations that value easy access to the Interstate highway system. Frederick County is well-suited for relocation of these types of manufacturing operations due to the combination of the County's proximity to the Metro areas and existing supply of flex space and other industrial property.[27] Compared to the Metropolitan region as a whole, this property is generally less expensive in Frederick County and located in less congested areas, reducing the conflict with other users (most notably


Industrial Flex Space near MD 85

[27] Both the City of Frederick and Frederick County offer space at rents lower than competitive markets, such as Montgomery County, averaging one-quarter to one-third less per square foot. Partners for Economic Solution Task 4 Technical Memorandum.

residential). In some instances manufacturers may leave the region altogether but for those that stay in the area to remain competitive, Frederick County represents a prime opportunity.

The industrial space market within Frederick County serves distribution and warehouse operations, light to heavy manufacturing, and construction. Industrial/flex space within the entire County totals 17.4 million square feet[28], 10 million square feet of which is warehouse space. Delta Associates estimates 429,000 square feet of industrial/flex space was built between 1988 and 2010. Future plans for new industrial/flex space includes 370,000 square feet near Fort Detrick. Vacancy rates for standard industrial space ranged from 14 to 16 percent at the end of the 2010, compared with 20 to 22 percent for flex space, the high percentages for flex space possibly due to recent construction and economic trends.

A survey of available industrial space for lease indicated that rents ranged from just below $3.00 per square foot to $11.00 per square foot per year. This represents a range of building types for older buildings with access to rail to newer distribution warehouse operations along major highways. Upon closer examination those properties with rail access in older buildings do not command rents above $4.00 square foot. While a premium may exist for rail access, it is specific to users requiring rail service for their operations.

3.3 MANAGING FREIGHT-ORIENTED GROWTH

Criteria for Determining Appropriate Sites for Freight-Intensive Facilities

Industrial firms choose Frederick County for their business location because of its close proximity to the Baltimore and Washington Metropolitan areas and it has many of the key site selection attributes sought by industrial developers. Some of these attributes include truck and rail access, large parcel size, adequate utility connections, general acceptance of industrial operating conditions (impact of noise, odor, and outdoor storage), and the ability to get workers and customers to their business. They also consider the potential operating costs associated with a particular location, including the distances to suppliers and customers, the land, building, taxes and other costs. The industrial space market within Frederick County serves distribution and warehouse operations, light to heavy manufacturing, construction, and R&D uses. Throughout much of the County, such as the MD 85/355 corridor south of Frederick, along U.S. 15 between Frederick and Thurmont, and along I-70 east of Frederick, freight-oriented businesses are clustered adjacent to major transportation facilities. Frederick County's position at the crossroads of Interstates 270 and 70 allows construction contractors and other businesses to easily dispatch trucks to Baltimore, Washington, as well as

[28] Frederick County Office of Economic Development.

Pennsylvania, Ohio, and West Virginia (via I-70, U.S. 15 and U.S. 340). Although Frederick County has excellent rail access, few new companies are seeking properties with rail, perhaps due to the focus on warehousing and distribution and light manufacturing which may find less utility in rail access than companies that deal in bulk commodities.

3.4 HOW DOES EXISTING LAND USE SUPPORT FREIGHT FACILITIES

Land supply and zoning policies within the County adequately support existing freight facilities. Generally, industrial land uses are consolidated into zones and clusters adjacent to major transportation facilities such as freeway interchanges or major rail lines. Industrial space within Frederick County currently totals 2.2 million square feet[29], with an 18-percent vacancy rate. The amount of occupied industrial space increased by 101,000 square feet in 2009, but contracted by 6,000 square feet in 2010.[30]

Table 3.1 Recent Industrial Space Trends
Frederick County, 2005-2010

Year Annual	Total Square Feet	New Construction	Vacant Square Feet	Occupied Square Feet	Occupancy Rate	Net Absorption	Average Rent[a]
2005	1,721,000	52,000	79,000	1,642,000	95.4%	N/A	$17.09
2006	1,808,000	87,000	51,000	1,757,000	97.2%	115,000	$18.48
2007	1,938,000	130,000	163,000	1,775,000	91.6%	18,000	$19.00
2008	2,201,000	263,000	491,000	1,710,000	77.7%	(65,000)	$19.29
2009	2,201,000	0	390,000	1,811,000	82.3%	101,000	$19.55
2010	2,201,000	0	396,000	1,805,000	82.0%	(6,000)	$19.20
2005-2010 Change							
Amount	480,000		317,000	163,000	-13.4%		$2.11
Percent	27.9%		401.3%	9.9%	-14.0%		12.3%

Sources: REIS; Partners for Economic Solutions, 2011.

[a] Average triple net rent, excluding taxes, utilities, and janitorial.

[29] REIS provides commercial real estate performance information: http://www.reis.com/index.cfm.

[30] Absorption is the change in the amount of occupied space. Absorption reflects net figures by calculating the amount of contractions against expansions and new leases.

Key Freight/Land Use Conflict Areas

Several areas within the County pose potential freight and land use conflicts. Conflict areas include industrial or mining land uses whose operations can cause noise, air quality, congestion, safety or other impacts and their proximity to residential or commercial land. Residential and commercial encroachment of industrial land uses has become more of an issue in recent years. In Frederick County, most industrial land uses are located near key transportation corridors and are generally not in close proximity to neighborhoods and commercial businesses. The quarries south of the City of Frederick, for example are located off of Maryland Highways 85 and 355 with little residential development immediately adjacent to freight businesses. However, there are some areas where encroachment of residential land use as a result of population and employment growth has caused friction between freight-intensive businesses and their residential and commercial neighbors. One example of a freight and land use conflict is a major freight business operation in Point of Rocks that abuts a residential development. Issues with noise and safety concerns have prompted residents to engage the freight business and caused the business to provide noise barriers and other improvements to mitigate the issues caused by freight operations.

3.5 POTENTIAL LOCATIONS FOR FREIGHT FACILITIES

Industrial Growth Corridors

Current development trends and patterns suggest that future freight-oriented growth will occur in areas with direct access to I-70, I-270 and other major highways. In Frederick County trucks are the primary mode of freight transportation (nearly 85 percent of freight flows) and will continue to be the mode of choice for many shippers, notwithstanding the increasing price of fuel. Trucks have greater flexibility in delivery than other modes (such as planes, trains, and ships) and remain the most reliable and low-cost means for distributing high value, low bulk materials, and products. Therefore, excellent highway access is a critical location factor. Based on the existing freight business clusters and evaluation of likely



Toys R' Us Distribution Center uses MD 85 to access interstate network

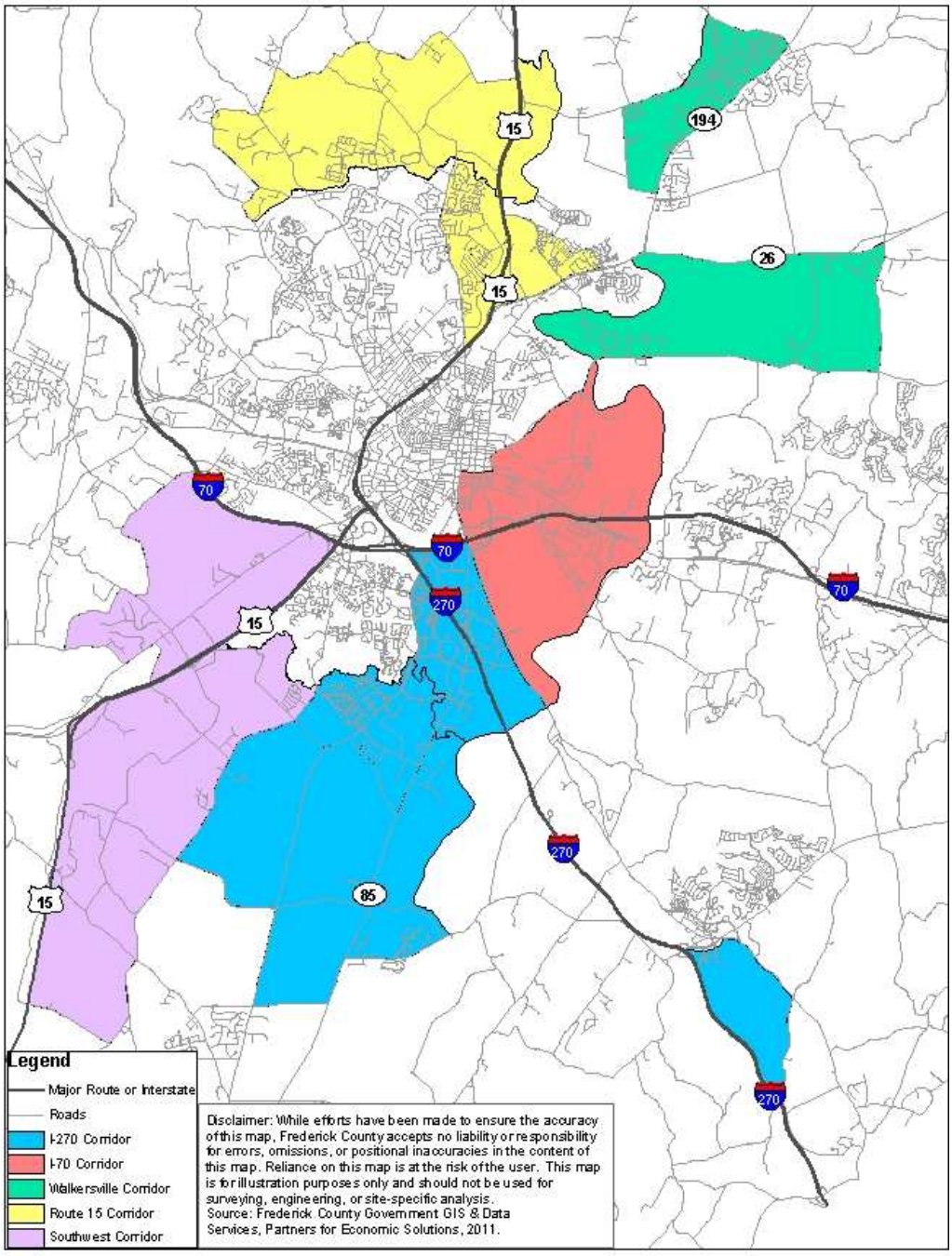
industrial land demand trends over the next 20 years, five major freight transportation growth corridors were identified.[31] These corridors are shown in Figure 3.4 and include the following:

- **I-70 Corridor:** I-70, running east-west through the middle of Frederick County provides access to major distribution hubs to the east and west including the Baltimore area and Hagerstown. The I-70 growth corridor in recent years has been heavily built-out with the addition of the commercial retail areas and the Frederick Municipal Airport, pricing industrial growth away from the I-270 and I-70 interchange and pushing it to points further east along US 40 and I-70. The corridor also includes a major mining operation in the southwest section of Maryland Route 355. Future growth in the Frederick region will be attracted to any remaining sites close-in at the crossroads of I-270 and I-70;
- **Walkersville Corridor:** The Town of Walkersville presents one of the best locations within Frederick County for concentrating mining activity and raw material production and distribution due to the existing natural resources in the area including the S.W. Barrick quarry and industrial agglomerations. The Maryland Midland Railway (a short line railroad) also operates within this corridor;
- **Route 15 Corridor: This** corridor offers a direct route from Frederick City to Pennsylvania, making it a popular truck route. North of and within the City of Frederick, there is some industrial development bordering the highway, however, residential development pressures could present challenges to building out the parcels planned for industrial development;
- **Southwest Corridor:** The Southwest corridor runs along U.S. 340 and U.S. 15, popular truck and travel routes to West Virginia and Loudoun County, VA as well as into the City of Frederick. These heavily traveled routes present a large number of available properties for industrial growth, including the Stanford Business Park and other flex/industrial properties offered at reduced rates compared to the I-270 corridor. Industrially zoned property between the Southwest Corridor and I-270 corridor includes the 1,400 acres owned by Alcoa (which previous operated the Eastalco plant on approximately 350 acres along Manor Woods Road until it closed in 2005); and
- **I-270/MD 85 Corridor:** This growth corridor has mixed-use commercial zoning, accounting for more than 100 acres or approximately 12 percent of total available land area. The increased traffic and rapid suburban development further north in Frederick County help promote growth in the southern

[31]The technical memorandum prepared by Partners for Economic Solutions (PES) includes additional market analysis for each growth corridor and is included in the appendix.

section of the I-270 corridor because of its proximity to points further south in Montgomery County and the Washington D.C. area.

Figure 3.4 Industrial Growth Corridors in Frederick County



These corridors include existing clusters of freight-oriented businesses and are located near major transportation corridors. The market analysis demonstrated that over the next 20 years, Frederick County will need approximately 200

additional acres of industrial land to meet projected demand. Although the County does have an adequate supply, with over 840 acres of industrial land available in the five Industrial Growth Corridors, there is a mismatch between existing supply and demand (based on forecast employment growth) in some areas, with the Route 15 and Walkersville Corridors each requiring additional industrial land to support projected employment growth.[32] Table 3.2 identifies the quantities of industrial land in each Industrial Growth Corridor required to meet expected demand over the next 20 years.

Table 3.2 Summary of Developable Acreage within each Growth Corridor

Developable Acreage Calculations by Industrial Growth Corridor							
		Estimated Undeveloped/Non-Resource Conservation Area Acreage					
			Undeveloped Industrial Zoning				
Industrial Growth Corridor	Total Existing Acres	Total Acres Undeveloped	Acres Zoned General Industrial	Acres Zoned Limited Industrial	Acres Zoned Office/ Research/ Industrial	Total Acres with Industrial Zoning	Acreage Needed to Support Employment Growth
I-270 / MD 85 Corridor	8,940	880	0	100	160	260	60
I-70 Corridor	3,950	390	350	0	0	350	30
Route 15N (North of City)	5,350	1,050	0	0	0	0	20
Walkersville	4,470	3,060	0	0	0	30[a]	80
Southwest Corridor	8,050	1,260	130	100	0	230	10
Total Growth	**30,760**	**6,640**	**480**	**200**	**160**	**840**	**200**

Source: Partners for Economic Solutions, 2011.

[a] The Walkersville Industrial Growth Corridor contains no Industrially zoned Undeveloped County land. However, approximately 30 acres of Undeveloped land within the Town of Walkersville is already zoned for Industrial development. Because these acres are located within the Town of Walkersville, they are excluded from "Total Growth" but included for reference.

[32] It is important to note that employment projections resulted in conclusions for 20 years of growth, but planning efforts need to extend for at least 40 years to allow for long-term growth.

Specific Parcel Locations for Potential Growth

Based on the market analysis, some development pressure exists to convert industrial land to other uses in the I-270 and Route 15 North corridors in the future. The Interstate 270 corridor has an ample supply of industrially zoned land (260 acres) to meet future demand; however, development of flex/office space may limit the selection of sites for freight-oriented businesses. The Route 15 Corridor projected demand of 20 acres is not currently met by existing supply. Future development may require zoning changes to existing agricultural land to meet growing needs for industrial space. Redeveloping properties that offer visibility and good access for new industrial users at Worman's Mill and on Frederick City annexed land along Route 15, could create new opportunities. The Southwest Corridor and I-70 Corridors currently have enough industrial land to meet projected demand.

The industrial corridors east of MD 194 near Walkersville and along the Maryland Midland Railway tracks present opportunities to accommodate growth. Most of the area in Walkersville slated for industrial growth, estimated at 33 acres, is currently zoned by the Town of Walkersville for industrial uses and would need few changes to parcels to accommodate additional industrial space close to town. This area will need 40 to 50 acres for industrial development over the next 20 years, while the greater MD 194 and 26 corridors will need an additional 30 acres of industrial land. To meet this need, the County could rezone agricultural land along MD 194 not far from the rail.



Costco Distribution Center near I-70/New Market

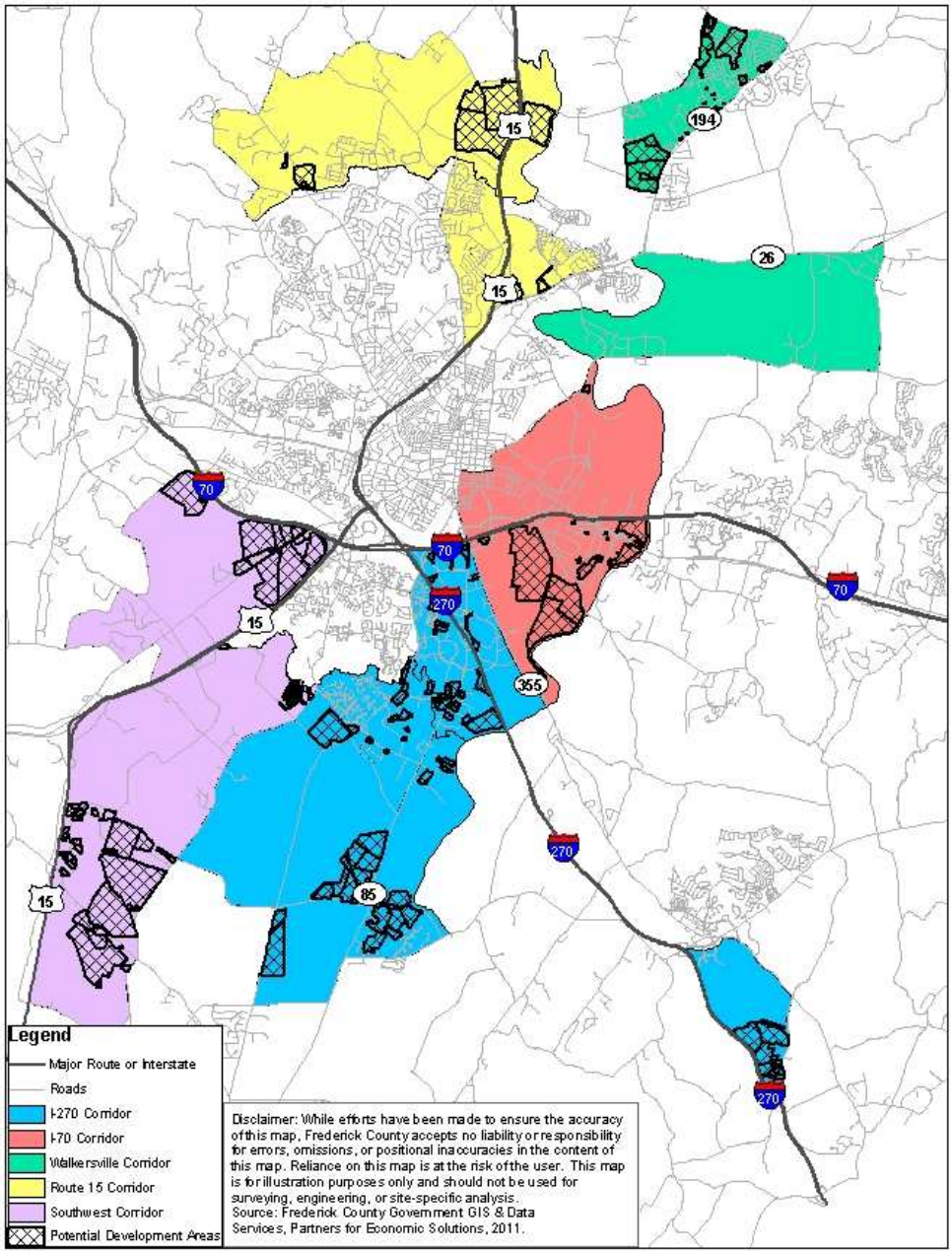
Within this corridor and throughout the County, issues of rail service frequency and pricing by both the Class I and short line railroads may limit growth opportunities for businesses seeking rail access. Further study may be needed of the impacts of railroad fees and operation frequencies on demand for rail accessible properties. Assuming reasonable rail access, this area should benefit from demand pressures for rail accessible bulk commodity transportation. As demand increases for intermodal (rail and truck) freight transportation, Frederick County could become increasingly competitive for warehousing and distribution staging due to proximity to the major regional markets of Baltimore and Washington D.C., and major port and intermodal facilities in and around Baltimore. The recent development of large distribution facilities for Costco and Toys R' Us in Frederick County, testifies to these opportunities. The northeastern section of the County already serves bulk commodity shippers and will continue to offer a strong market location for these users.

Although rail currently plays a role for certain businesses in Frederick, County Area brokers currently receive few inquiries from parties interested in access to rail as a deciding factor for locating in Frederick County[33]. While it is likely that these users represent a smaller portion of demand, the amount of property with good access to other truck routes and rail continues to diminish over time. Long-term land use policies should seek to protect properties with rail access as energy prices rise and encourage greater dependence on rail. Most important will be rail-served sites with good highway access in the I-70 and Southwest corridors.

Further review of specific parcels in these two corridors will be needed to assure sufficient industrial land exists to meet future demand. Figure 3.5 displays the potential parcels available for future freight facilities.

[33]Mineral mining companies excepted.

Figure 3.5 Potential Development Areas for Freight-Oriented Facilities



Although not expected to play as large a role in *future* industrial development, beyond the land already allocated and in addition to the five potential opportunity areas identified by the demand analysis, there are eight existing clusters of freight-oriented businesses that should be monitored into the future:

- New Market;
- Point of Rocks;

- Brunswick;
- Adamstown and the Eastalco site;
- Myersville;
- Thurmont;
- Emmitsburg; and
- Union Bridge.

All of these areas are currently home to at least one major freight-oriented industrial property, such as the Costco Distribution facility near New Market and Lehigh Cement in Union Bridge. There is also existing industrial land available at these sites that could be utilized or leveraged for future freight-oriented development. The evolution of development over time, in particular along the U.S. 15, 40, 340 and MD 85 corridors, demonstrates the shift from light industrial to other uses, such as retail. In some instances, non-industrial uses may have been non-conforming and later converted or traditional industrial users added rentals, sales, repairs, and office space over time, resulting in subsequent land use changes. This issue should be monitored to ensure that flex/office development does not preclude availability of sites for other industrial purposes.

3.6 SAFETY AND BOTTLENECKS

In addition to future growth constraints, two of the major issues that should drive improvements in freight transportation facilities are safety issues and bottlenecks.

Safety

Truck safety is an important aspect of freight transportation planning. According to information provided by the Maryland State Highway Administration (SHA), eight percent of total crashes in Frederick County are related to large vehicles such as trucks and buses[34], and large vehicles were involved in 15 percent of all fatal crashes in the County. Many truck crash locations are also located near heavy concentrations of industrial land use, such as the area directly south of the MD 75/I-70 interchange. The proportion of crashes is positively correlated with increased vehicle miles traveled (VMT), however the crash rates on the arterial highway routes are much higher than the freeway routes, with the segment on MD 75 near the I-70 interchange,



Restricted clearance CSXT and MD 75

[34] Maryland SHA Frederick County Crash Summary, 2008.

accounting for seven truck crashes over the three-year period with an extremely high severity index rate of over 281 indicating a large number of fatal or other serious crashes. Identifying conflict areas will be a key element for the County to develop policies to direct trucks or other goods movement vehicles to highway facilities best designed to accommodate them.

Bottlenecks

Within Frederick County there are a number of areas where physical constraints contribute to a lack of efficiency in freight transportation operations. Effective land use planning and transportation coordination is key to preventing bottlenecks from inhibiting freight transportation operations within Frederick County. Bottleneck issues were identified during both the data analysis and public outreach components of this project and mitigation strategies are discussed in the next section.

Table 3.3 Summary of Freight Stakeholder Comments

Comment	Where Reported
Weaving problems for both cars and trucks at the I-270/I-70/U.S. 15 interchange to the southwest of the City of Frederick	Public Outreach Meeting
U.S. 15/Hayward Road intersection backs up traffic northwest of Frederick	Public Outreach Meeting
Acceleration and deceleration lanes from Southbound U.S. 40 to 15 may need to be lengthened to accommodate truck movement safely into/out of Frederick.	Public Outreach Meeting
Capacity limitations and traffic congestion on I-70, I-270, and U.S. 15 (four lanes each direction (eight total)). Congestion worst at urban interchanges.	Public Outreach Meeting
Freight rail delays due to MARC passenger rail service on the Brunswick line	Public Outreach Meeting
Difficult transition for trucks traveling from I-70 Westbound to I-270 Southbound, not a direct connection.	Stakeholder Interviews
East-West connectors between MD 85/MD 355/and I-270 are very poor. Grove Road is currently the only direct East-West connection between MD 85 & MD 355.	Stakeholder Interviews
Intersection of U.S. 15 and MD 28 not wide enough to handle very long truck loads. Trucks sometimes back up to navigate turn	Stakeholder Interviews
Passing lanes on U.S. 15 very difficult for trucks. Hilly terrain, short-passing areas, long queues for passenger vehicles following trucks.	Stakeholder Interviews
Access to the Costco from I-70 Exit 62 is sometimes difficult for trucks because it also serves as a major commuter exit. Trucks sometimes park on the ramp as well.	Stakeholder Interviews
Low railroad bridge on MD 75 restricts truck movement	Stakeholder Interviews
MD 75 from New Market to Union Bridge is narrow and winding and there are no shoulders. Very difficult for trucks to navigate.	Stakeholder Interviews
Truck parking issues throughout the County. Sometimes park on side of roadway or freeway ramp inhibiting traffic flow and causing safety issues	Stakeholder Interviews
Stanford Industrial park (between U.S. 15 and Cap Stine Road has relatively poor freight access and narrow internal streets	Stakeholder Interviews

4.0 Strategies to Preserve Freight Mobility

Assessment of growth in freight flows, the performance and impact of freight transportation on the existing circulation system, and current provision of industrial land highlights the key connections between freight transportation and land use in Frederick County. By identifying these connections, the County can maximize opportunities to grow the industrial economy and efficiently utilize existing transportation infrastructure. At the policy level, freight transportation must be considered as part of the land use planning process. Zoning decisions should incorporate freight considerations and transportation improvements should focus on maintaining and improving access to key industrial clusters. Enhancing linkages between freight and the planning process will help the County in allocation decisions of increasingly scarce transportation improvement dollars to help industrial industries (and associated jobs and people to work those jobs), promote economic development, and enhance the County's competitive advantages. Recognizing these connections will position the County to recognize and mitigate the constraints that may inhibit future potential.

4.1 Opportunities and Constraints

This study has identified several opportunities and constraints to improve freight transportation and land use connections in the County. Among the opportunities, Frederick County has an existing competitive advantage for accommodating freight and industrial development through its highway and rail freight infrastructure; adequate provision of industrial land to accommodate future demand; flexible planning tools that can be utilized to promote development; current highway and rail improvement programs to accommodate future freight demand; and a location advantage for shippers and carriers to serve the Baltimore and Washington Metropolitan areas. Challenges include truck parking shortages, industrial land compatibility and supply issues, peak period road congestion, and rail access.

Frederick Grain—No Rail Access



Although these opportunities represent significant advantages for Frederick County, the County will need to address the challenges to facilitate future growth. Mitigating these challenges will help the County leverage existing strengths to build a more sustainable program for freight transportation. Table 4.1 describes the major Opportunities and Constraints illuminated by the study and presents some potential mitigation strategies, proposed by the stakeholders and identified through the literature review. Additional tools and national best practices will be highlighted later in this section. Two types of strategy solutions provide a framework for alleviating the identified constraints:

1. **Strategy, planning, and policy solutions** - including promotion of industrial or freight-oriented land, exploring flexibility in the zoning code, and engaging freight stakeholders such as the railroads to identify feasible strategies for improving industrial access.
2. **Implementation solutions** - including designating land for truck parking, improving signage and routing roadway tools for truckers, and integrating freight considerations more carefully into the County's prioritization process for highway improvements.

Table 4.1 Opportunities and Constraints Summary

Opportunity	Potential Constraints	Potential solutions (Planning)	Potential solutions (Implementation)
Maximize the benefit of the existing core of highway and rail freight infrastructure	Infrastructure capacity limitations (i.e., highway capacity, rail capacity issues on the Brunswick line, truck parking)	Promotion/incentives for off-peak truck delivery, coordination between shippers, truck parking implementation plan	Travel demand/transportation system management techniques, including signage and enforcement, new roadway/truck parking facilities
Maximize the location advantage of Frederick County to shippers and carriers serving the Baltimore and Washington Metro areas	Industrial rail access challenges and mismatched demand and supply of rail served properties	Information sharing between Class I and short line railroads and existing and potential shippers, clearinghouse of rail contacts and rail access information (including the potential costs for improving access to certain sites)	Infrastructure bank for improved rail access for shippers (modeled on Pennsylvania, Virginia, or New Jersey programs), explore inclusion of rail access improvement costs in priority funding areas
County has suite of planning tools to promote industrial development (i.e., small area and corridor plans, Priority Funding Areas)	Industrial Land Use Challenges (i.e., mismatch between the location of industrial land and the future expected demand, residential/commercial encroachment of industrial land)	Flexible zoning within industrial/institutional classification to preserve heavy industrial land, incorporate freight findings into long range plan, coordinate freight planning efforts with local governments (Thurmont, Frederick)	Explore a transfer of development rights (TDR) program for industrial land, regional master planning for freight, promote continued clustering of freight activities adjacent to transportation facilities
Current infrastructure plans and programs, if implemented, will help accommodate future freight demand and improve access to industrial facilities	Transportation access challenges to industrial facilities (i.e., local access to new industrial facilities, including the Stanford and Intercoastal Industrial Parks, poor east-west roadway connections leading to circuitous truck routing south of Frederick	Improved enforcement/information sharing between shippers/carriers and the County, MDOT, and the SHA, further study of access routes to industrial developments, such as the Port of Baltimore or other regional intermodal transfer centers to identify improvements	Identify and promote County truck routes, develop truck turn outs/auxiliary lanes/passing lanes on truck routes every mile or two to ensure passing lanes, build on potential TDM strategies (traffic information sharing, truck routing, virtual weigh-in-motion WIM)
Existing industrial land will accommodate future demand	Current industrial property vacancies in the County and softness of the market may increase the risk for conversion industrial properties into non-industrial "highest and best use"	Industrial land use preservation districts with special tax benefits, planned industrial corridors, creation of buffer zones around industrial properties written into zoning codes to prevent encroachment	Consideration of sound walls or double-paned glass in plan review, enhance terrain/landscape buffers for residential or commercial areas adjacent to industrial facilities

4.2 WHAT IS THE COUNTY CURRENTLY DOING?

Land Use Planning

Currently the land use designations in Frederick County (outside of incorporated municipalities) include four major categories of industrial or "freight-oriented" land: General Industrial, Office/Research Industrial, and Limited Industrial land uses. These land uses are concentrated along the major highway corridors such as U.S. 15, I-70, and MD 85 and major mineral mining operations currently exist between MD 85 and MD 351 just south of the City of Frederick, directly east of MD 194 near Walkersville, and in the Union Bridge area off MD 75 in the northeast part of the county. Also supporting the identification and accommodation of industrial facilities, the County's Zoning Code defines the purpose of industrial zoning as follows:

> *The purpose of the industrial districts is to provide for the development of varied industrial uses that would supply needed employment opportunities for the county. Industrial development has inherent characteristics that require special attention and protection. Due regard must be given to industrial needs for adequate site locations with concentration on terrain, availability of water and sewer systems, transportation, and compatibility with surrounding development.*[35]

Frederick County has made provisions for industrial land corridors to accommodate existing industrial growth and mineral extraction. To accommodate future growth, the County may need to explore additional expansion of location and extent of existing industrial zoning. The County utilizes a Community and Corridor Planning Process, established by the 2010 County Comprehensive Plan whereby plan updates occur at three levels, "County Plan", "Community Plans," and "Corridor Plans." This attention to planning at the community and corridor level will allow the County to focus investments to serve freight-oriented development.

Comprehensive Plan Update Process

Frederick County, through their most recent general plan process, has been exploring strategies to accommodate future growth within the County. County planning staff should continue to utilize existing relationships with local businesses, Office of Economic Development staff, counterparts at local jurisdictions, and other major regional freight providers to better understand the nexus of freight transportation growth in the County. Frederick County has recently updated its general plan and is interested in better integrating freight considerations into the land use planning process. In the most current iteration of the County's long range plan, there were several policies presented, including Transportation Policy: TR-P-17.

> *Support the accommodation of freight rail and trucking, which will enhance the development of a broad base of industrial and commercial uses by provided adequate*

[35] County Zoning Code Ordinance 1-19-5.250, Accessed February 25, 2011.

infrastructure and the designation of industrial or freight rail dependent land uses along the rail lines.

Additionally, through other policies such as TR-P-14 and TR-P-21, the County is interested in supporting the City of Frederick in the development of the Frederick Municipal Airport Master Plan and the exploration of air freight potential and minimizing the impacts of airport, highway, truck, and rail noise on sensitive land uses. The following strategies were described by the County in their General Plan Update[36] to mitigate noise impacts (a key impact associated with freight transportation operations):

- Increased building setbacks from roadways;
- Truck quiet zones;
- Use of landscaping, screenings, or berming;
- Grade separation of roadways;
- Noise barriers; and
- Land use overlay zones.

During the public outreach component of the study, few of the freight-oriented businesses reported land use incompatibility problems with neighboring uses (truck noise, manufacturing operations) would cause quality of life issues. Some businesses, such as Frederick Grain have received periodic complaints from neighbors, but have not had to adjust operations as the complaints stem from the traffic on public roads. Similarly, businesses focused on mineral mining operations such as LaFarge deal with community issues by engaging in good neighbor behavior by using water and sweeper trucks to keep the dust at a minimum and prevent track out. The County can continue to encourage businesses with potential noxious operations (noise, air quality, etc.) to act as a good neighbor, and continue to implement these mitigation strategies.

Freight Transportation Planning

Within Frederick County there are a number of areas where capacity constraints, geometry, operations, and maintenance deficiencies inhibit the flow of people and goods in the County. As described previously, freeway and arterial highways in the County, while providing a strong backbone network for goods movement flows, have some deficiencies. The highway projects identified in the state and regional planning documents include capacity improvement projects on Interstates 70 in Frederick City, the major freight transportation corridor in the County by overall truck volume, as well as other major freight corridor such as U.S. 15 and I-270 from Montgomery County to Monocacy Boulevard north of MD 26. Expanding the capacity on these facilities would better accommodate

[36] Frederick County General Plan Update, 2010.

freight flows in the County. Most of these projects are designed to alleviate peak period bottlenecks and improve passenger and freight traffic operations and safety in Frederick County.

Mitigating Freight Transportation Constraints

The County currently utilizes a Priority Transportation letter system to raise awareness and promote key projects within the County borders within the MPO's Constrained Long-Range Plan and State planning and funding programs. County priorities are selected based on a variety of criteria, including public safety, traffic congestion, gap closures in the transportation system, and community support. The most recent letter, dated May 2011, identified several projects that, if completed, would enhance mobility for freight transportation in the County. The current project list is intended for consideration in the development of the FY 2012-2017 Maryland Consolidated Transportation Program (CTP)[37] and includes as top priorities the following four projects:

- #1 – Construction Funding – U.S. 15 Monocacy Boulevard Interchange;
- #2 – Construction Funding – MD 85 Phase I;
- #3a – Design/Engineering Funding – Interstate 70 Phase 4; and
- #3b – Planning Funding – Interstate 70 at Meadow Road Interchange.

Working with County staff, this report identifies over 60 transportation projects that would help improve the flow of goods and services throughout the County. Projects were identified by Maryland State Highway Administration, the Maryland Department of Transportation (MDOT) Office of Freight and Multimodalism, and MWCOG Freight Office, and the MARC Commuter Rail. In addition, the private railroads have identified projects that would improve system performance and alleviate bottlenecks. The projects fall into three categories – freight primary projects, freight secondary projects, and other projects to enhance freight flows.

Primary Freight Projects: *Projects with a strong freight component previously identified in the Maryland Freight Plan project list, the Metropolitan Washington Council of Governments (MWCOG) National Capital Region Freight Plan, or a current construction program along a major freight.*

Secondary Freight Projects: *Projects identified by the stakeholders during the public outreach phase of the Frederick County Freight and Land Use Plan, projects identified in the Maryland Highway Needs Inventory (HNI) on major freight corridors (truck routes, proximity to major shippers).*

Freight Supportive Projects: *Local projects with a strong freight component. Includes projects on smaller highway facilities that service major freight users, lower*

[37] FY 2012 Frederick County Transportation Priorities.

priority HNI projects, and other support projects to enhance freight flows (i.e., local road access to major freight business clusters).

Developing a "Freight" Project List

The study team and County sought to develop a list of freight transportation project list is to highlight the beneficial projects in the County. The State of Maryland does not officially designate "freight" projects in its Consolidated Transportation Program (CTP), because many projects serve both freight and passenger movement. The study team also included approximate costs to identify the scale of projects and the expected timeframe for completion.

Many of these projects have already been highlighted in Freight Plans for the State of Maryland and MWCOG, demonstrating their regional importance. Additionally, these projects were selected based on their proximity to major existing freight business clusters, such as the major industrial or warehousing and distribution operations in Point of Rocks (Canam Steel), New Market (Costco), or Union Bridge (Lehigh Cement) or potential development corridors identified in Section 3: Interstate 70 and 270 Corridors, Southwest Corridor, Route 15 Corridor and the Walkersville Corridor.

Projects in Frederick County that would likely facilitate the improvement of freight flows within the County are highlighted in the following tables:

Table 4.2 Frederick County Primary Priority Freight Projects

Name of Project	Approximate Cost ($mn)	Existing Planning/ Programming					Freight Benefit	Development Timeframe[b]
		MD/MWCOG Freight Plan	MWCOG CLRP	MWCOG TIP/MD CTP	SHA Construction Program[a]	SHA Needs Inventory		
Highway Projects								
Freeways								
Interstate 70 – Widening of the existing four lane section to six lanes and reconstruction of the interchanges 5.3 miles between Mt. Phillip Road and MD 144 FA (Phase 4).	262.22	√	√	√		√	Improve County's major freight trucking route (under design)[c]	Short
Interstate 70 – Phase 2D – Widen 1.57 miles from east of MD 355 to east of MD 144) and replace bridge over Reich's Ford Road	49.00		√	√	√	√	Improve connections between MD 355 and I-70 (under construction)	Programmed Completion 2013
Interstate 70 – Reconstruct and widen – Washington County Line to west of Mt. Phillip Road	318.40	√				√	Improve County's major freight trucking route	Long
Interstate 270 Reconstruct and widen (including managed lanes N of MD 80 to MD 121 from the Montgomery County Line to I-70 – Part of I-270/US15 Multimodal Study)	1,024.70	√	√	√		√	Improve flows of trucks along major freight corridor	Long
U.S. 15 – Reconstruct and widen from I-70 to north of Biggs Ford Road (including auxiliary lanes)	549.20	√	√	√		√	Improve flows of trucks along major freight corridor	Long
U.S. 15 – Interchange construction at U.S. 340 Jefferson Tech Park (MP 9.94)	10.90	√	√	√			Improve commercial access to I-70 and U.S. 15	Short
U.S. 15 – Interchange construct at Monocacy Boulevard	79.15		√	√		√	Alleviate major public safety and freight movement issues intersection. (under design)[b]	Short
U.S. 40 – Reconstruct and widen between U.S. 15 and I-270	63.00	√				√	Improve flows of trucks along major freight connector	Long

Table 4.2 Frederick County Primary Priority Freight Projects (continued)

Name of Project	Approximate Cost ($mn)	Existing Planning/ Programming: MD/MWCOG Freight Plan	MWCOG CLRP	MWCOG TIP/MD CTP	SHA Construction Program[a]	SHA Needs Inventory	Freight Benefit	Development Timeframe[b]
Highway Projects (continued)								
Arterial Highways								
MD 85 – Reconstruction of interchange at I-270 (Phase I)	127.75	√	√	√		√	Improve flows of trucks along major freight corridor[c]	Long
MD 85 – Upgrade to a four lane divided highway from South of English Muffin Way to the SHA/Westview Development Complex, 6 lanes through I-270 interchange, reconstruct and widen English Muffin Way to N. of Grove Road (2.40 miles) Phase II and III)	134.97	√	√	√		√	Improve flows of trucks along major freight corridor	Mid
County Highways								
Shockley Drive to Spectrum Drive Connector (study only included in Frederick County CIP)	15.0						Improve access and truck flows from MD 85 to MD 355 Corridor	Mid
Rail Projects								
Enhance connection in short line rail traffic to customers in the north and northeast part of the County	Costs not available	√						Long
MARC Growth and Investment Plan – Add third mainline track between Silver Spring and Brunswick	190.00	√	√	√			Improve MARC performance and reduce conflicts with CSX Freight flows in the region	Long
MARC Growth and Investment Plan – Add sidings and interlockings between Silver Spring and Brunswick to accommodate passing trains on the Brunswick line	Included above	√	√	√			Improve MARC performance and reduce conflicts with CSX Freight flows in the region	Short

Table 4.2 Frederick County Primary Priority Freight Projects (continued)

Name of Project	Approximate Cost ($mn)	Existing Planning/ Programming: MD/MWCOG Freight Plan	Existing Planning/ Programming: MWCOG CLRP	Existing Planning/ Programming: MWCOG TIP/MD CTP	Existing Planning/ Programming: SHA Construction Program[a]	Existing Planning/ Programming: SHA Needs Inventory	Freight Benefit	Development Timeframe[b]
Rail Projects (continued)								
National Gateway – Increase capacity and provide double-stack clearance between Washington, D.C. and West Virginia state line (Includes two projects in Frederick County)	842.00	√					Enable double-stack service on CSX mainline from eastern ports to Midwest	Short
Point of Rocks – Total arch liner replacement – Point of Rocks Tunnel	5.00	√					Enable double-stack service on CSX mainline from eastern ports to the Midwest	Short
Catoctin – Total arch liner replacement – Catoctin Tunnel	3.30	√					Enable double-stack service on CSX mainline from eastern ports to the Midwest	Short

Source: MWCOG Freight Plan, Maryland Statewide Freight Plan, MWCOG CLRP/TIP, SHA Construction Program, Maryland Statewide Long Range Transportation Plan/TIP, SHA Highway Needs Inventory, Frederick County Freight and Land Use Plan Stakeholders.

[a] Full construction funding identified.

[b] For highway projects, Short-term projects include those expected to be completed in 7-12 years, Mid-term projects, 13-18 years, and Long-term projects 19+ years. The short-term arch liner rail projects are expected to be completed prior to the completion of the Panama Canal widening in 2014-15. Other rail projects may have different timeframes

[c] Current priority project – Frederick County Transportation Priorities Report (2011).

Table 4.3 Frederick County Secondary Freight Projects

Name of Project	Approximate Cost ($mn)	Existing Planning/ Programming: MD/MWCOG Freight Plan	MWCOG CLRP	MWCOG TIP/MD CTP	SHA Construction Program[a]	SHA Needs Inventory	Freight Benefit	Development Timeframe[b]
Highway Projects								
Freeways								
Interstate 70 – Reconstruct interchange Meadow Road/Ijamsville Road	27.00		√	√	-	√	Improve access to I-70 and airport[c]	Mid
Interstate 270/MD 75 Interchange construct (includes extending MD 75 from MD 355 to I-270 – Part of I-270/US15 Multimodal Study)	57.30	√	√	√	-	√	Improve access to and from I-270 to industrial properties in Urbana	Long
U.S. 15 – Freeway reconstruct between Potomac River and U.S. 340 and explore the implementation of auxiliary and passing lanes	155.20					√	Improve the flow of truck traffic on a major freight corridor and enhance access to industrial properties in Point of Rocks and off U.S. 15/Cap Stine Road	Long
U.S. 15 – Reconstruct and widen from north of Biggs Ford Road or Pennsylvania State Line(including interchanges)	291.80					√	Alleviate major public safety and freight movement issues on U.S. 15. Enhance capacity on a major trucking corridor	Long
U.S. 40 – Multilane divided reconstruction between Washington County line and west of Hollow Road	83.80					√	Enhance truck traffic into and out of the City of Frederick	Long
Arterial Highways								
MD 28/Tuscarora Road – 2 lane Construction/Reconstruction East of U.S. 15 to 0.5 miles east of Rock Hall Road (Point of Rocks)	14.20					√	Improve movement for trucks accessing U.S. 15 from industrial properties on MD 28	Long
MD 75 – Green Valley Road Reconstruction between MD 355 and I-70 (Green Valley)	86.40					√	Improved truck access to Urbana and New Market. Enhance safety on route with high instance of crashes	Long

Table 4.3 Frederick County Secondary Freight Projects (continued)

Name of Project	Approximate Cost ($mn)	Existing Planning/ Programming: MD/MWCOG Freight Plan	MWCOG CLRP	MWCOG TIP/MD CTP	SHA Construction Program[a]	SHA Needs Inventory	Freight Benefit	Development Timeframe[b]
Highway Projects (continued)								
Arterial Highways (continued)								
MD 77 Middleburg Road: 1.5 mile two lane reconstruction from East of Frederick County line to MD 194 at Keymar (Union Bridge)	11.50						Support truck movement to and from the industrial users on Carroll and Frederick County border	Long
MD 77 extension resulting in Direct Access of MD 77 and MD 194 traffic to MD 75 (Union Bridge-Carroll County)	48.70						Support truck movement to and from the industrial users on Carroll and Frederick County border	Long
MD 194 Woodsboro Pike divided highway reconstruction between MD 26 and Devilbliss Bridge Road	25.70					√	Improve local truck access to Walkersville and Worman's Mill	Long
Rail Projects								
2 main tracks, Old Main Line/Frederick Branch. Add second main track on the Old Main Line/Frederick Branch between the Catoctin tunnel and the Potomac River.	76.00						Improve MARC performance and reduce conflicts with CSX Freight flows in the region	Long
Upgrade existing road/railway crossings to concrete base on CSX line between Point of Rocks and Frederick Junction	Costs not available						Improve long-term stability of the crossing for roadway and rail traffic	Short
Rebuild 2 miles of formerly out-of-service track to Class I Standards between Walkersville and Woodsboro	4.70						Potentially provide access for new rail customers within the corridor	Short

Source: MWCOG Freight Plan, Maryland Statewide Freight Plan, MWCOG CLRP/TIP, SHA Construction Program, Maryland Statewide Long Range Transportation Plan/TIP, SHA Highway Needs Inventory, Frederick County Freight and Land Use Plan Stakeholders.

[a] Full construction funding identified.

[b] For highway projects, Short-term projects include those expected to be completed in 7-12 years, Mid-term projects, 13-18 years, and Long-term projects 19+ years. The short-term arch liner rail projects are expected to be completed prior to the completion of the Panama Canal widening in 2014-15. Other rail projects may have different timeframes

[c] Current priority project – Frederick County Transportation Priorities Report (2011).

Table 4.4 Frederick County Freight Supportive Projects

Name of Project	Approximate Cost ($mn)	Existing Planning/ Programming: MD/MWCOG Freight Plan	MWCOG CLRP	MWCOG TIP/MD CTP	SHA Construction Program[a]	SHA Needs Inventory	Freight Benefit	Development Timeframe[b]
Highway Projects								
Freeways								
Interstate 70 – MD 75 Interchange Reconstruct	Costs not available						Better accommodate commuter queuing and truck traffic to Costco DC	Long
U.S. 15 – During freeway reconstruct between Potomac River and U.S. 340 explore the implementation of auxiliary and passing lanes	155.20					√	Improve the flow of truck traffic on a major freight corridor by alleviating queues for vehicles following slower trucks	Long
Arterial Highways								
MD 75 – Study the realignment of MD 75 corridor between Union Bridge and New Market	Costs not available						Hilly terrain, short-passing areas, long queues for passenger vehicles following trucks	Long
MD 180 / MD 351 Jefferson Pike / Ballenger Creek Pike multilane reconstruction between Greenfield Drive and Corporate Blvd	196.36		√	√			Enhance NB access from 180/351 to I-70	Long
MD 355 Urbana Pike multilane reconstruction between MD 75 and MD 85 (Segment between MD 80 and North of Urbana Completed)	179.50					√	Improve truck access along a major freight corridor	Long
MD 464 Souder Road two lane reconstruction between MD 79 and Corporate limits of Brunswick	14.60					√	Local access to Brunswick	Long

Table 4.4 Frederick County Freight Supportive Projects (continued)

Name of Project	Approximate Cost ($mn)	Existing Planning/ Programming: MD/MWCOG Freight Plan	MWCOG CLRP	MWCOG TIP/MD CTP	SHA Construction Program[a]	SHA Needs Inventory	Freight Benefit	Development Timeframe[b]
Rail Projects								
Brunswick maintenance facility expansion. Expand facility to accommodate future growth in MARC service	28.00						Improve MARC performance and CSX interaction	Long
Point of Rocks: new platform on Frederick Branch to help accommodate passengers on 2nd main track.	1.00						Improve MARC performance and CSX interaction	Long
Airport Projects								
Construct Air Traffic Control Tower and access road	5.3						Project expected to be completed by August 2011	Estimated Completion 2011
Construct perimeter fence and road along boundary of property	3.0						Contribute to safety and security at the airport	Long
Bailes Lane Demolition (demo/site prep only)	10.0						Eliminate current obstructions at the airport. Enhance operational capacity. Provide for new hangar development areas	Mid
Airport Runway Extension, extended run up area and taxiway relocation	10.0						Improve capacity of the airport	Long

Table 4.4 Frederick County Freight Supportive Projects (continued)

Name of Project	Approximate Cost ($mn)	Existing Planning/ Programming: MD/MWCOG Freight Plan	MWCOG CLRP	MWCOG TIP/MD CTP	SHA Construction Program[a]	SHA Needs Inventory	Freight Benefit	Development Timeframe[b]
Other Support Projects								
Construct commercial tire wash station in the vicinity of Union Bridge (along MD 75)	1.5						Enhance ability of trucks to wash down in local area, alleviate track out and improve air quality, safety	Long
Study the relocation of either Manor Woods, Cap Stine, or Elmer Derr Roads	Costs not available						Enhance east-west connections in new freight cluster between Eastalco and Stanford Industrial Park	Long
Construct or designate permanent truck parking facility within County boundaries	Costs not available						Provide additional opportunity for truck parking within County boundaries	Short

Source: MWCOG Freight Plan, Maryland Statewide Freight Plan, MWCOG CLRP/TIP, SHA Construction Program, Maryland Statewide Long Range Transportation Plan/TIP, SHA Highway Needs Inventory, Frederick County Freight and Land Use Plan Stakeholders.

[a] Full construction funding identified.

[b] For highway projects, Short-term projects include those expected to be completed in 7-12 years, Mid-term projects, 13-18 years, and Long-term projects 19+ years. The short-term arch liner rail projects are expected to be completed prior to the completion of the Panama Canal widening in 2014-15. Other rail projects may have different timeframes

[c] Current priority project – Frederick County Transportation Priorities Report (2011).

4.3 OTHER FREIGHT AND LAND USE TOOLS

To effectively manage the connections between land use and freight transportation the study team identified a suite of planning and implementation tools. Although different sized jurisdictions around the United States recognize the challenges associated with transportation and land use connections, few have taken the initiative to explore the linkages between freight transportation and land use, including evaluating the system and identifying challenges and opportunities associated with freight transportation. Several resources were reviewed to provide the County with a list of best practices for incorporating freight transportation and land use considerations.

Freight and Land Use Toolbox (Best Practices)

To develop a list of tools the project team reviewed materials, including freight strategies for regional governments, statewide and regional freight plans, corridor studies, and planning handbooks. The resources provide direction to developing appropriate tools for mitigating the freight and land use constraints within the County. The strategies and tools have been sorted into categories representing the constraint that they are intended to alleviate. The tools were also sorted by estimated cost and level of effort to Frederick County and other stakeholders to implement in staff time and relative financial support. The tools have been broken down into three categories:

Reviewed Resources: Freight and Land Use Tools

- *Puget Sound Regional Council (PSRC) Regional Freight Strategy*
- *Seattle Freight Mobility Study*
- *Freight System Action Plan (Pennsylvania)*
- *Maryland Statewide Freight Plan*
- *FHWA Freight and Land Use Handbook*
- *National Highway Institute (NHI) Course Linking Freight to Planning and the Environment*
- *Atlanta Regional Freight Mobility Plan*
- *Regional Goods Movement Study—Bay Area*
- *I-10 Freight Corridor Study Final Report*
- *Baltimore Truck Route Master Plan*
- *Atlanta Truck Route Master Plan*
- *Truck Only Lanes Study in California*
- *Maine Industrial Rail Access Program*
- *Morris County New Jersey Freight Rail Development Program*

Low: *Little to no cost to implement. Projects/programs can likely be implemented within existing planning processes and with existing staff support.*

Medium: *Minimal to moderate effort to implement. May include minor studies, agency coordination, and small-scale physical infrastructure (i.e. signage).*

High: *Moderate to extensive staff time and/or funding required to implement. May require extensive physical infrastructure improvements, new programs, and dedicated funding to support land use policies. Programs may be implemented at the state level with County support either through a local match or with in-kind staff support.*

Constraint #1: Lack of Truck Parking

Although the County has a strong existing freight transportation system with freeway and arterial highways, and multiple rail lines, there are capacity limitations. Major limitations highlighted by the stakeholders are the lack of adequate truck parking and congested roadways. Quality freight transportation is a function of the timeliness of goods movement. Capacity constraints can cause delays and disrupt supply chains. Arguably the most effective way to alleviate capacity constraints is addition of additional capacity. Funding challenges, right of way, and other issues often preclude this approach. Another way to deal with capacity constraints is through operational strategies that enable existing infrastructure to be used more efficiently. Transportation demand management (TDM) and Transportation System Management (TSM) techniques such as delivery time adjustments and improved signage can help the County manage the existing transportation system. Coordination with the private sector is key to leverage existing TDM programs (such as off-peak delivery and shared use facilities) and track the effectiveness of programs.



Truck parking and staging at MD 355/I-70

Table 4.5 Best Practices for Mitigating Constraint #1

Implementation Effort/Cost	Description of Tool	Organization/Agency Responsible
Low	**Off-peak truck delivery:** Research off-peak delivery among freight stakeholders to better understand challenges.	Local/County/Private
	Shared use truck parking facilities: Promote shared use truck parking facilities between neighbors to maximize available space.	Local/ Private/State
Medium	**Signage and enforcement for truck parking:** Enhance signage and enforcement for truck parking in non-designated zones (i.e., side of highway near major freight generators).	Local/County/State
	Truck parking minimum requirements: Study truck parking minimum requirements or incentives for certain types of facilities (based on square footage, expected truck trips, etc.). Develop implementation plan for changes in minimum parking requirements	MPO/County
High	**Construction of new truck parking facilities:** Designate or construct new truck parking facilities.[38]	County/Private/State
	Land bank for truck parking: Work with state and private industry to set aside land for future truck parking near industrial facilities/clusters, freeway interchanges, or intermodal facilities.	State/Private

[38] SHA recently made the weigh station near New Market available for truck parking.

Constraint #2: Industrial Rail Access

Industrial rail access in Frederick County meets the needs of some, but not all of the potential rail customers in the County. Many industrial users proximate to rail lines do not use rail for several reasons: lack of familiarity with rail ownership, operational or equipment issues, or an issue with the costs of rail maintenance,[39] which often require a substantial investment to raise the facilities to a usable level. Implementing some or all of the tools identified below will allow the County to remove existing roadblocks to rail access and help bridge the gap between rail supply and existing and potential users.

Table 4.6 Best Practices for Mitigating Constraint #2

Implementation Effort/Cost	Description of Tool	Organization/Agency Responsible
	Track industrial demand: Build a database of existing rail adjacent parcels and explore the expansion or improvement of substandard rail facilities.	MPO/County/State
Low	**Plan funding assistance for local rail access:** Explore the implementation of a funding program for improving local rail access for businesses either through financial or technical assistance (i.e., siding, switches, track upgrade).	State or Fed
	Industrial development along existing rail lines: Promote the construction of industrial facilities along existing rail lines.	County/MPO/State/Fed
Medium	**Coordinate with railroads on traffic light timing:** Work with the railroads on scheduling to ensure that traffic light timings and truck queuing areas near industrial facilities are adequate to account for very long trains—particularly critical for crossings of CSXT mainline adjacent to major shippers.	Private/Local/MPO/County/ State
High	**Provide funding assistance for local rail access:** In cooperation with interested partners (i.e., State of Maryland, local jurisdictions) implement a grant or loan program for local businesses to apply to pay for rail access improvements (i.e., financing assistance of $500,000 for rail siding, switches).	County/MPO/State

[39] Discussions with the railroads confirmed that customers are typically responsible for maintenance of the rail siding including costs associated with switching. These costs can range from a few thousand dollars per month, to over a million dollars to upgrade out of service spurs.

Constraint #3: Industrial Land Use Challenges

Although there are currently sufficient quantities of industrial land within the County to accommodate future employment demand (20 years), market research from PES demonstrated slight mismatches between the locations of existing industrial land and future demand. These mismatches should be addressed during the Comprehensive Planning and Zoning update process, as well as during updates of Community and area plans in key industrial areas. During the stakeholder outreach for this plan, some existing industrial users reported difficulty expanding existing operations due to residential and commercial encroachment. Implementing the strategies highlighted in the matrix below will help manage industrial land and mitigate the risks associated with "mixing of uses" as a result of encroachment such as air quality, noise pollution, and safety concerns for residents. This will allow industrial users the flexibility for future growth and associated economic development.

Table 4.7 Best Practices for Mitigating Constraint #3

Implementation Effort/Cost	Description of Tool	Organization/Agency Responsible
Low	**Site design standards for industrial land:** Consider site design guidelines and/or performance standards for noise, vibration, odors, dust, smoke, at and around industrial facilities.	Local/MPO/County
	Monitor priority funding and designated growth areas for expansion: Continue to monitor areas where priority funding and growth area designations might help promote industrial development.	Local/County
Medium	**Promote buffers:** Consider buffers (soundwalls, transition land) around industrial and other freight-intensive land uses. Ensure adequate segregation of land uses; prevent encroachment of incompatible land uses.	Local/County
	Refine zoning to reduce use conflicts: Protect viable industrial areas from encroachment by conflicting land uses with zoning changes.	Local/County
	Coordinate freight planning between jurisdictions: Provide technical assistance to local governments on freight planning within the County (i.e., coordinate freight planning programs among County agencies/municipalities).	MPO/County/State
	Truck delivery hour restrictions: Explore institutionalized restrictions and step up enforcement on truck delivery hours within certain corridors (i.e., MD 355, MD 85) to not only mitigate congestion challenges but also help to eliminate conflicts with residents and non-freight- oriented businesses, with associated safety benefits. Some existing freight stakeholders are already making a strong effort to implement.	Local/County

Constraint #4: Access to Industrial Facilities

One major freight and land use connection challenge that the County may encounter in the future is accommodating transportation access to new industrial properties and maintaining good quality access to existing industrial properties. Prioritizing freight transportation improvements and improving truck routing will help promote economic development in the County. Exploring these strategies with State Highway Administration and MDOT staff will ensure that the County's transportation system meets the needs of all users.



Warning Sign Approaching CSXT overpass on MD-75

Table 4.8 Best Practices for Mitigating Constraint #4

Implementation Effort/Cost	Description of Tool	Organization/Agency Responsible
Low	**Priority ranking of freight projects:** Develop strategy to promote higher ranking of transportation projects that have important freight benefits (i.e., regional truck route system projects higher priority in the Transportation Priorities Report)	MPO/County
Medium	**Site design standards for industrial land for logistics:** Review standards or design guidelines for industrial facilities to better accommodate logistics (i.e., entry and exits close to roadway facilities, shipping and receiving areas near entry of facility).	Local/County
	Roadway design review for truck use: Integrate appropriate design principles for trucks (i.e., turning apron) into current standards of local transportation infrastructure(especially on major truck routes)	Local/County
	Truck-only lanes: Study truck exclusive lanes on particularly important freight facilities (i.e., U.S. 15, I-70)	State or Fed
	Truck bypasses: Preparation of a truck bypass plan of urbanized areas to facilitate freight transportation flows. Participate in regional, statewide, and multistate planning efforts to improve regional connections	State or Fed
	Truck route planning: Analyze truck routes through the County and develop truck routing plan, including signage and enforcement.	Local/MPO/County/State

Table 4.8 Best Practices for Mitigating Constraint #4 (continued)

Implementation Effort/Cost	Description of Tool	Organization/Agency Responsible
Medium (continued)	**Ongoing stakeholder outreach:** Engage in public outreach (develop freight stakeholder committee) exercises with freight stakeholder community for projects, such as highway improvements to better understand impacts on operations.	MPO/County/Local/State
	Use County traffic models to identify freight infrastructure improvements: Identify locations for future freight-related transportation infrastructure investments such as interchange improvements, truck restrictive zones, truck climbing, and auxiliary lanes)	MPO/County/Local/State
High	**Virtual WIM:** Work with the state to set up virtual weigh-in-motion (WIM) stations on the truck route system to ensure that trucks using the facilities are meeting standards and the facilities can accommodate size and weight.	County/State
	Loading zone management: In residential and commercial areas (including small town downtown areas with a pass through highway), improve the management of loading zones (management plans, more curb space) and increase enforcement. Require new industrial and commercial developments to provide off-street loading areas and/or parking areas for trucks	Local/County

Constraint #5: Industrial Property Demand

Currently, the market for industrial real estate in the County is relatively soft and may lead to a greater proportion of industrially zoned land being consumed by commercial uses. This could lead to a gradually conversion and rezoning of that land to more "attractive" official use, with fewer perceived negative externalities.[40] Once industrial land is rezoned or encroachment begins, it is difficult to utilize the land to its full industrial potential again. Industrial property owners are unable to expand operations and access to transportation facilities might be inhibited. The following strategies will help Frederick County preserve industrial land and corridors and help the County accommodate the anticipated population and economic growth and associated increase in freight flows.

[40] For those zoning categorizes that allow flex office and or mixed-use commercial development, current market trends make it more favorable to use this land for office development which generally provides better returns to property owners/ developers. It appears that in the past Frederick County has allowed these types of uses to move into light industrial zoned properties.

Table 4.9 Best Practices for Mitigating Constraint #5

Implementation Effort/Cost	Description of Tool	Organization/Agency Responsible
Low	**Consolidate industrial land within corridors:** Use Frederick County's system of comprehensive plan and zoning review to consolidate industrial land within corridors through the changes of parcel designations.	Local/County
	Recognition of industrial corridors: Official designation of industrial corridors (such as those described herein) for greater planning flexibility, preferential zoning	MPO/County
	Prioritize industrial land preservation: Prioritize maintenance of industrial land in local jurisdiction and County's rezoning process.	MPO/County
Medium	**Disaggregate industrial land use codes to preserve certain types:** In areas where there is an issue with certain types of industrial development being absorbed by others (i.e., Class B industrial space over Class C) [41], disaggregate freight-oriented land uses such as Industrial to more specific 'Warehousing and Distribution (W&D)' zoning to facilitate freight-supportive land use planning.	MPO/County
	Explore using preferential zoning for industrial use: Identify industrial corridors for site planning and other area planning efforts. Other strategies include property tax relief, expedited reviews for projects, etc.	Local/MPO/County
	Transfer of Development Rights (TDR): Explore implementation of a Transfer of Development Rights program for industrial property preservation.	Local/County
	Retain Industrial Zoning: Properties with immediate access / adjacency to freight-rail should be retained as industrial. This is particularly important in areas where encroachment exists from other uses	Local/County
High	**Reduced Fees:** Many local governments require developers to pay impact fees or provide land for facilities to mitigate the impacts generated by a project. Targeted **reduction** of these impact fees for freight-related development could support this activity.	Local/County

[41] Classing of commercial space helps differentiate buildings by physical condition and operating performance. Class A buildings represent the highest rents and Class C represents those properties in average condition, with Class B in between.

Table 4.9 Best Practices for Mitigating Constraint #5 (continued)

Implementation Effort/Cost	Description of Tool	Organization/Agency Responsible
High (Continued)	**Industrial land preservation ordinance/regulation:** Implement regulation to preserve industrial land such as that used for farmland preservation (or expand property tax credit program currently offered for properties entering the state or County land preservation programs)	Local/County/State
	Industrial Development Bonds: Bonds issued on behalf of local industry to underwrite capital expansion costs. Typically underwriting is based on project revenues and handled by Maryland Industrial Development Financing Authority (MIDFA).	Local/County/State

5.0 Recommendations

Frederick County should undertake the following actions to improve the freight and land use connections in the County.

5.1 FREIGHT ACTION PLAN

Frederick County currently has many tools at its disposal for accommodating economic development through its attention to connections between freight and land use planning. Some of these existing tools include: the Comprehensive Plan and Zoning Ordinance update process; community and corridor planning efforts; and working with partners at the Maryland State Highway Administration, MDOT, municipal government, and the private sector to identify appropriate transportation improvements and funding programs to accommodate growth in the County. The following describes an implementation plan for the County to build on existing methods and integrate additional national best practices to best accommodate economic growth and promote these connections based on best practices and recommendations from the stakeholder community. To accommodate freight and land use connections in the County, the following land use and transportation planning strategies could be implemented by County staff:

General Freight Recommendations

1. Explore the implementation of the "low cost" best practices, identified in the previous section, including shared use of truck parking facilities, official recognition of industrial corridors within the County, and exploration of industrial access funding programs for rail-adjacent properties.
2. Create an interdisciplinary team in the County to recommend the "medium and high cost" strategies for implementation by MDOT and Frederick County.
3. Develop a system for updating the Freight and Freight Dependent Land Use Plan with the methodology framework identified in this report. The plan should be updated concurrent with the existing comprehensive plan or master transportation plan updates and made available to other organizations doing regional freight planning (i.e. MDOT, MWCOG).

Land Use and Transportation

1. Continue efforts to promote industrial land in the County, including exploring the expansion of industrial zoning to accommodate future growth. Incorporate industrial land use demand findings from this plan into the County's Community and Corridor Planning Process.[42] Many of the existing Community Plan areas, such as Buckeystown and Point of Rocks have been identified by this study as potential areas for future industrial development.
2. During future updates to the zoning ordinance and development review processes for Frederick County, explore strategies to integrate truck parking strategies (i.e., shared use) and industrial land buffer zones to help prevent future encroachment of non industrial land. Updates of the long range plan also will provide opportunities to designate industrial corridors and identify appropriate parcels for zone changes to promote clustering around major transportation facilities.
3. Encourage zoning and consolidation of industrial parcels along both short line and Class I freight rail lines and adjacent to major highway facilities.
4. Utilize the transportation priority list outlined in this report to promote freight beneficial projects in their Annual Transportation Priorities Letter. All four projects from the most current letter are included in the freight project priority list. As part of this effort the County may want to consider the prioritization methodology used by MDOT in the recent Statewide Freight Plan. The prioritization approach ranked projects within each transportation mode as high, medium, or low priorities based on the following weighted evaluation criteria: quality of service, safety and security, environmental stewardship/Maryland development plan goals, connectivity for freight mobility, and coordination.
5. Prioritize highway and rail projects that benefit not only Frederick County but also improve through movements along I-70 and U.S. 15 to existing and proposed intermodal facilities at Front Royal, VA; Chambersburg, Greencastle and Harrisburg, PA; the Port of Baltimore and BWI airport/I-95 corridor.
6. Utilize transportation modeling tools to identify relatively inexpensive freight transportation improvements (such as truck turnouts on certain congested freight corridors such as U.S. 15) to implement in the absence of full transportation funding for constructing the freight priority list.[43]

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[42] http://www.frederickcountymd.gov/documents/Planning/Comprehensive%20Plans/Community%20Corridor%20Plans/CommCorrPlanProcess.PDF.

[43] A more detailed explanation of the available modeling tools is available in the technical appendix.

Costs of Implementation

Based on discussion with County staff, many of the tools identified within the "low" implementation effort can be integrated into existing processes and with existing staff. Most of these tools focus on promoting, encouraging, and prioritizing freight within the existing planning process in Frederick County. By allocating these minor responsibilities to staff, Frederick County will continue to be able to leverage existing planning efforts and support economic development.

Maintenance of Industrial Properties

The largest industrial site in Frederick County currently underutilized is the collection of parcels near Adamstown, southwest of the City of Frederick. Alcoa operated the Eastalco plant on approximately 350 acres along Manor Woods Road until it closed in 2005. The property is almost exclusively surrounded by agricultural land with the exception of a large parcel of industrial businesses that support agriculture across Buckeystown Pike to the west of the Eastalco plant.

A literature search revealed interest from the State Department to redevelop the property and locate a training facility on the site. This type of reuse opportunity would certainly benefit the community as an anchor for job creation and redevelopment of a potential 'brownfields' site. Other alternatives for reuse of the property for industrial activity would require a specific user interested in rail access and willing to be located off the major truck routes. Many stakeholders interviewed for this plan suggested exploring use of the site for staging of large shipments (such as steel or building materials), truck parking, or storage.

For the higher levels of commitment, outlined in the "medium" and "high" effort categories of the toolbox, Frederick County will need to work with the State of Maryland, Metropolitan Washington Council of Governments, private industry, and the local jurisdictions within Frederick County to identify specific projects and funding sources to implement the recommended strategies. Projects such as the development of a truck routing plan, industrial access funding program (which might provide funding support for rail access improvements), or a TDR program for industrial properties will require extensive coordination with participating agencies and organizations.

Funding Approaches

Frederick County currently contributes a share of funding for planning and developing roadway improvements on State transportation facilities. For the remaining strategies the County may consider the following strategies to fund improvements to access freight-oriented land uses:

1. In Maryland the **excise tax** on vehicle sales can be dedicated directly to transportation. Frederick County could continue to direct these fees toward transportation infrastructure funding.
2. **Special Benefits Districts** involve the creation of a district to tax affected properties that benefit from a public infrastructure improvement (which could include parking facilities or an industrial rail spur). Such districts are used commonly to fund sewer extensions. While these types of districts

typically require approval by a large majority of property owners, the dedicating of funding for specific improvements expected to enhance property values makes consensus building more feasible. Frederick County's existing Tax Increment Financing (TIF) program could be utilized for improving access to freight-oriented facilities.

3. Many of the smaller towns within the County do not have the financial capacity or staff capable to issue/underwrite tax-exempt bonds. Frederick County could structure a more creative special assessment for local jurisdictions that would allow the County to **group major transportation investments into a single bond issuances**, funded by a new tax on the cities' and towns' property owners.
4. **Economic Development Opportunities Fund (Sunny Day Fund)**, provides funding for significant capital investment in Priority Funding Areas (PFA). The fund promotes Maryland's participation in extraordinary economic development opportunities that provide significant returns to the state through creating and retaining employment. These actions must be approved by the State's Legislative Policy Committee with full support of the local jurisdiction. Since most of the industrial clusters are located within existing priority funding areas, this tool would provide an immediate opportunity to redevelop older industrial clusters in the County.

Institutional and Organizational Relationships

For the County to continue to promote economic development through accommodation of freight within the land use planning process it needs to maintain relationships with stakeholders involved in freight movement in the County. Coordination with organizations such as the SHA/MDOT and major shippers will help Frederick County recognize ongoing challenges and promote freight-friendly policies, programs, and projects. To date, much of the engagement with the freight community has centered on Office of Economic Development staff working to identify new markets. To develop the Freight and Land Use plan, there was extensive outreach undertaken through phone interviews, online survey, and a public meeting with interested stakeholders, and provided critical feedback to the opportunities and constraints. Consistent engagement of the freight community has been effective in larger neighboring jurisdictions such as MWCOG TPB and the Baltimore Metropolitan Council (BMC) to utilize the freight community to identify needs as they arise and offer insight toward improving the freight transportation system. Frederick County should continue to engage the freight stakeholder community and move toward institutionalizing the engagement through an advisory committee.