July 2023

Chester County
FREIGHT PLAN

DELAWARE VALLEY
dvrpc
REGIONAL
PLANNING COMMISSION

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DELAWARE VALLEY dvrpc REGIONAL PLANNING COMMISSION

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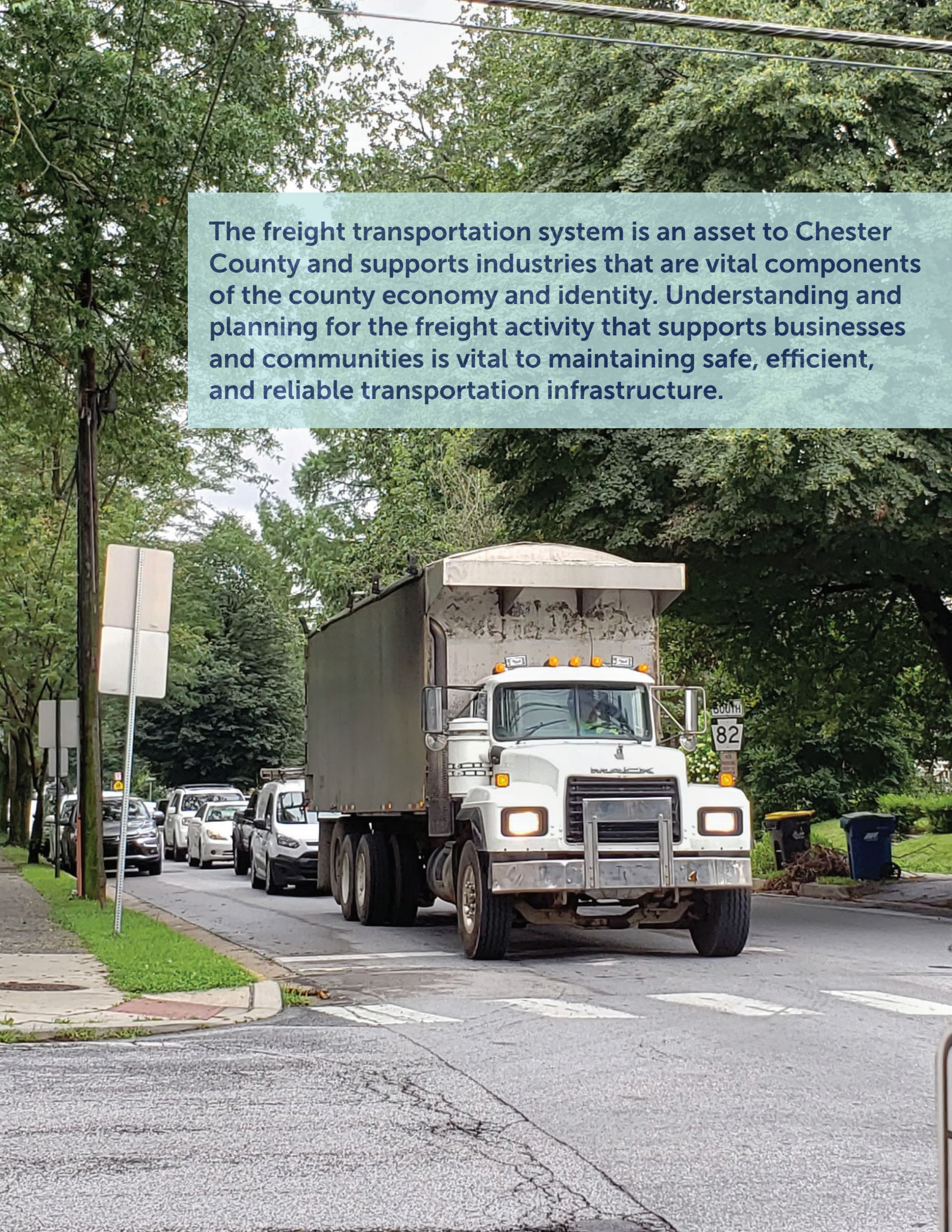

The freight transportation system is an asset to Chester County and supports industries that are vital components of the county economy and identity. Understanding and planning for the freight activity that supports businesses and communities is vital to maintaining safe, efficient, and reliable transportation infrastructure.

Executive Summary

The *Chester County Freight Plan* grows out of the Chester County Planning Commission's *Landscapes3 Comprehensive Plan*, which outlines a clear vision for the future of Chester County framed around six goal areas: Preserve, Protect, Appreciate, Live, Prosper, and Connect. This freight plan seeks to advance objectives within the Prosper and Connect goal areas of *Landscapes3* that include the following:

CONNECT:

- To ensure that rail, aviation, and select highway facilities provide for a safe, efficient, and competitive transport of freight, goods, and people through and within the county;

PROSPER:

- To support redevelopment and strategic infrastructure investment to maximize community assets, capitalize on existing infrastructure, and provide areas for residential and commercial growth; and
- To encourage the agricultural industry so that its diverse business models and workforce can adapt and thrive, continuing as a vital component of county industry and land use.

The Chester County Freight Plan was conducted in two phases. Phase I of the plan focused on establishing a county freight profile by defining key freight industries, infrastructure, activity, and trends in the county. This phase also included community and industry outreach to identify top locations and issues of concern. Phase II of the plan involved the development of a freight action plan to address these issues centered around six goals: Safety; Efficiency; Preservation and Identity; Environment; Economic Development; and Community and Place.

County Freight Profile

Chester County has an extensive network of freight infrastructure that carries goods to, from, and through the county. This network connects the county to regional, national, and global markets with one Class 1 rail carrier, three shortline railroads, three intermodal terminals, 26 miles of interstate highway, 220 National Highway System (NHS) miles, and 600 miles of pipeline.

Freight-intensive industries and establishments that utilize this infrastructure were identified and include businesses in the Agriculture, Construction, Manufacturing, Mining/Quarrying, Transportation, Utilities, and Wholesale Trade sectors. These industries are major generators of freight activity in the county, but also represent significant employers and revenue generators.

Two prominent freight-intensive industries had been previous identified in *The Chester County Ecomony* report as critical to the county based on their relative strength, high profile for the business community and public, their importance for economic development, and their historic significance. These were the Agriculture and Manufacturing industries. In the county, there are many agricultural and manufacturing businesses and a strong presence of industries that support these sectors as well. Both of these sectors generate a variety of different vehicles that can be found on county roadways ranging from tractors, to bulk tankers and refrigerated trucks. Both also utilize the rail network for transporting bulk supplies.

A summary of the activity of all freight-intensive businesses showed that a majority of freight moves through the county by truck, with rail being used heavily for the transport of bulk commodities to manufacturers. Heavy-duty truck trips were found to be concentrated on major roadways while medium-duty truck trips

were more dispersed across the road network. All truck trips entering and leaving the county were also concentrated along major roadways. Although less prominent than truck movement, the rail network supports many industrial businesses, and there is the potential for future opportunities for industrial access to rail along the Western Octoraro Line.

Freight generating businesses have formed clusters of industrial development across the county. DVRPC has identified Freight Centers across the region that are focal points of the freight economy and employment. Seven of these centers are located in Chester County. These Freight Centers are intended as a planning tool to better understand the priorities, challenges, and opportunities created by these important regional centers.

While these freight centers all continue to be active freight-generators, development trends show that most of the freight centers have not seen significant new development in the last 10 years. The exceptions are the Downingtown Freight Center, the Oxford Freight Center, and the Chester County Airport Freight Center which have all experienced some infill development. Construction of new industrial structures is shifting away from traditional centers of freight generation, and flex properties are growing in frequency of construction as the county continues to see increasing demand for industrial, and specifically warehouse, space. This trend is likely due to the increased demand for e-commerce goods and the warehouses required to deliver products quickly to population centers.

Outreach and Issue Collection

DVRPC solicited input about freight activity in Chester County and the concerns of those who drive, bike, or walk and share the roadway with trucks or trains. Input was collected through a Municipal Open House, an issue collection map, presentations in local professional organizations, and targeted outreach to industrial employers.

The outreach identified the following top locations of concern for freight activity:

- US 30 Corridor,
- Kennett Square Borough,
- Borough areas,
- Rail crossing at PA 926, and
- US 100 between Pennsylvania Turnpike and US 30.

Of the issues identified, the following were top issues of concern that were repetitively mentioned and highlighted by the steering committee as important to the county:

- Increased congestion on all roads across the county;
- New industrial development and the potential for increased truck traffic;
- Insufficient designated truck routing;
- Preserving access to rail-adjacent properties for industrial development; and
- Protecting vulnerable road users where trucks interact with other modes.

Freight Action Plan

Freight planning and investment are critical to meet the development and economic growth that the county is experiencing and to mitigate the impacts of changing land use and freight activity. The freight action plan established goals and strategies for comprehensively considering freight and directly support the clear vision established by the Chester County Planning Commission's *Landscapes3 Comprehensive Plan*. These goals are the following:

- Support and implement freight safety improvements and initiatives;
- Increase efficiency of goods movement and maintain reliable mobility for trucks;
- Promote education about freight that supports vital industries and county identify, and support industrial redevelopment opportunities that preserve open space;
- Encourage new technologies that offer more sustainable options for freight transportation and freight efficiency;
- Support industrial redevelopment opportunities and infrastructure for economic growth; and
- Coordinate with communities to ensure mobility for freight that is consistent with local and regional priorities.

The strategies and actions put forth will build upon the existing county efforts to embrace places, enhance choices, and engage communities while continuing to balance preservation and growth. Critical action strategies for accomplishing this are the following:

- Designate a truck network so that context-appropriate design choices can be made that protect all road users;
- Invest in transportation infrastructure along the designated network that supports efficient goods movement;
- Promote infill development and redevelopment that concentrates freight activity near supportive infrastructure;
- Preserve rail access as a sustainable mode of transportation that reduces the number of trucks on the roads; and
- Invest and prepare for alternative fuels, especially for new and redeveloped sites.

Chester County is a vibrant place to live, work, and visit, and this plan lays the foundation for a future of freight that supports economic development and enhances the quality of life for residents.

Photo Source: DVRPC

Introduction

Background and Scope

The *Chester County Freight Plan* grows out of the Chester County Planning Commission's *Landscapes3 Comprehensive Plan*, which outlines a clear vision for the future of Chester County framed around six goal areas: Preserve, Protect, Appreciate, Live, Prosper, and Connect. This freight plan seeks to advance objectives within the Prosper and Connect goal areas of *Landscapes3* that include the following:

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The Chester County Freight Plan was conducted in two phases. Phase I of the plan focused on establishing a county freight profile, to define key freight industries, infrastructure, activity, and trends in the county. Phase II of the plan involved the development of a freight action plan centered around six goals: Safety; Efficiency; Preservation and Identity; Environment; Economic Development; and Community and Place.

Purpose

The purpose of the Chester County Freight Plan is to document existing conditions of freight in the county to provide a better understanding of the role, network, and impact of freight in the county. This activity profile was used to inform the freight action plan that outlines strategies for the county and municipalities to support freight-related activity and maintain livable communities.

This plan can also be used to inform other planning and funding processes in the county that interact with and support freight activity.

Plan Creation

DVRPC, in partnership with the Chester County Planning Commission, convened a Study Advisory Committee composed of representatives from various government stakeholders in the county. These members helped to guide the purpose and goals of this study and provide critical feedback and support in creating this plan. The Study Advisory Committee met three times and included the following members:

- Brian Styche, *Chester County Planning Commission, Environment and Infrastructure*
- Brian Donovan, *Chester County Planning Commission, Environment and Infrastructure*
- Hillary Krummrich, *Chester County Planning Commission, Agricultural Development Council*
- Ann Lane, *Chester County Planning Commission, Agricultural Development Council*
- Mark Gallant, *Chester County Planning Commission, Community Planning*
- MaryFrances McGarrity, *Chester County Economic Development Council*
- Gary Smith, *Chester County Economic Development Council*

- Guy Ciarrocchi, *Chester County Chamber of Business and Industry*
- Donna Steltz, *Western Chester County Chamber of Commerce*
- Pam Johnson, *PennDOT District 6*
- Al Sauer, *Regional Rail, LLC*
- Chris Spiceland, *Regional Rail, LLC*
- Rudy Husband, *Norfolk Southern*
- Mike Pack, *PA Turnpike*
- Tim Phelps, *Transportation Management Association of Chester County*
- Chris Parker, *PA Turnpike*

DVRPC Representatives

- Kristen Scudder, *Manager, Freight Programs, DVRPC*
- Michael Ruane, *Associate Director of Planning Innovation, DVRPC*
- Kendra Nelson, *Transportation Planner, DVRPC*
- Anne Nygard, *Intern, Freight Programs, DVRPC*

The study advisory committee also reached out to other freight and industry stakeholders in the county for targeted outreach to inform the plan. Establishments from the agriculture, construction, manufacturing, quarrying, transportation, and wholesale trade industries were contacted for input.

Plan Organization

This Chester County Freight Plan is organized into eight chapters that cover the following topics:

- **Chapter 1:** An overview of roadway infrastructure, railway infrastructure, and current conditions analysis;
- **Chapter 2:** Identification of key freight generating industries and their presence in the county;
- **Chapter 3:** A summary of commodities and modal movement in the county;
- **Chapter 4:** Overview of freight activity at each of the seven identified freight centers;
- **Chapter 5:** Industrial development patterns and trends;
- **Chapter 6:** Overview of outreach and identified freight priority areas.
- **Chapter 7:** The Freight Action Plan, goals, and funding opportunities; and
- **Chapter 8:** A process for designating a truck route network.

This report concludes with a summary of the key aspects of the plan.

CHAPTER 1

Freight Infrastructure

Chester County has an extensive network of freight infrastructure that carries goods to, from, and through the county. This network connects the county to regional, national, and global markets with one Class 1 rail carrier, three shortline railroads, three intermodal terminals, 26 miles of interstate highway, 220 National Highway System (NHS) miles, and 600 miles of pipeline (See Figure 1).

Highway System

There are 26 miles of interstate routes in Chester County and 220 miles of the NHS. The Pennsylvania Turnpike (I-76) is also part of the National Highway Freight Network (NHFN). These are federally designated routes, established by the Fixing America's Surface Transportation (FAST) Act, that strategically direct federal resources and policies toward improved performance of highway portions of the U.S. freight transportation system. The NHFS includes the Primary Highway Freight System (PHFS), a network of highways identified as the most critical highway portions of the NHFN as well as Critical Urban Freight Corridors which are public roads in urbanized areas which provide access and connection to the PHFS.

Airport System

There are three reliever airports in Chester County: Chester County Airport, Brandywine Airport, and New Garden Airport. While none of these have significant known freight movements, both Chester County and Brandywine Airports support major corporate traffic that allows businesses to locate nearby. Chester County Airport was home to Lockheed Martin's Sikorsky helicopter manufacturing site. Due to a prolonged downturn in the helicopter market, this plant closed in 2022 and was purchased by Piasecki Aircraft Corporation to be used as a research and development site.[1]

Pipelines

There are 600 miles of pipeline infrastructure in Chester County that include both gas transmission lines and hazardous liquid pipelines. These pipelines, owned by ten pipeline operators, are extensive and cross through all but 13 municipalities in the county. There are also four compressor stations, two natural gas liquids pumping stations, and four active pipeline projects currently under construction.[2]

Rail System

There are five freight rail right-of-ways in Chester County. Table 1 details the operators and extents of these lines.

Table 1: Rail Right-of-Ways

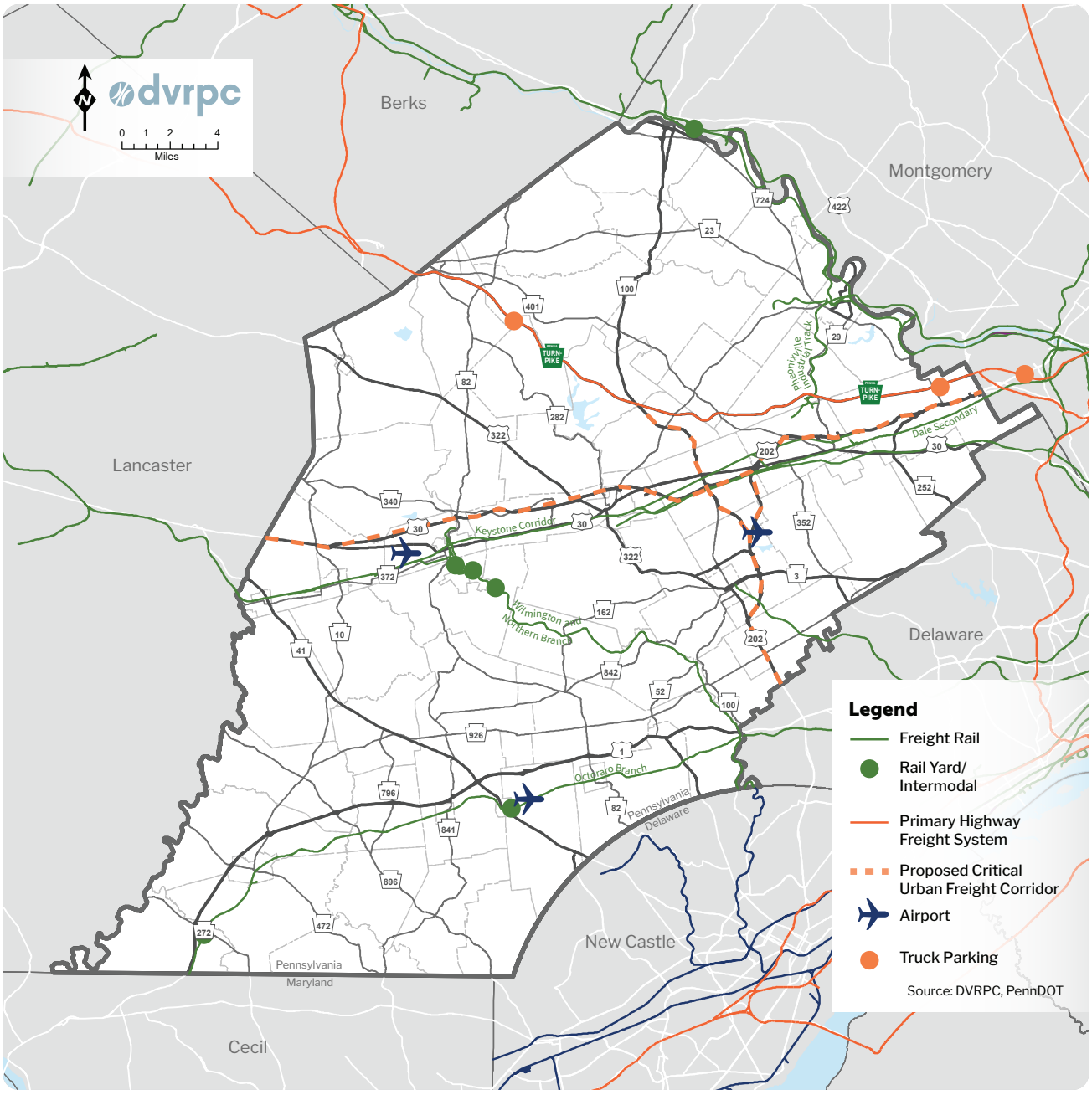
Railroad	Operator	Extents
Keystone Corridor	Amtrak, Norfolk Southern, SEPTA	Philadelphia to Pittsburgh
Wilmington and Northern Branch	East Penn Railroad, Brandywine Valley Railroad	Wilmington to Coatesville
Octoraro Branch	East Penn Railroad	Chadds Ford to Sylmar
Phoenixville Industrial Track (Inactive)	Norfolk Southern	Upper Providence Township to East Whiteland Township
Dale Secondary	Norfolk Southern	Norristown to Glenloch

Source: DVRPC

[1] 1. "Former Sikorsky Helicopter Plant in Coatesville Acquired by Storied Aviation Firm," Bizjournals.com, April 5, 2023, www.bizjournals.com/philadelphia/news/2023/04/05/coatesville-sikorsky-plant-piasecki-helicopter.html.

[2] Chester County Planning Commission, PIC Active Projects, www.chescoplanning.org/pic/ProjectsAll.cfm.

Figure 1: Chester County Freight Infrastructure



26 miles of interstate routes
220 miles of the NHS

3 reliever airports

108 miles of freight trackage
5 yards and intermodal terminals

600 miles of pipeline
4 compressor stations,
2 pumping stations

Roadways

Both trucks and personal vehicles rely on the extensive roadway system in Chester County on a daily basis. Trucks especially rely on the primary road system to access larger industrial and warehouse facilities and get as close as possible to their final destination before using more local roads. This makes it no surprise that these primary roads are also where higher concentrations of truck traffic are seen.

Truck Volumes

To better understand truck activity on the major roads in the county, vehicle classification counts were compiled from PennDOT's Highway Performance Monitoring System, and a summary of total truck volumes are shown in Figure 2. Truck volumes consist of all vehicles in Federal Highway Administration (FHWA) Class 5 or higher, which include single-unit straight trucks, tri-axle dump trucks, and tractor-trailers with three or more axles.

Truck on PA 41 in the Village of Chatham in London Grove Township. Source: DVRPC

Truck Parking

There are two public truck parking facilities in Chester County: the Valley Forge Service Plaza and the Peter J Camiel Service Plaza. Both are owned by the Turnpike Commission, operated by Sunoco, and are located along the Turnpike offering overnight parking for long-haul truck drivers. Both sites are expected to operate over capacity, indicating that additional truck parking may be needed along this major thoroughfare connecting to Philadelphia. In other areas of the county, trucks rely on local facilities and occasional street parking to make short- and long-term stops.

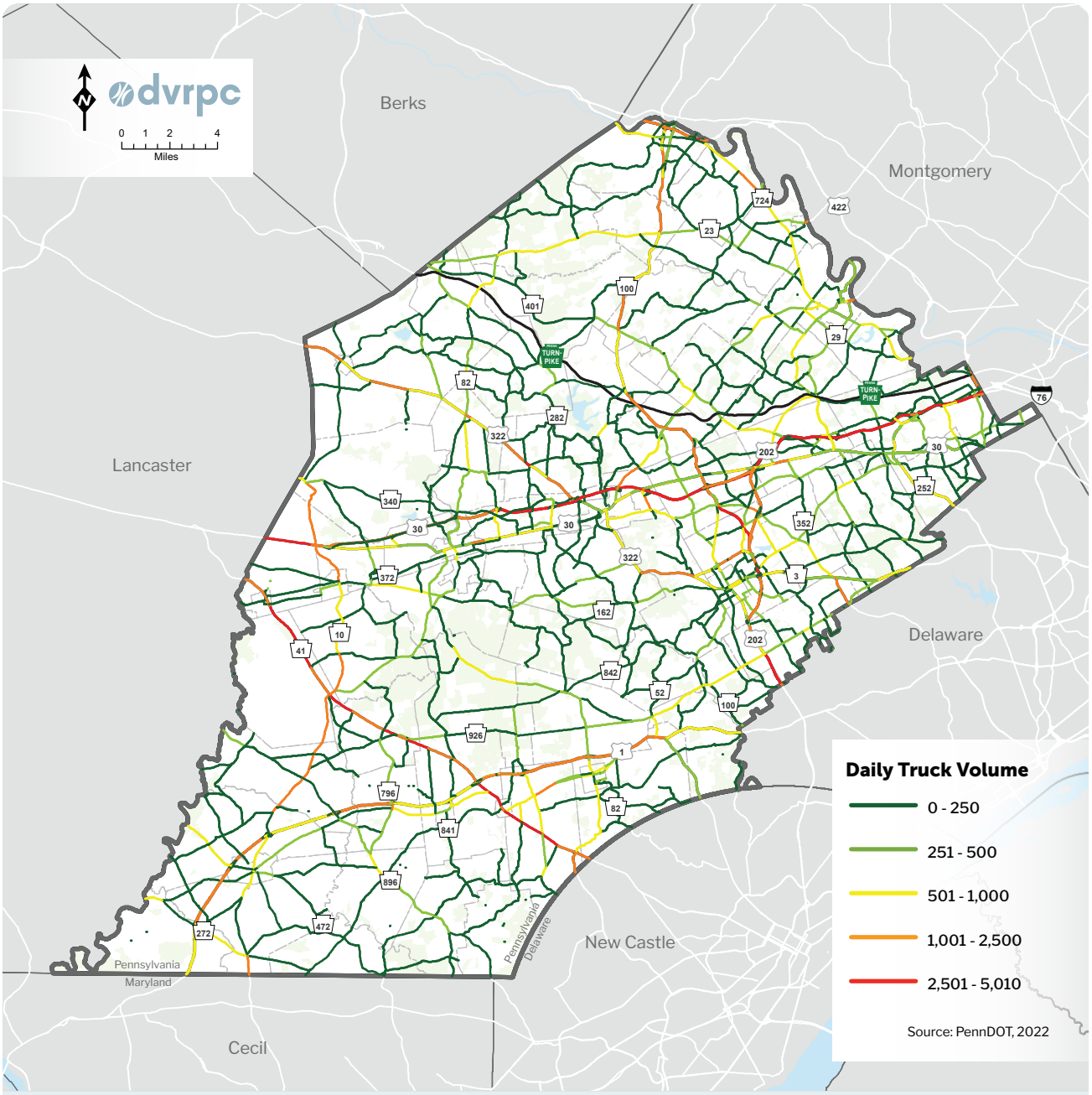
Congestion Management

There are seven congestion management corridors in Chester County identified by the DVRPC 2019 Congestion Management Process (CMP). The CMP uses performance-based and other measures to identify and prioritize congested locations on the regional transportation network, analyzes potential causes, develops multimodal transportation strategies to mitigate congestion, and evaluates the effectiveness of implemented strategies to improve mobility and enhance safety across the region. The identified corridors in Chester County include *the PA Turnpike; US 1; the intersection of US 202, 322, 30, PA 100; US 422; PA 3 & Center City; PA 100; and PA 41*.

Freight operations improvements and freight capacity investments are specifically identified as appropriate strategies for congestion management on the *PA Turnpike* corridor given that it is part of the National Interstate System and due to the high volume of truck traffic. Although the Turnpike is an identified CMP corridor, its Truck Travel Time Reliability (TTTR) ratio has been calculated to be less than 1.5, which is the least congested category for TTTR in the region. TTTR measures the consistency or predictability of travel times and is calculated by dividing the 95th percentile truck travel time by the 50th percentile truck travel time.

For more information on these corridors and appropriate strategies for congestion management, please visit www.dvrpc.org/congestion management to access the current version of the region's CMP.

Figure 2: Total Truck Volumes on Major Roads



TRUCK VOLUME PATTERNS

PA 41, US 30, and the PA Turnpike carry the highest volume of total trucks in the county.

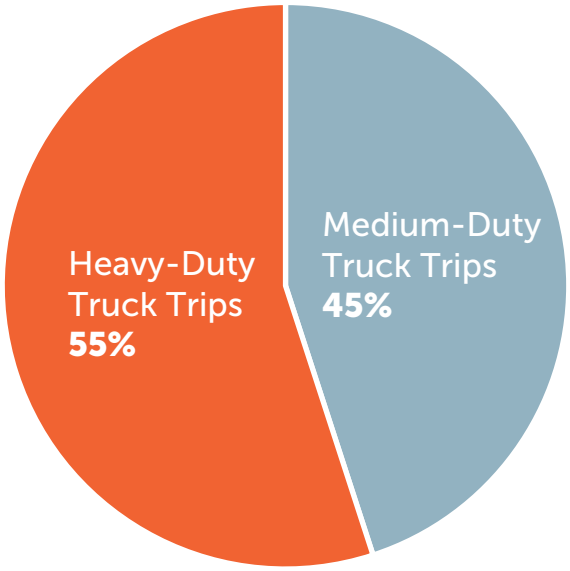
Truck Travel Path Analysis

Truck and vehicle volumes in the county provide an understanding of activity levels by road but do little to explain the distribution of trips as they move across the network. To better inform the understanding of how trips move through Chester County, a path analysis was conducted utilizing INRIX Trips data. The INRIX data is compiled from global positioning system (GPS) trace trip tour data, categorized between medium-duty (14,001–26,000 lb.) and heavy-duty (>26,000 lb.) trucks, and was collected over four one-week periods in 2018 that represent each season. These weeks include January 21–27, April 22–28, July 15–21, and October 14–20.

Analysis of the INRIX trips data illustrates the path selection for both medium- and heavy-duty trucks, providing clarity on how trucks utilize local and arterial connectors to access the primary access highways. Figure 3 shows the collection of these paths. Patterns that were seen in the path data show that heavy duty truck trips concentrated on major roads while medium-duty truck trips are more distributed across the network. Of the total truck trips in the county, 55 percent of trips were heavy-duty truck trips and 45 percent of trips were medium-duty truck trips as seen in Figure 4.

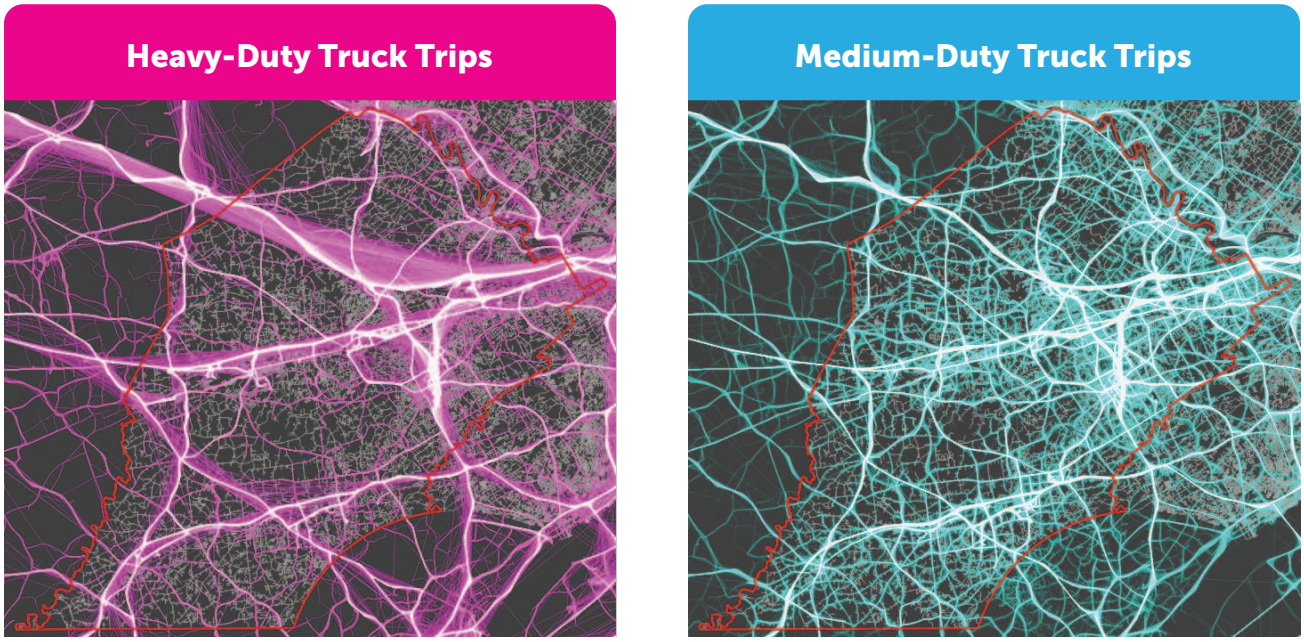
A gate analysis of all truck trips showed that a majority of trips enter or exit the county on a few main roads, as seen in Figure 5. These are the primary entry and exit points for truck traffic.

Figure 4: Total Truck Traffic Distribution



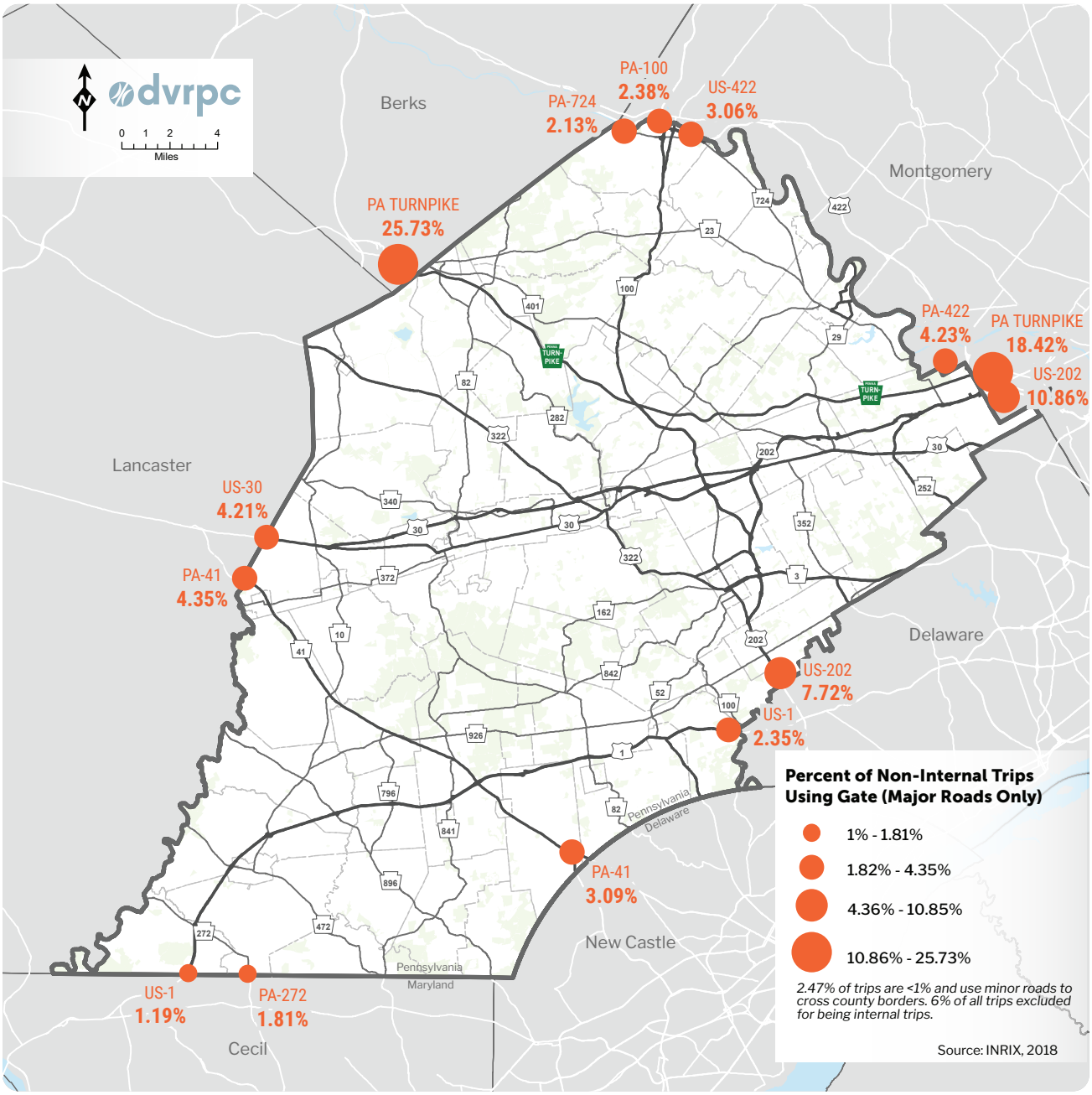
Source: INRIX, 2018

Figure 3: Heavy- and Medium-Duty Truck Trip Paths



Source: INRIX, 2018

Figure 5: Gate Trips by Percentage (All Truck Trips)



Railways

Rail freight operates on its own network of infrastructure with limited interactions with the county roadways. This separation allows freight to travel by rail mostly unhindered by traffic-related issues, creating its own unique set of concerns and benefits.

Rail is a critical part of the freight network in Chester County and serves a vital role in supporting Chester County businesses and the local economy. The railroads in the county serve specific industries, many of which are iconic industries for the county and are those that need access to bulk commodity movement and the wider national rail network. Freight rail provides an alternative to trucks for regional and national movement, since the rail network is connected nationally via the Keystone Corridor.

COMMODITIES MOVED BY RAIL IN CHESTER COUNTY FROM HIGHEST TO LOWEST WEIGHT

- Steel
- Metal scrap
- Paper and pulp products
- Chemical products
- Plastic and fiber materials
- Flour and grain mill products
- Liquefied gas

Intermodal Facilities

Intermodal facilities are those where freight can be transfered between truck and rail. There are three intermodal facilities serving Chester County in Avondale (owned by East Penn Railroad), West Nottingham (owned by Herr's Foods), and South Coatesville (owned by Cleveland Cliffs). Commodities transferred at these facilities include lumber and building products, aggregates, chemicals and other bulk liquids, grain and grain products, and steel.

Rail Benefits

For those establishments that have rail served properties, there are many benefits to using rail over trucks. These benefits are also very attractive for new industrial businesses that are looking for sites in the region to develop. Some of these rail benefits include the following:

- It is cheaper to haul bulk materials by rail than by truck, making it economically advantageous for those businesses that have rail access.
- One train can hold hundreds of trucks' worth of bulk materials, which helps to reduce congestion on the roads.
- Many businesses need to meet Environmental Social Governance (ESG) requirements, and since rail is more energy efficient than trucks it can have a positive effect on ESG scores. ESG criteria are an increasingly popular way for investors to evaluate companies in which they might want to invest.
- Rail service is becoming faster with the implementation of precision railroading as congestion on our highways increases.

Rail Priorities

The following were identified as top priorities by rail partners in the county:

- Additional track or rail yard space;
- Preservation of potential rail-served properties; and
- Conversion of noncompliant or nonconforming land uses back to industrial land use for potential use as rail served properties.

Freight Rail Industrial Opportunities Along Western Octoraro Line

Existing rail-accessible, industry-compatible parcels are in limited supply; however rail industry partners identified the portion of the Octoraro line west of the Avondale Transload as a prime candidate for future rail-served industrial investment in the county. This area has undeveloped parcels with compatible land use among a few other criteria identified as necessary for rail access. Figure 6 shows the results of a parcel identification analysis to identify potential candidates for freight rail accessible development.

Parcel Identification

Parcels with potential for freight rail industrial development meet the following criteria.[3]

Distance: Less than 2,000 feet from rail line.

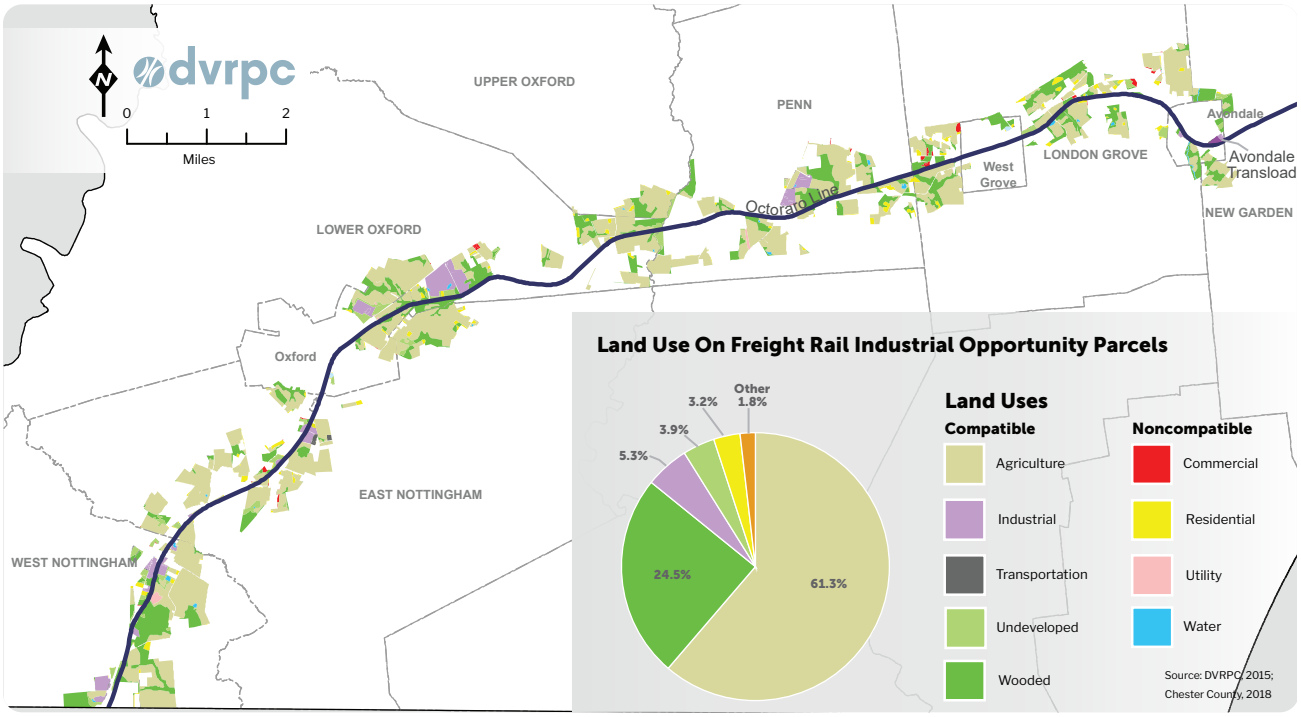
Existing Land Use: At least 50 percent of the parcel acreage is one of agriculture, industrial, transportation, wooded, or undeveloped. None of the acreage is protected open space.

Parcel Dimensions: At least three acres in size and compact in shape.

Road Access: Direct access to nonresidential roads.

250 PARCELS IDENTIFIED ACROSS 4,027 ACRES WITH FREIGHT DEVELOPMENT POTENTIAL

Figure 6: Land Use of Identified Parcels on Western Octoraro Line



[3] Criteria based on publication, Freight Rail Industrial Opportunities Corridors Program, June 10, 2019, www.njtpa.org/NJTPA/media/Documents/Planning/Regional-Programs/Studies/Freight%20Rail%20Industrial%20Opportunity%20(FRIO)%20Corrido/190610-NJTPA-FRIO-Final-Report.pdf?ext=.pdf.

Conditions and Safety

Thoughtfully designed and well-maintained infrastructure is critical for safe and efficient freight movement. Bridges that are open and allow full weight capacity create more options for trucks to move across the county and provide first- and last-mile delivery access. Upgraded rail grade crossings help to ensure safer movement of freight by rail where it interacts most with other modes.

Grade Crossings

At-grade rail crossings can cause significant delays in rail movements, personal vehicle movements, and truck movements. As an interaction point between modes, they also present a safety risk for both road and rail users. In Chester County, there are a total of 69 grade crossings. Fifty-eight percent of these crossings have active warning devices that give visual or advance notice of a train approaching, while the other 42 percent of crossings have passive or no warning devices.[4] Figure 7 shows the principal warning device inventory for these crossings.

Bridge Conditions

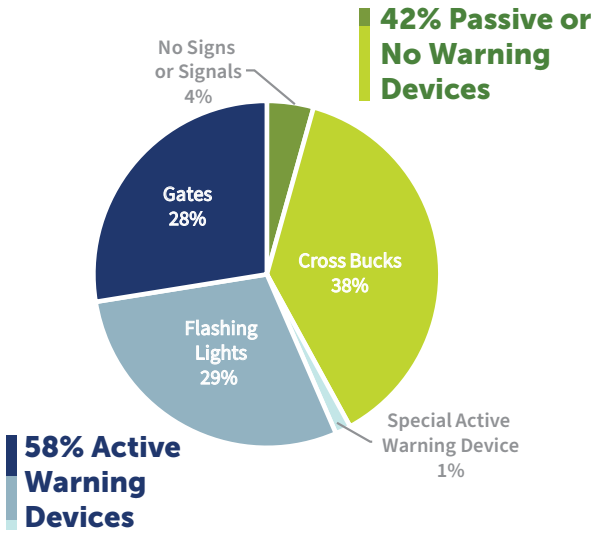
Of the 893 bridges in Chester County, 541 have a PennDOT rating of Fair and 137 have a PennDOT rating of Poor. A classification of Poor condition means that deterioration on at least one structural component is advanced. There are eight bridges currently closed in the county and 93 that have a posted weight restriction.[5]

Wilmington and Northern Branch grade crossing on PA 926.
Source: Google Maps, 2019

Crashes

Safety for all roadway users is a priority for Chester County. An analysis of PennDOT crash data from 2017-2021, seen in Figure 8, shows that crashes involving trucks are more frequent in and around borough areas. This is not surprising given that borough areas are usually more densely developed and have a much higher interaction between different kinds of road users. The West Chester area and the Route 30 corridor have some of the highest densities of truck crashes.

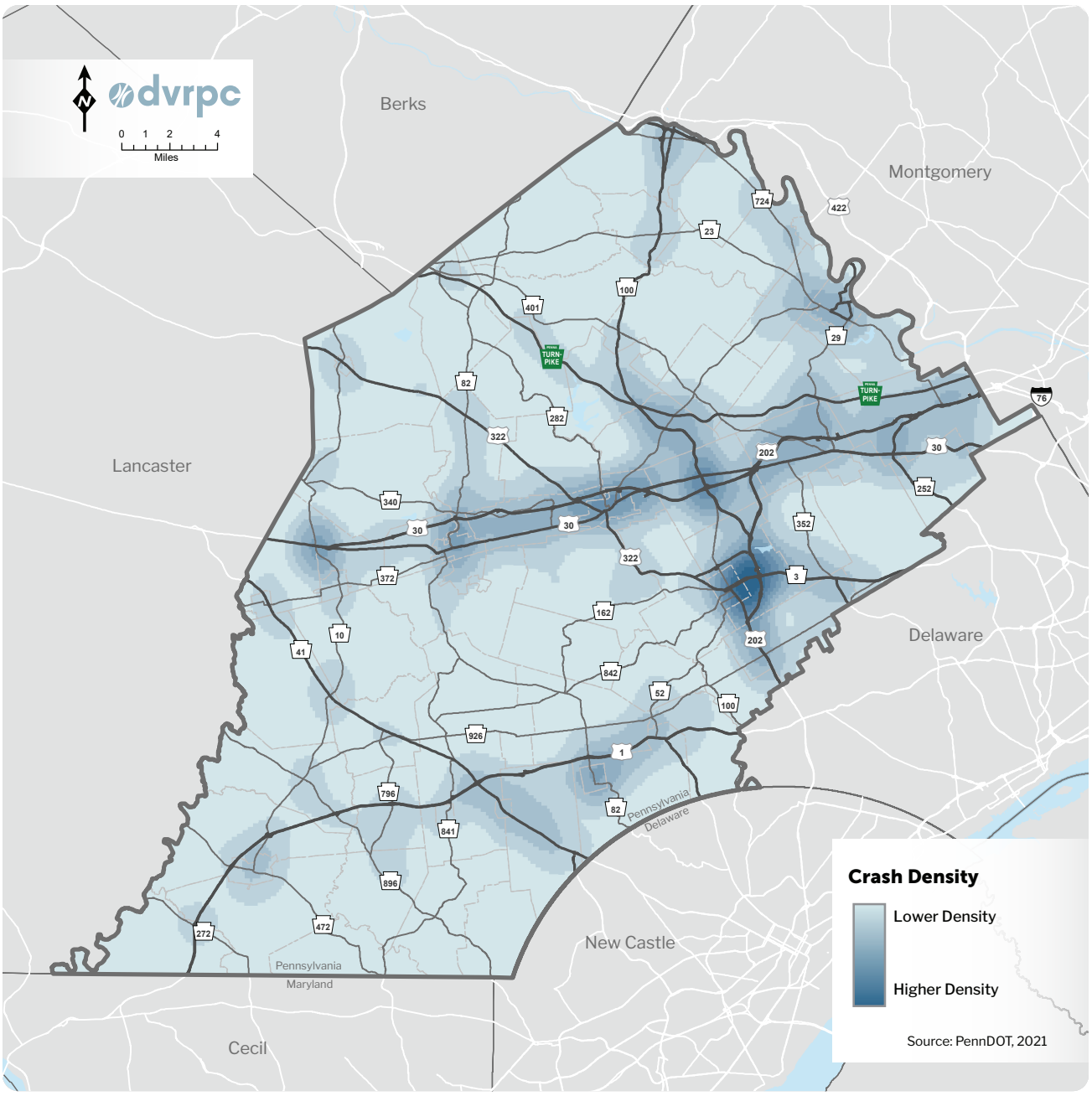
Figure 7: Rail Crossing Principal Warning Devices



Source: Federal Railroad Administration Crossing Inventory, 2021

[4] Federal Railroad Administration Crossing Inventory, 2021
[5] PennDOT Bridge Conditions, 2021

Figure 8: Truck Crashes in Chester County



CHAPTER 2

Freight-Related Industries

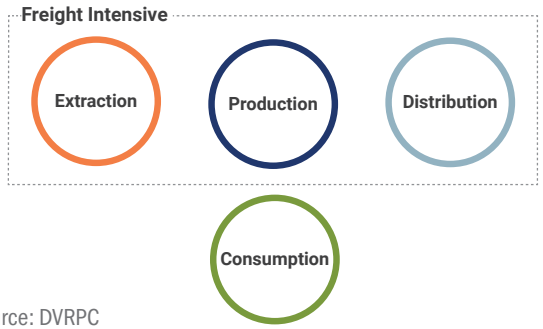
Identifying freight-intensive industries and establishments is important for understanding the major generators of freight activity and their economic value to the county. The freight-intensive industries in Chester County are Agriculture, Construction, Manufacturing, Mining/Quarrying, Transportation, Utilities, and Wholesale Trade. These industries represent significant employers and revenue generators in the county.

Freight-Intensive Industries

Freight-intensive industries can be defined as industry subsectors that are associated with extraction, production, or distribution. These are industries, highlighted in Figure 9, that generate a significant amount of freight traffic and are important to evaluate as generators in the freight transportation network. Non-freight-intensive industries are the remaining, or consumption, industries. While businesses in consumption industries may have freight activity at their locations, it is generally minimal and not a point source for generation. Consumption industry freight activity tends to be concentrated more in urban areas and along commercial corridors.

Freight-related industries provide vital and family sustaining jobs across the county, and their economic importance can be quantified through metrics such as employment, Gross Domestic Product (GDP), and location quotients. The summary of these characteristics can be seen in Table 2.

Figure 9: Freight-Intensive Industries



Source: DVRPC

Employment

Employment is one metric for evaluating the size and impact of an industry. Those with higher employment generally have a larger presence in the county and are more likely to generate freight activity. Similarly, the number of establishments can be indicative. While employment and total number of establishments are indicators of larger industries, they do not necessarily have a direct relationship to freight trip generation. In Chester County, the top freight-intensive industries by employment are manufacturing (10 percent of total employment), wholesale trade (4 percent of total employment), and construction (4 percent of total employment).

Gross Domestic Product

GDP is another metric for measuring the impact of industries based on the value of the goods and services that they provide. Industries with the highest levels of employment are not necessarily the same as those with the highest GDP. In 2018, the total GDP of Chester County was around $42 billion. The top freight-intensive industries in Chester County based on GDP are manufacturing (10 percent of total GDP), wholesale trade (9 percent of total GDP), and construction (3 percent of total GDP).

Location Quotient

Location quotients offer a way to quantify the importance of a local industry in comparison to that industry at the national level. This is done by comparing the county's distribution of employment by industry, ownership, and size to that of the national distribution. Higher location quotients mean that the industry is more prominent in the county and is a local specialization. In Chester County, the agriculture industry has the highest location quotient of 2.37, indicating that it is a specialty and identity-defining industry for the county. Even though agriculture does not have the highest employment or GDP in the county, this is still a freight-intensive industry that is important to support for the county and one that has been recognized in *Landscapes3*.

Chester County Economic Report

In the summer of 2020, Chester County released an economic report, *The Chester County Economy: Background Economic Data for Restore Chester County.* This report was created to document patterns in economic development throughout the county to assist in the Covid-19 recovery plan, and it not only provides a baseline metric for growth but also offers a comparison to other counties in the region. The report identifies nine prominent industry groupings for Chester County: agriculture & food production, education, energy, finance, health care, information technology, life science, manufacturing, and tourism & entertainment. These industries are not necessarily the largest in the county, but they are critical for a variety of reasons, including their relative strength, their high profile for the business community and the public, their importance for general economic development, and their historic significance in the county.

Prominent Freight Industries

Of the nine prominent industry groups highlighted in the *Chester County Economy* report, two are freight-intensive: agriculture & food production and manufacturing. This freight plan provides more details of these critical freight intensive industries, their history in the county, and their supply chains.

Table 2: Freight-Intensive Industries in Chester County

Industry	Establishments	GDP	Location Quotient
Agriculture and Forestry	729	$283 M	2.37
Construction	3,783	$1,295 M	0.88
Manufacturing	1,545	$4,087 M	0.85
Mining and Quarrying	22	$30 M	0.10
Transportation	635	$527 M	0.76
Utilities	56	$97 M	0.42
Wholesale Trade	1,860	$3,875 M	1.02

Source: The Chester County Economy, 2020

Freight-Intensive Industries

The freight-intensive industries in Chester County are Agriculture, Construction, Manufacturing, Mining/ Quarrying, Transportation, Utilities, and Wholesale Trade. Establishments from these industries can be found across the county, representing significant employers and revenue generators. In addition to highlighting the GDP and location quotient (LQ) of each industry, this spread shares examples of the following:

Primary Mode: primary transportation mode for goods that support and are produced by each industry.

Highlighted Business: examples of Chester County companies in each industry.

Sample Products: examples of commodities moved as a part of each industry.

Agriculture and Forestry

$283M GDP

2.37 LQ

Primary Mode

Highlighted Business
South Mill Champs
Milky Way Farms
Phillips Mushroom Farms

Sample Products
Grain and hay
Dairy
Mushroom

Mining and Quarrying

$30M GDP

0.1 LQ

Primary Mode

Highlighted Business
Allan Myers
Lehigh Hanson
Kemper Equipment

Sample Products
Ready-Mix Concrete
Sand and Gravel
Broken Stone & Riprap

Transportation

$527M GDP

0.76 LQ

Primary Mode

Highlighted Business
Keystone Turbine Services
A. Duie Pyle, Inc.
BRT, Inc.
Sikorsky Aircraft

Sample Products
Trucks
Aircraft
EProduct transport

Construction

$1.30B GDP

0.88 LQ

Primary Mode

Highlighted Business
Norwood Company
IMC Construction
Technivate, Inc.

Sample Products
Lumber
Building Materials
Soils/Earthworks

Manufacturing

$4.09B GDP

0.85 LQ

Primary Mode

Highlighted Business
Cleveland-Cliffs
Synthes (USA) LP
Herrs Food, Inc.

Sample Products
Steel Metal Plates
Pharmaceuticals
Biomedical products

Utilities

$97M GDP

0.42 LQ

Primary Mode

Highlighted Business
PECO Energy
XO Energy

Sample Products
Gas
Solar
Water
Electricity

Wholesale Trade

$3.88B GDP

1.02 LQ

Primary Mode

Highlighted Business
Manfredi Cold Storage
Dansko
Everfast, Inc.

Sample Products
Warehousing & Distribution
Clothing Distribution
Pharmaceuticals

GDP and LQ Source: The Chester County Economy, 2020

Prominent Industry: Agriculture

Chester County has a rich agricultural history due to its prime soil conditions and ideal location for support industries and for a direct-to-consumer market. The diversity of agricultural products also makes the corresponding freight movement in the county unique from other freight trips and often more heavily intertwined with residential communities and drivers. As a result, agricultural freight patterns are an important aspect of this freight plan.

Agriculture is a prominent industry in Chester County and a vital part of the county's identity. While it may not be the largest freight-generating industry, dedicated agricultural land is 32 percent of the county land area, making the freight trips generated widespread across the county. Agricultural freight movement is also unique compared to other freight-intensive industries, since these establishments utilize a variety of different vehicles and machinery that are often required to travel on narrow local roads in order to transport tools and commodities from site to site. Rather than operating out of one centralized location, establishments often own a number of different properties that may not be adjacent to each other to farm or store products.

The largest agricultural sub-industry is mushroom farming, followed by dairy products, grain products, and miscellaneous crops. Throughout the county, however, many smaller farms grow a variety of crops.

Truck collecting mushroom substrate at a grow house in Chester County.
Source: DVRPC

Mushroom Farming

The mushroom industry is prominent in Chester County, with Kennett Square being widely recognized as the "Mushroom Capital of the World" and the county growing about half of the total mushroom supply nationwide.[6] Support industries such as spawn and compost suppliers are also concentrated in the region. Grow houses, the foundation of the mushroom industry, are scattered throughout agricultural areas and their mushroom crops are consolidated at processing facilities. These central facilities handle the preparation, packing, and distribution of the mushrooms. As the primary point of distribution, these facilities receive the many daily trips of small straight trucks moving product from grow houses, as well as trips of large tractor-trailers that move the packed product to markets across the country.

For more information on the presence of the mushroom industry and its impact on freight movements, see DVRPC's Kennett Area Freight Transportation Study (www.dvrpc.org/Reports/19021.pdf).

[6] The Chester County Economy, December 2021, www.chescoplanning.org/pdf/EconomyReport-2021.pdf.

Grain

The primary products sold by grain farms are corn, wheat, soybean, and hay. The major inputs onto grain farms are seeds, fertilizer, and pesticides. Depending on the farm, grain products can either be sold in their raw form or produced into products for human or livestock consumption. Perdue in Marietta, P.A. is an example of a major soy processing plant where Chester County farms send their products.

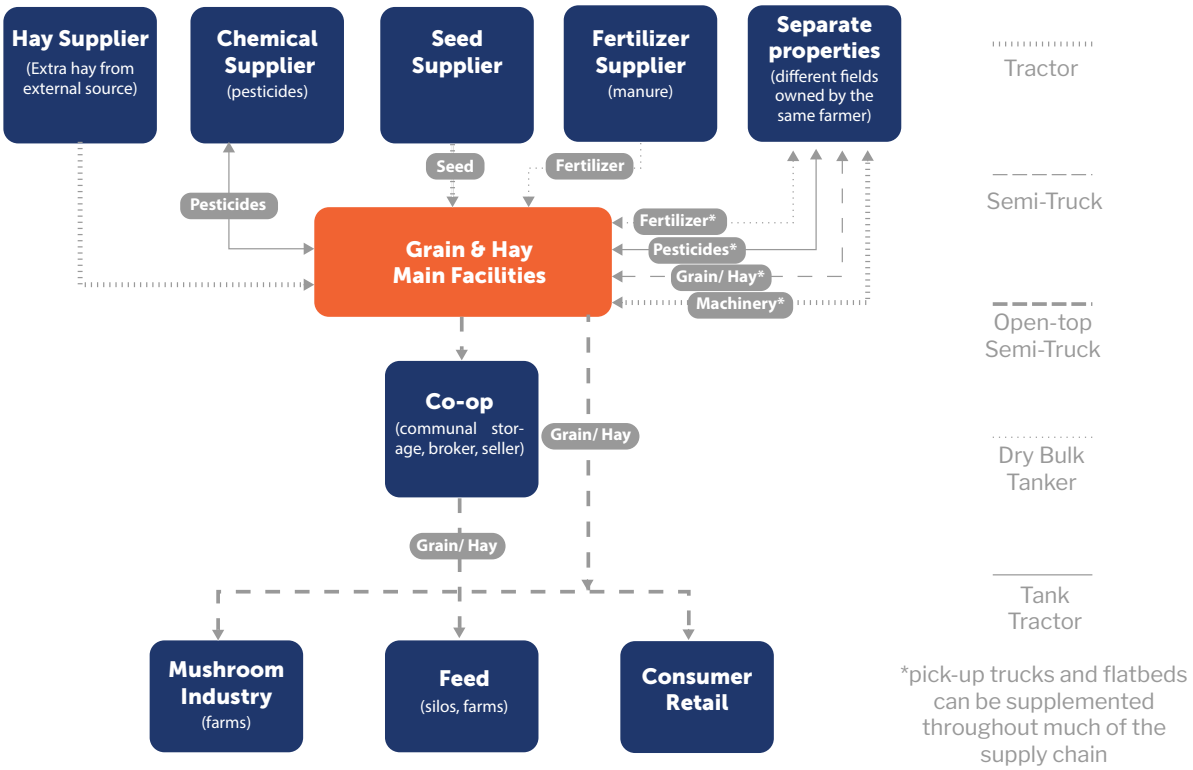
Depending on the size of the establishment, farms may choose to store their product in their own barns, grain bins, silos, or grain drying and handling storage facilities. Grain farmers can manage up to 40 different properties traveling from farm to farm hauling different equipment and products. Because of this inter-farm travel, some farming vehicles experience issues sharing narrow often curbed roads with other passenger vehicles.

Farmers may also decide to enter a contract with a communal storage program known as a co-op. These co-ops can provide a range of functions from storage to broker services. Landel Lakes located in Cornell, PA is a co-op that also functions as a broker, where farmers in Chester County store their grain.

Because this region is known as a corn-deficit area, meaning that there is more demand for corn than there is supply, much of the grain produced stays within the region. However, some soy in the county is sold through the Port of Baltimore for exportation.

Figure 10 shows the supply chain for grain products, including facilities, inputs, outputs, and typical truck transportation modes. The facilities highlighted in orange are those that generate the highest amount of concentrated freight traffic in the county.

Figure 10: Grain and Hay Supply Chain



Source: DVRPC

Dairy

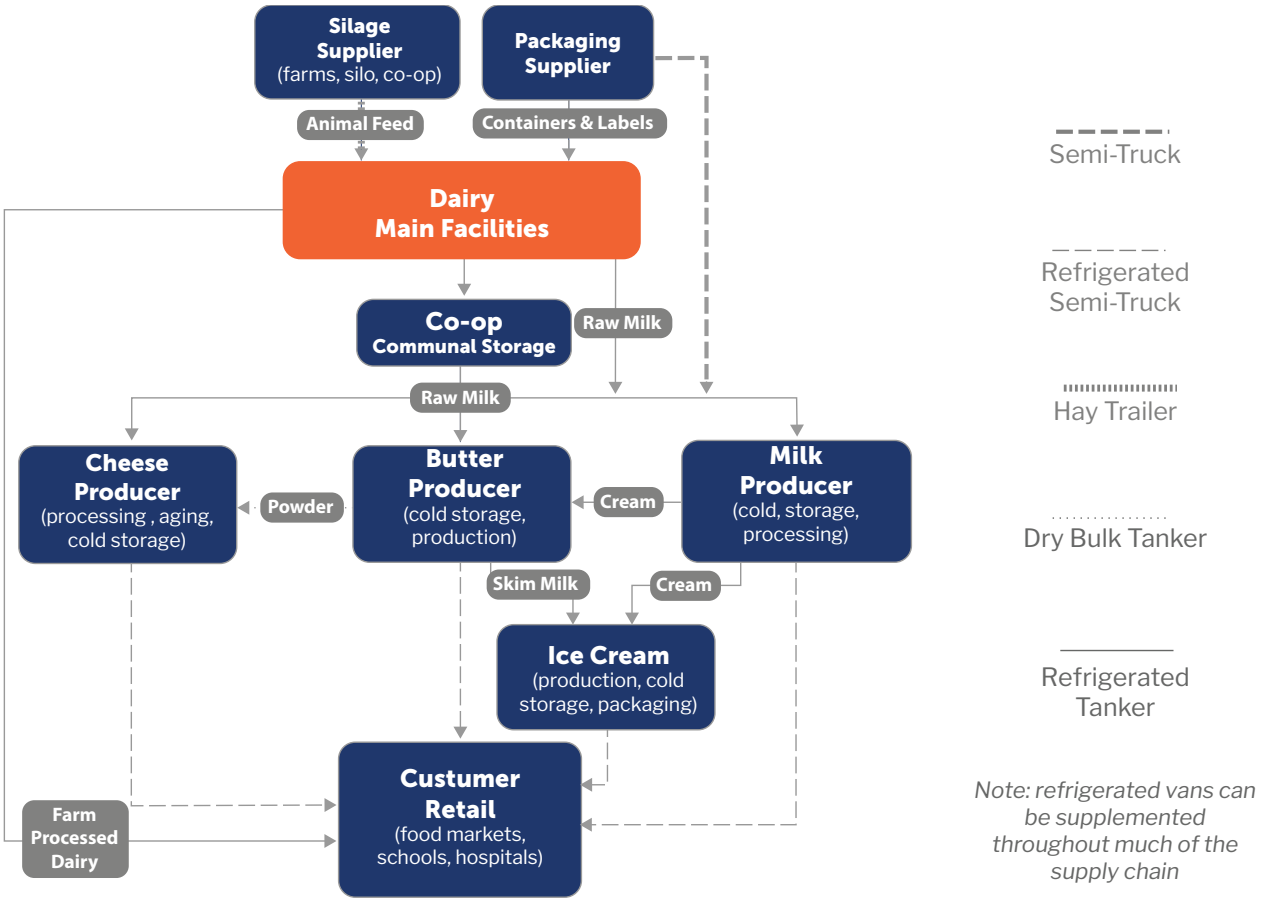
The primary product of most dairy establishments is raw milk; however, there are some instances where farmers produce their own ice cream, crossbreed, or sell beef. Dairy farms in the county range in size from smaller farms that may have around 30 cows to larger farms that have 1,000 cows. Dairy farms' busiest times of year are between April and May, between August and September, and during the end-of-year holiday season, making these the busier times of year for their transportation needs as well.

The primary input onto dairy farms is corn or oat feed, also known as silage. This silage generally comes from outside of the region as far as the Midwest or Canada since Pennsylvania is a corn-deficit area. This feed may be delivered anywhere from two to ten times a week depending on the size of the farm.

Dairy farms often sell their raw milk to co-ops, who manage resale to dairy processors for the production of butter, milk, ice cream, and cheese. Much of the product stays either within the county or within the tri-state region. Some smaller farms choose to make their own products, which they sell at their farm stands.

Figure 11 shows the supply chain for dairy products, including facilities, inputs, outputs, and typical truck transportation methods. The facilities highlighted in orange are those that generate the highest amount of concentrated freight traffic in the county.

Figure 11: Dairy Supply Chain



Source: DVRPC

Prominent Industry: Manufacturing

Chester County has a long history of manufacturing dating back to early industrialization in the United States, and it is the home of the country's first iron industry. Today, manufacturing in the county includes a wide range of businesses including precision metal fabrication, medical devices, telecommunication equipment, food and beverage processing, pharmaceutical products, and many more.

Though manufacturing in Chester County has declined in recent years, despite growth at a national level, the industry is still very present in the county and a significant source of freight trip generation. The industry includes companies that range in size from small to large, and generate an increasing number of products that are sold to national and international markets.

Although there is a wide range of manufactured products, many of these businesses have a similar supply-chain organization. Figure 12 shows a typical supply chain for manufacturing. Manufacturers and Distributors, shown in orange, are those that generate the highest amount of concentrated freight traffic in the county.

THE STEEL INDUSTRY

By the 1800s, Pennsylvania became the iron industry hub, and Coatesville rolling mills were particularly prosperous due to their location near the turnpike and access to key natural resources. During this time period, ArcelorMittal Coatesville was in its infancy as a small water powered saw mill. This and ten other waterwheel-powered mills—four of which were in Chester County—operating in the early 1800s contributed to the creation of nearly 3,000 tons of iron per year in Pennsylvania. With the invention of the rolled boilerplate and steam engine power, local mills were able to remove their dependence on running water, and by the end of the 19th century a preference for wider, steel boiler plates had become more popular than iron. Today, steel plates produced by ArcelorMittal Coatesville are used in the production of bridges, construction and military equipment, and other major constructions throughout the nation.

Figure 12: Manufacturing Supply Chain

Source: DVRPC

CHAPTER 3

Commodities and Modal Movement

Freight in Chester County travels by truck, rail, air, and pipeline. Each mode serves a different purpose to move goods to and from businesses and consumers, directly contributing to the county economy.

Mode and Direction

A vast majority of freight moves through Chester County via truck and rail. Trucks haul about 98 percent of goods (by tonnage) in the county and rail moves most of the other 2 percent. While this may seem like a small share of movement dedicated to rail, rail is responsible for moving a significant portion of bulk goods, including a majority of iron and steel products, metal scrap, and paper among other products, all of which support important economic generators in the county. Inbound freight represents the highest share of freight movement by tonnage and by value, while outbound tonnage contains about one-third less volume and internal movements are even less. (See Figure 13 and Figure 14).

Top Commodities

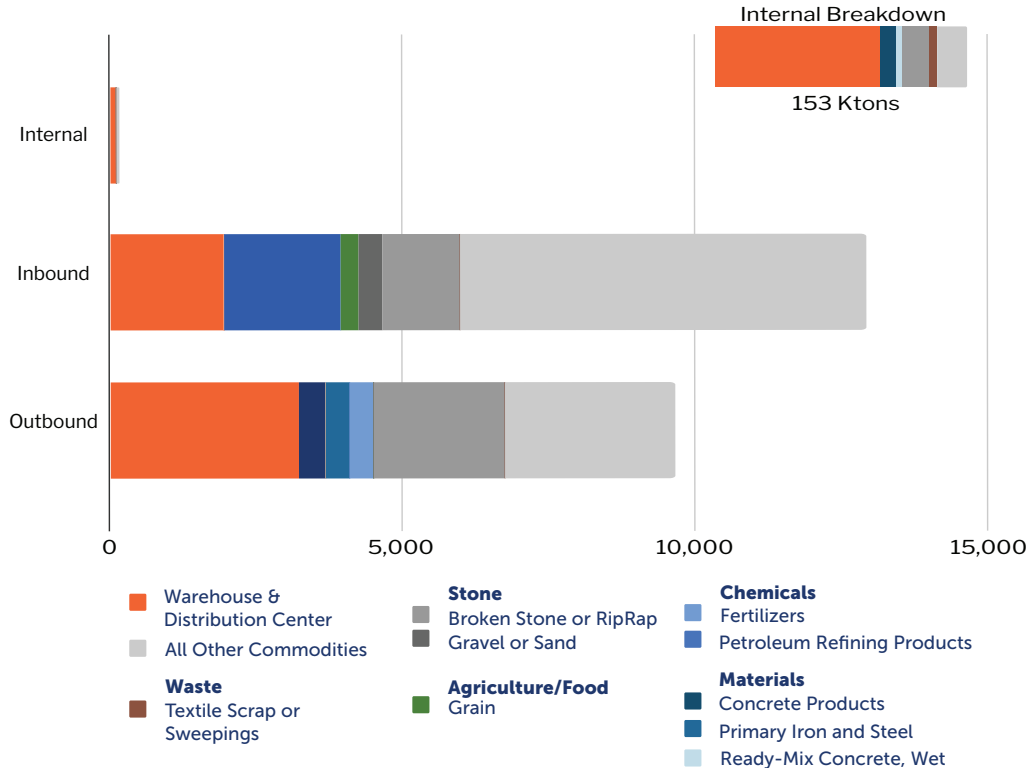
The top commodities moved throughout the county (both by tonnage and volume) are those traveling to and from warehousing and distribution centers. Broken stone and rip rap is the second largest contributor by tonnage moving inbound and outbound. Grain, which is identified in other sections to be a top agricultural commodity, also makes up over 300 kilotons of the top five commodities by tons coming inbound.

A Future Outlook on Freight Movement in Chester County

Freight in 2011	Freight in 2040
In 2011, there were 22.75 million tons and $24 billion worth of freight movement. 98 percent of freight movement was attributed to truck transportation. In 2011, approximately 22 million tons were transported internally, inbound and outbound.	By 2040, freight movement is projected to increase in tons by 117 percent (to 49.5 million tons) and in value by 164% (to $63.7 billion in 2011 dollars). While internal freight movements still represent the smallest portion of freight movement, internal freight movement showed the highest increase by 254 percent (540,951 tons in 2040). Warehousing & distribution and concrete products are projected to increase by 305 percent and 36 percent outbound, respectively.

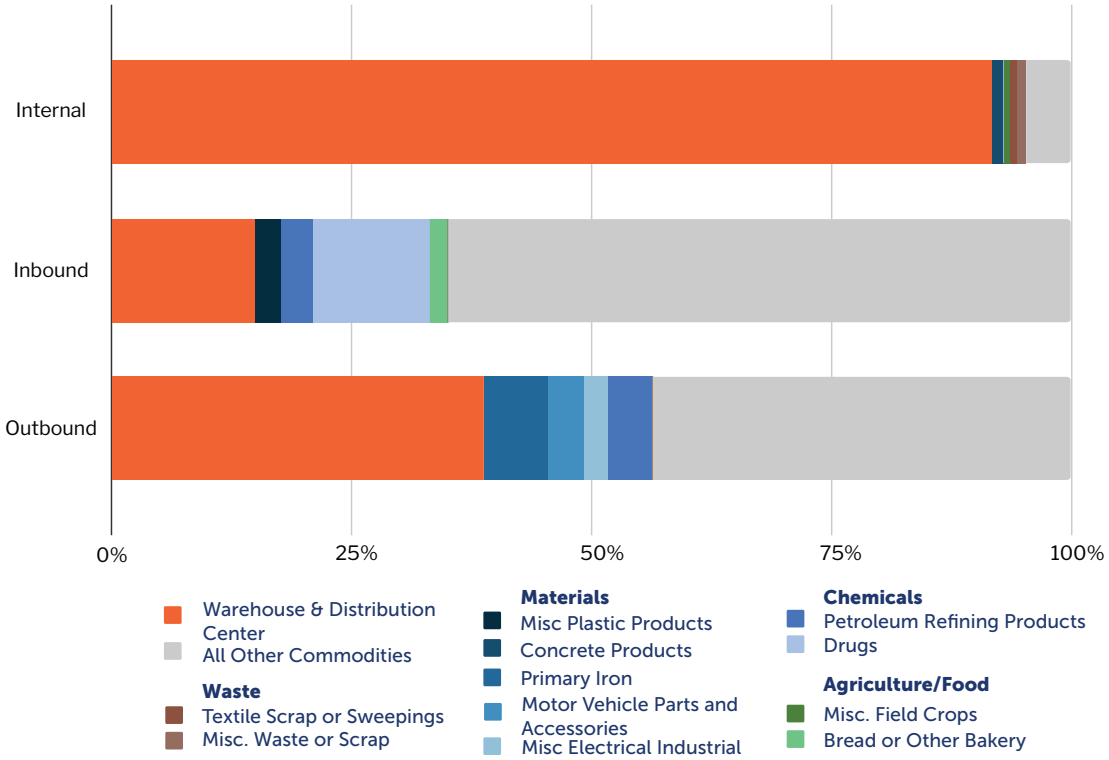
Source: Transearch, 2011

Figure 13: Top Commodities by Tonnage



Source: Transearch, 2011

Figure 14: Top Commodities by Value



Source: Transearch, 2011

CHAPTER 4

Greater Philadelphia Freight Centers

DVRPC has identified Freight Centers across the region that are focal points of our freight economy and employment. These Freight Centers are intended as a planning tool to help DVRPC and regional partners better understand the priorities, challenges, and opportunities created by these important regional centers. There are seven Freight Centers in Chester County.

Greater Philadelphia Freight Centers

The production and distribution of goods is an integral part of the region's economy, requiring dedicated expanses of land in order to meet the needs of businesses and consumers. This land is an essential resource for a prosperous economy and an important part and source of tax revenues for many communities. The goal of the Greater Philadelphia Freight Centers inventory is to identify and categorize these key locations to enhance planning necessary to concentrate growth, invest in appropriate transportation infrastructure, and minimize conflict with host communities. For more information on DVRPC's Freight Centers, visit www.dvrpc.org/webmaps/PhillyFreightFinder.

While there is not currently a designated freight center in the West Chester area, this is an area of interest for the county and could be reevaluated in future updates of the DVRPC freight centers. For the purposes of this report, a detailed inventory of freight activity was only conducted at the existing freight center designations.

Freight Center Typology

Defined Freight Center typologies have been established to help planners, decision makers, and other users to better understand transportation infrastructure requirements, land use/land development patterns, building types, employment characteristics, and potential community impacts that may exist at each freight center type. These typologies, as seen in Figure 15, are a starting point for understanding the freight centers in Chester County.

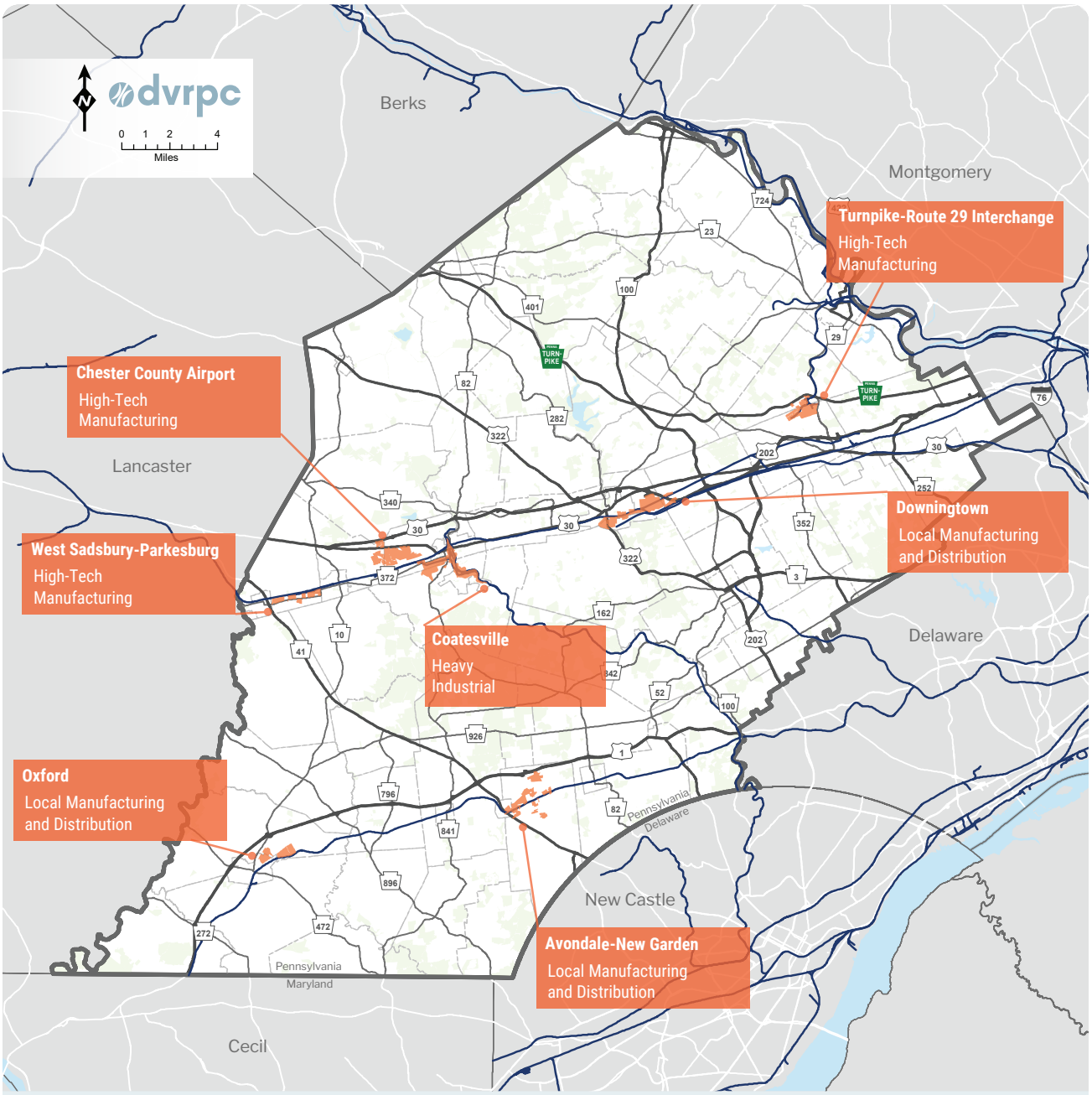
Freight Movement

Truck and vehicle volumes provide an understanding of activity levels by road but do little to explain the distribution of trips as they move across the network. To better inform the understanding of how trips move to and from freight centers to access the rest of the road network in the county, an analysis was conducted utilizing INRIX Trips truck GPS trace data for each of the defined freight centers.

Development Trends

In order to better understand the types of establishments that compose each freight center, a more in-depth review of past and current development trends was conducted. This review used 2020 CoStar Realty data as well as Chester County Subdivision and Land Development Reviews to identify existing and proposed freight-intensive developments. Freight-intensive developments were those classified as industrial or flex structures.

Figure 15: Greater Philadelphia Freight Centers in Chester County



There are four different Freight Center typologies in Chester County:

Heavy Indsutrial: A Heavy Manufacturing Freight Center is a node focused around heavy industrial land uses involved in the manufacturing of goods. These centers are served by freight rail access.

Distribution and Logistics: A Distribution and Logistics Freight Center is a node with a high concentration of regional and national serving distribution and logistics businesses. These centers are often located around key highway interchanges with access to both port gateways and consumer markets.

High-Tech Manufacturing: A High-Tech Manufacturing Freight Center is a node focused around advanced manufacturing land uses and businesses. These centers rely less on major freight rail and maritime facilities but are well located relative to highway facilities.

Local Manufacturing and Distribution: A Local Manufacturing and Distribution Center is a node focused around locally serving small manufacturing and distribution facilities. These are less dependent on prime location near interstate interchanges, but are well served by smaller highway facilities and proximity to consumer populations.

Downingtown Freight Center

LOCAL MANUFACTURING AND DISTRIBUTION

East Caln Township, West Whiteland Township, Downingtown Borough

The Downingtown Freight Center is characterized by local manufacturing, distribution, and quarry establishments. These are primarily served by major roads US 30, US 322, and PA 100 as well as by the Keystone Corridor, owned by Amtrak and operated by Amtrak, Norfolk Southern, and SEPTA. The freight center is concentrated just south of US 30 Business, centered around Boot Road. Due to its proximity to central Downingtown, the freight center is also adjacent to many residential communities as well.

FREIGHT CENTER BY THE NUMBERS

789 acres of land[7]

2.74 million sq ft industrial buildings[8]

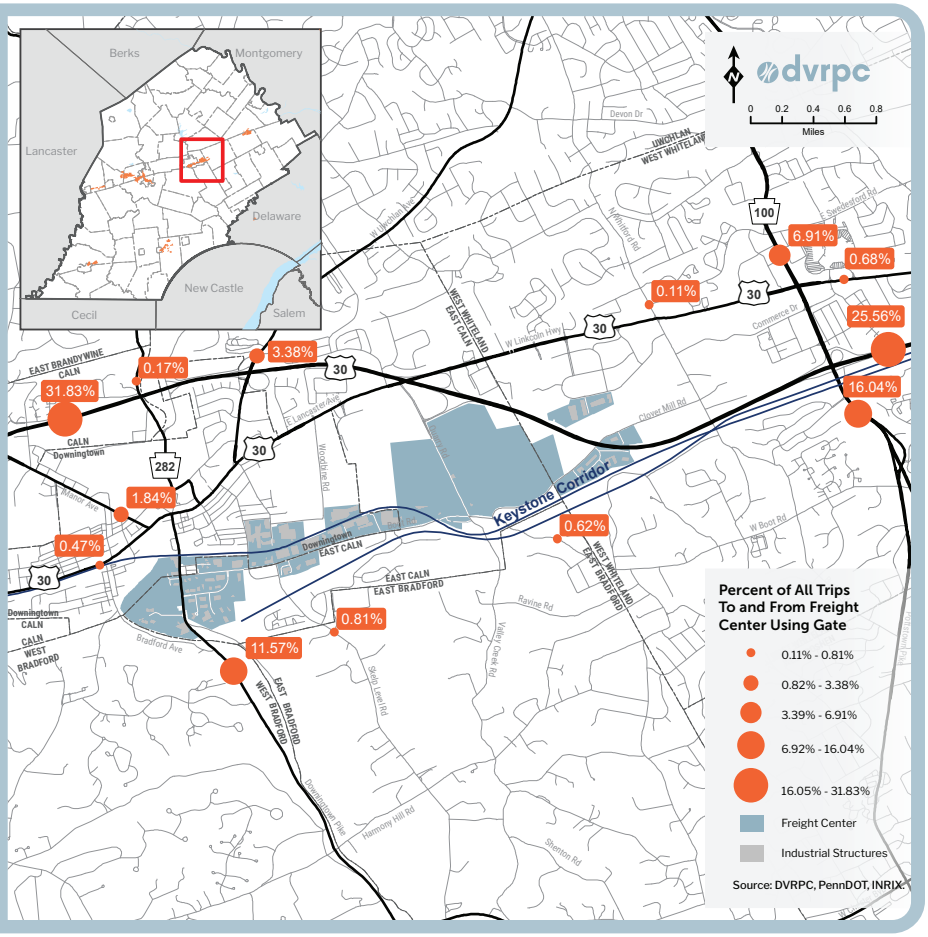
322.9 acres of quarry[9]

1,816 freight employees[10]

1,469 non-freight employees

Top Gates for Truck Traffic:

- US 30 Bypass
- PA 100
- PA 282

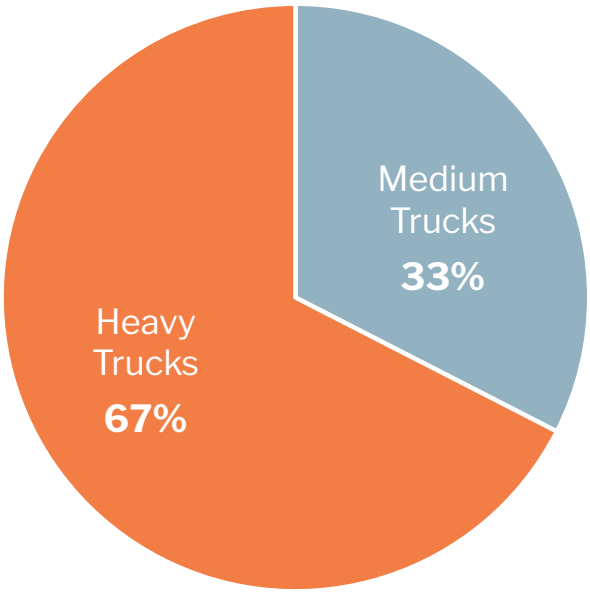


[7] DVRPC, 2020
[8] Costar, January 2020
[9] Chester County, November 2018
[10] NETS, 2015

Freight Movement

A majority (67 percent) of the truck trips in the freight center are heavy trucks, and a limited amount of truck trips in the area are through trips. Both heavy- and medium-duty trucks are most likely to use the US 30 bypass to the west (34 percent of heavy truck traffic and 28 percent of medium truck traffic) and the US 30 Bypass to the east (25 percent of heavy truck traffic and 23 percent of medium truck traffic) when entering or exiting the freight center. Nineteen percent of heavy trucks also use PA 100 to the south and 15 percent of medium trucks use US 322 to the south to access the freight center.

Figure 16: Downingtown Freight Center Truck Activity



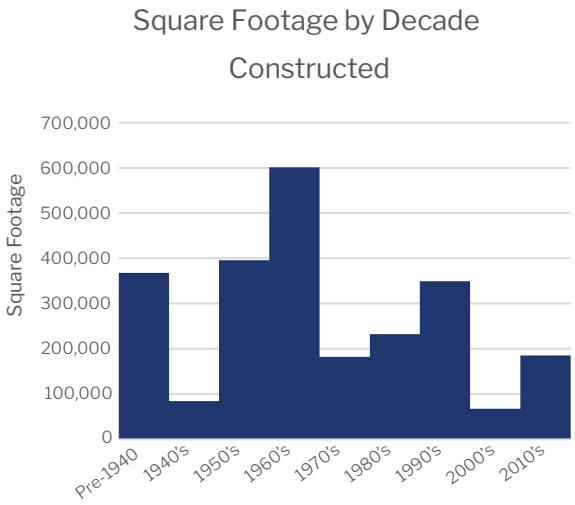
Source: INRIX, 2018

Development Trends

The Downingtown Freight Center has around 50 existing freight-intensive developments. These buildings cover around 69 percent of the freight center's total land area. Another 19 percent of the freight center is designated as industrial land use with no current structures. This might be a potential opportunity for future freight-intensive development. The remaining freight center area is occupied by a quarry site that primarily extracts limestone and produces washed aggregates for road construction.

Recent development since 2015 has included a 25,000 square-foot light distribution space and a 160,000 square-foot manufacturing site. In 2018, two plans for industrial land consolidation were also submitted to the County Subdivision and Land Development Review Board as well as a proposal for an industrial warehouse in 2019.

Figure 17: Downingtown Freight Center Industrial Construction Activity by Decade



* 247,765 square feet of development with unknown construction date

Source: CoStar, 2020

Coatesville Freight Center

HEAVY INDUSTRIAL

Modena Borough, Coatesville City, East Fallowfield Township, South Coatesville Borough, Valley Township

The Coatesville Freight Center is a heavy industrial complex centered around the Cleveland Cliffs steel facility (formerly Arcelor Mittal) and adjacent to the center of Coatesville. Freight establishments are primarily served by US 30, PA 82, and PA 372. This center is also at the junction of two rail lines. The Keystone Corridor runs east-west and is operated by Amtrak, Norfolk Southern, and SEPTA. The Wilmington Northern Rail Branch runs north-south and is operated by Norfolk Southern and Brandywine Valley Rail. Due to the heavy industrial activity at this location and crossing of rail lines, there are also two rail yards, the Richey Railyard and the Modena Railyard, just south of the center, as well as an intermodal station, Coatesville Transload, owned by Cleveland Cliffs.

FREIGHT CENTER BY THE NUMBERS

810 acres of land[11]

1.3 million sq ft industrial buildings[12]

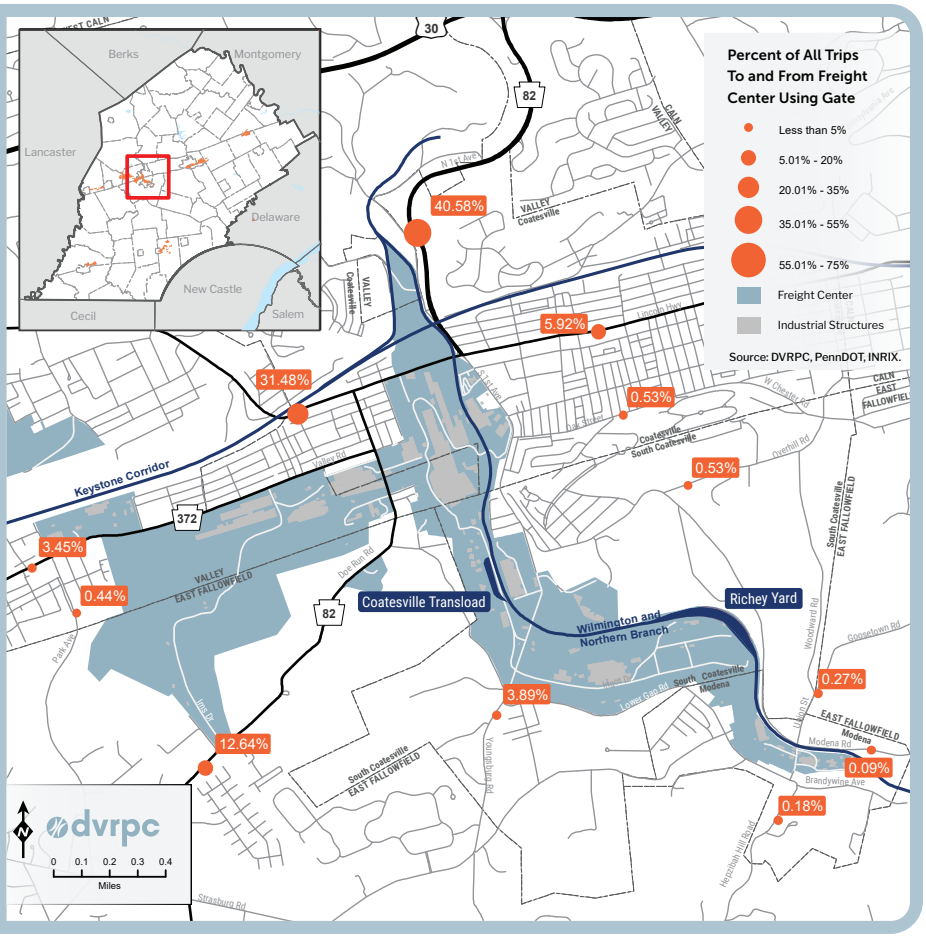
640 acres owned by Cleveland Cliffsl[13]

107 freight employees[14]

101 non-freight employees

Top Gates for Truck Traffic:

- PA 82
- US 30 Business
- 1st Avenue/ Youngsburg Road
- PA 372

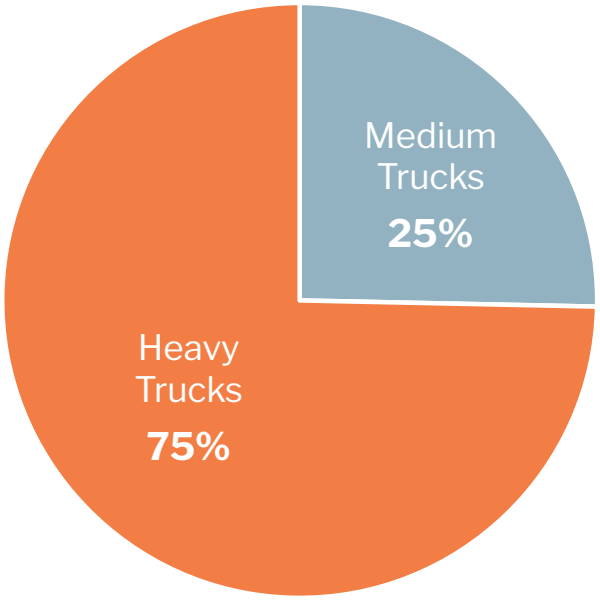


[11] DVRPC, 2020
[12] Costar, January 2020
[13] Chester County, November 2018
[14] NETS, 2015

Freight Movement

A majority (75 percent) of the truck trips in the freight center are heavy trucks, and a limited amount of truck trips in the area are through trips. Both heavy- and medium-duty trucks are most likely to use PA 82 to the north (42 percent of heavy traffic and 37 percent of medium truck traffic) and to the south (12 percent of heavy truck traffic and 15 percent of medium truck traffic) when entering or exiting the freight center. Forty percent of heavy trucks also use US 30 to the west and 18 percent of medium trucks use PA 372 to the east to access the freight center.

Figure 18: Coatesville Freight Center Truck Activity

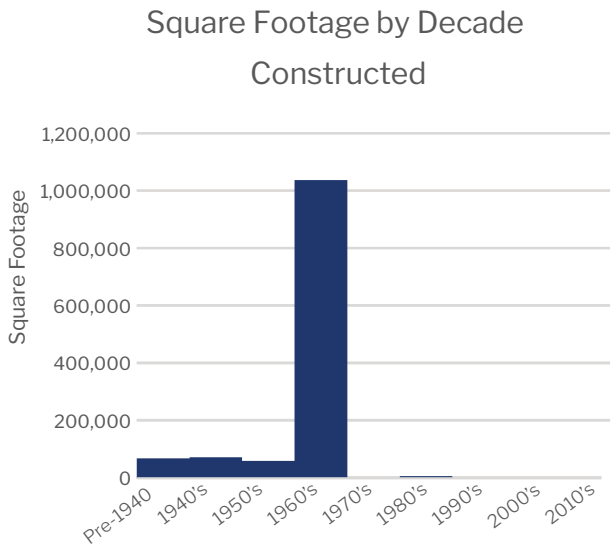


Source: INRIX, 2018

Development Trends

The Coatesville Freight Center has nine existing freight-intensive developments. These buildings cover around 82 percent of the freight center's total land area and consist of 1.3 million square feet of warehouse and industrial manufacturing sites. More than half of the land in the freight center is owned by Cleveland Cliffs (formerly Arcelor Mittal Steel). In 2018, two plans for industrial land consolidation were submitted to the County Subdivision and Land Development Review Board. No major industrial developments have been constructed in this center since the mid-1980s despite development trends seen across the county.

Figure 19: Coatesville Freight Center Industrial Construction Activity by Decade



* 55,549 square feet of development with unknown construction date

Source: CoStar, 2020

Avondale–New Garden Freight Center

LOCAL MANUFACTURING AND DISTRIBUTION

Avondale Borough, New Garden Township

The Avondale-New Garden Freight Center is known for its location in the center of the mushroom industry, but it is also the home of the New Garden Airport and the Avondale Transload Center. The area is primarily served by PA 41, US 1, and Baltimore Pike, as well as by the Octoraro Branch rail line owned and operated by East Penn Railroad. The freight center is concentrated in Avondale Borough and New Garden Township, and it is also directly east of Kennett Square Borough and Kennett Township.

FREIGHT CENTER BY THE NUMBERS

577 acres of land[15]

333,319 sq ft industrial buildings[16]

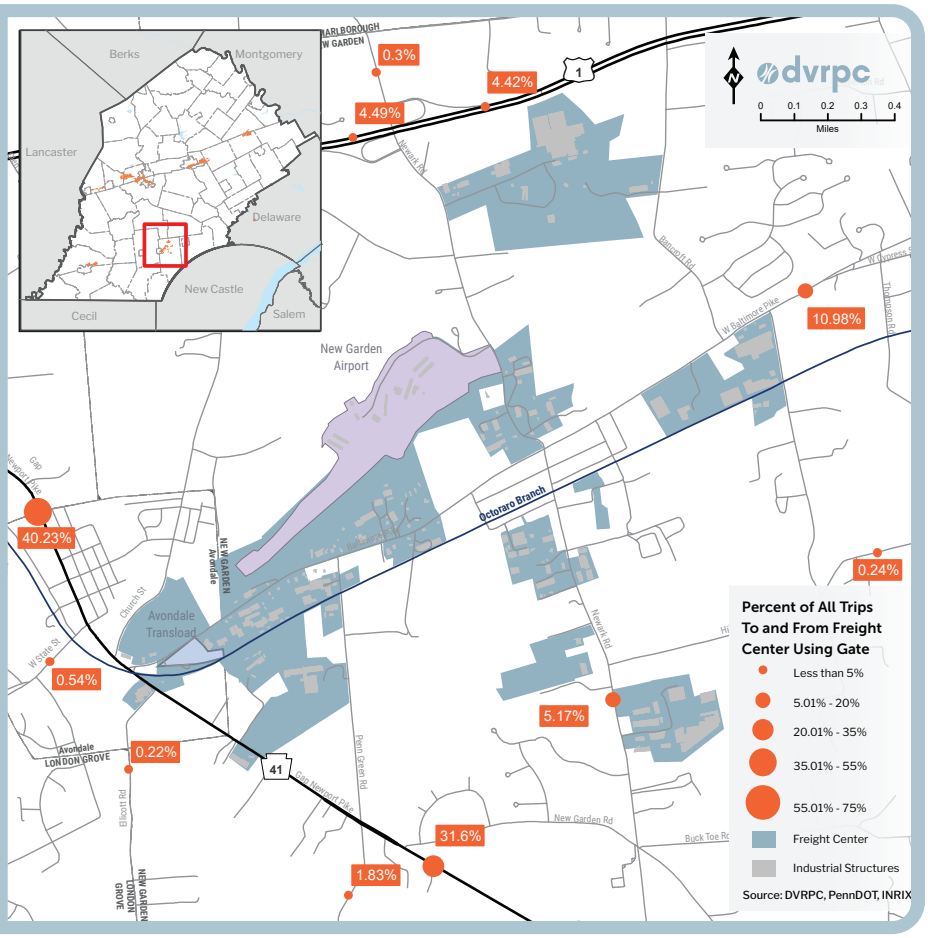
New Garden Airport

1,062 freight employees[17]

265 non-freight employees

Top Gates for Truck Traffic:

- PA 41
- Newark Road
- US 1

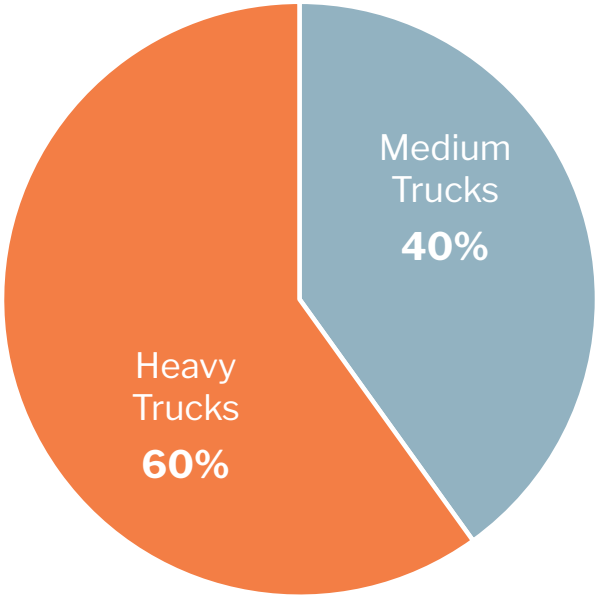


[15] DVRPC, 2020
[16] CoStar, January 2020
[17] NETS, 2015

Freight Movement

A majority (60 percent) of the truck trips in the freight center are heavy trucks. Both heavy- and medium-duty trucks are most likely to use PA 41 to the north (47 percent of heavy truck traffic and 22 percent of medium truck traffic) and to the south (38 percent of heavy truck traffic and 21 percent of medium truck traffic) when entering or exiting the freight center. Twenty-nine percent of medium trucks also use westbound Baltimore Pike to access the freight center. There is a significant amount of truck through traffic that uses PA 41.

Figure 20: Avondale-New Garden Freight Center Truck Activity

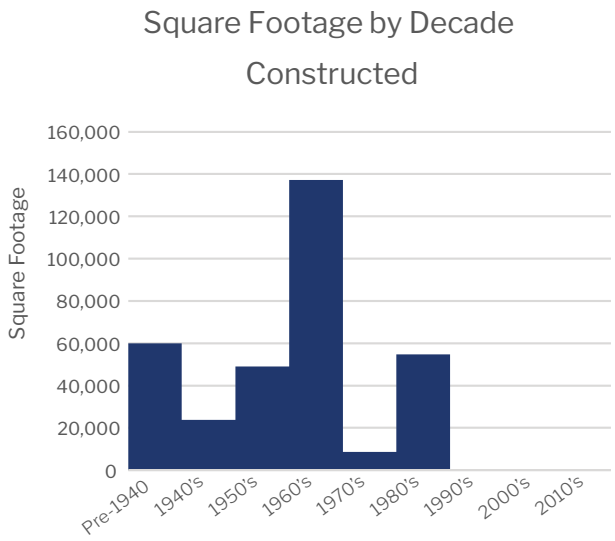


Source: INRIX, 2018

Development Trends

The Avondale-New Garden Freight Center has 16 existing freight-intensive developments, a majority of which occupy only around 26 percent of the total freight center land area, making this a less dense and more spread out freight center footprint. The New Garden Airport accounts for around 84 acres of land in this freight center as well. Two warehouses totaling 750,000 square feet have been proposed in Toughkenamon as of 2020.

Figure 21: Avondale-New Garden Freight Center Industrial Construction Activity by Decade



Source: CoStar, 2020

Oxford Freight Center

LOCAL MANUFACTURING AND DISTRIBUTION

Oxford Borough, Lower Oxford Township

The Oxford Freight Center is a Local Manufacturing and Distribution freight center that is characterized by industrial warehouses. These warehouses are served by the US 1 Kennett-Oxford Bypass that runs east-west north of the center as well as Baltimore Pike that runs through the freight center and PA 10 that runs north-south just west of the freight center. The Octoraro Branch rail line owned and operated by East Penn Railroad runs along the southern edge of the center.

FREIGHT CENTER BY THE NUMBERS

311 acres of land[18]

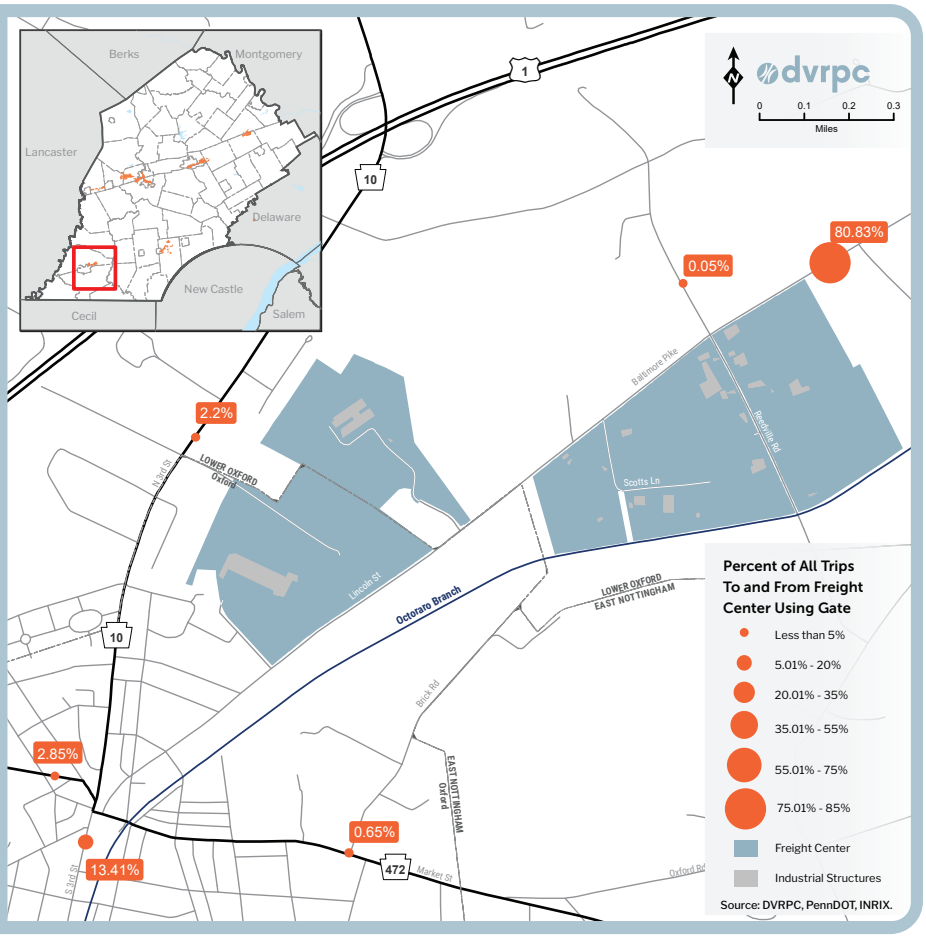
280,158 sq ft industrial buildings[19]

259 freight employees[20]

0 non-freight employees

Top Gates for Truck Traffic:

- Baltimore Pike
- 3rd Street

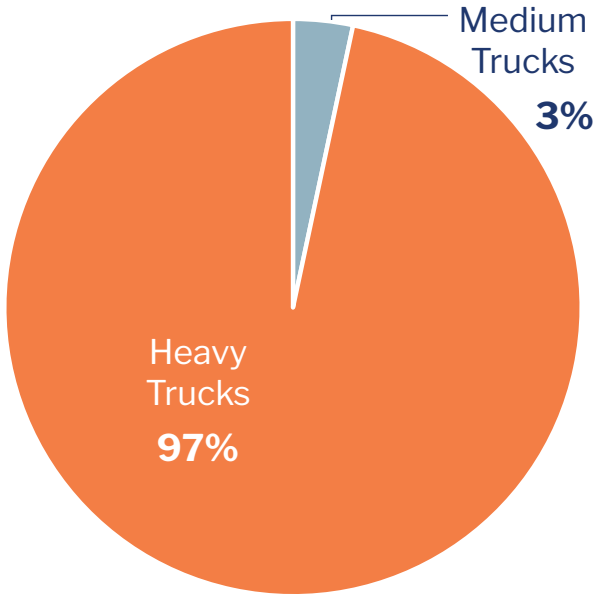


[18] DVRPC, 2020
[19] CoStar, January 2020
[20] NETS, 2015

Freight Movement

Almost all (97 percent) of the truck trips in the freight center are heavy trucks, and a limited amount of truck trips in the area are through trips. Both heavy- and medium-duty trucks are most likely to use Baltimore Pike (81 percent of heavy truck traffic and 63 percent of medium truck traffic) and South 3rd Street/ Baltimore Pike (13 percent of heavy truck traffic and 15 percent of medium truck traffic) when entering or exiting the freight center.

Figure 22: Oxford Freight Center Truck Activity

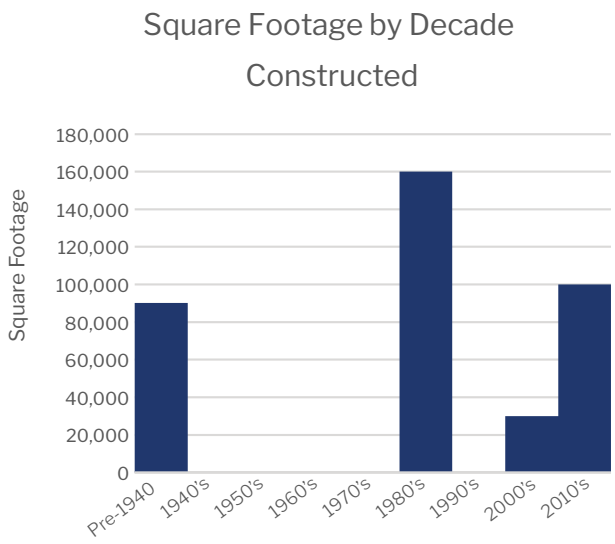


Source: INRIX, 2018

Development Trends

The Oxford Freight Center has three existing freight-intensive developments, all of which are classified as industrial warehouses with an average square footage of around 95,000 square feet. The largest development in this freight center was built in the 1980s, and before that the last industrial development was in the early 1900s. This center has seen a number of proposed developments in the past decade. About 10 percent of the land area in this freight center is classified as industrial land without existing structures, indicating that there could be a growth opportunity for industrial properties.

Figure 23: Oxford Freight Center Industrial Construction Activity by Decade



Source: CoStar, 2020

Chester County Airport Freight Center

HIGH-TECH MANUFACTURING

West Caln Township, Sadsbury Township, Valley Township

The Chester County Airport Freight Center is, as its name suggests, centered around the Chester County Airport and is classified as a High-Tech Manufacturing Freight Center with light industrial establishments. Freight-intensive establishments are accessible primarily by US 30 and PA 372 that run east-west through the center. The Keystone Corridor, owned by Amtrak and operated by Amtrak, Norfolk Southern, and SEPTA, also runs just south of the freight center, although there are no major spurs that currently serve the businesses in this freight center.

FREIGHT CENTER BY THE NUMBERS

686 acres of land[21]

1.05 million sq ft industrial buildings[22]

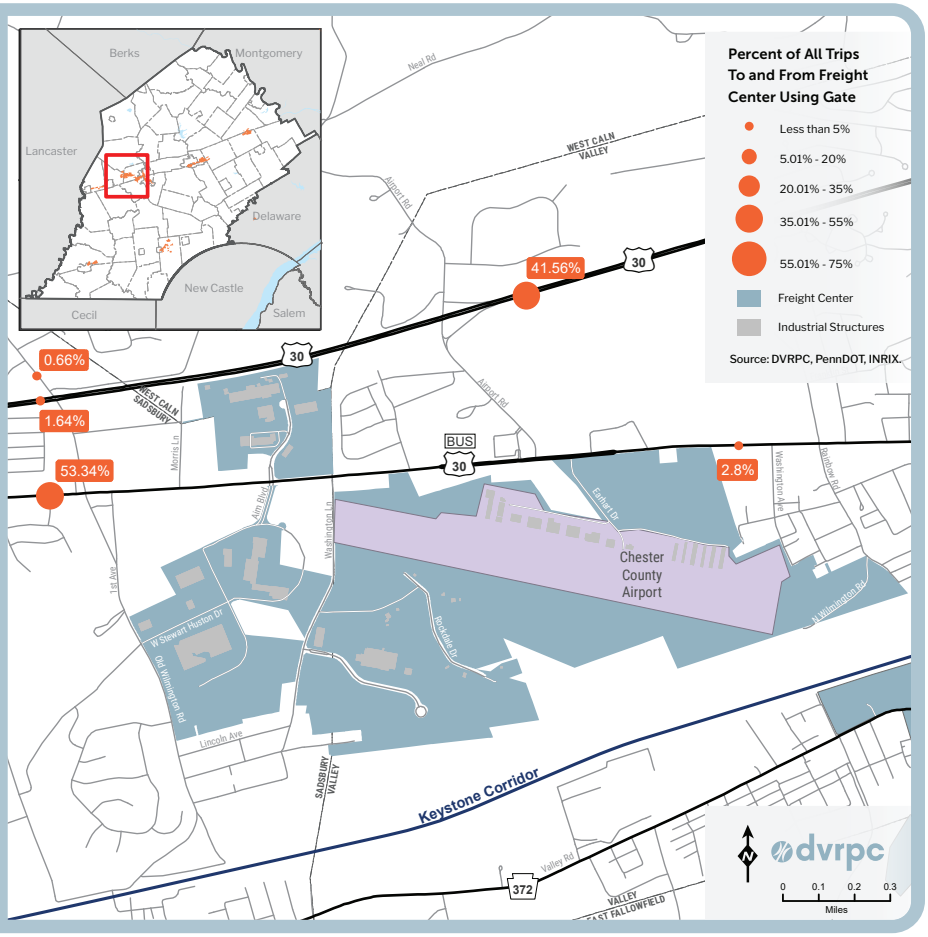
Chester County Airport

929 freight employees[23]

517 non-freight employees

Top Gates for Truck Traffic:

- US 30 Bypass
- US 30 Business

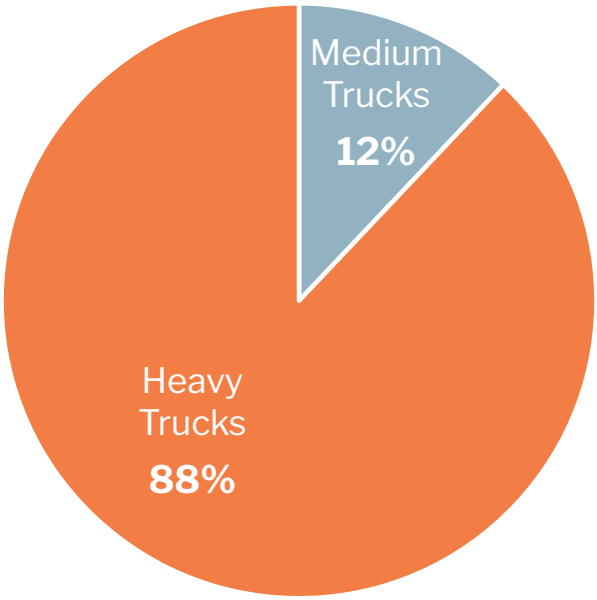


[21] DVRPC, 2020
[22] CoStar, January 2020
[23] NETS, 2015

Freight Movement

A majority (88 percent) of the truck trips in the freight center are heavy trucks, and a limited amount of truck trips in the area are through trips. Both heavy- and medium-duty trucks are most likely to use US 30 Business to the west (55 percent of heavy truck traffic and 32 percent of medium truck traffic) and the US 30 Bypass to the east (41 percent of heavy truck traffic and 54 percent of medium truck traffic) when entering or exiting the freight center. Forty percent of heavy trucks also use US 30 to the west and 18 percent of medium trucks use PA 372 to the east to access the freight center.

Figure 24: Chester County Airport Freight Center Truck Activity

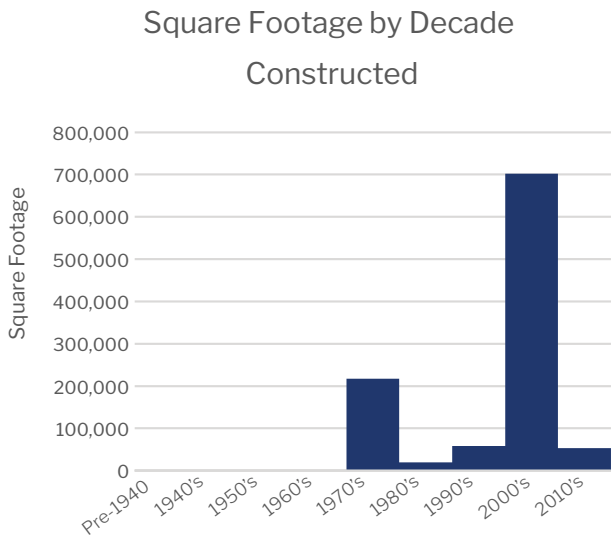


Source: INRIX, 2018

Development Trends

The Chester County Airport Freight Center has 12 existing freight-intensive developments, which are a mix of warehouses, industrial distribution, and light distribution sites. Development in this area is more recent, with all current freight-intensive buildings constructed after 1970 and a significant portion of warehouse square footage built after 2000. The most recent development was in 2018 when a 53,000 square-foot light distribution building was constructed.

Figure 25: Chester County Airport Freight Center Industrial Construction Activity by Decade



Source: CoStar, 2020

West Sadsbury-Parkesburg Freight Center

HIGH-TECH MANUFACTURING

West Sadsbury Township, Parkesburg Borough

The West Sadsbury-Parkesburg Freight Center is characterized by a few large industrial developments and the center is classified as a High-Tech Manufacturing Freight Center. These businesses are accessed primarily by PA 372, PA 41, and PA 10. The Keystone Corridor, owned by Amtrak and operated by Amtrak, Norfolk Southern, and SEPTA, also runs just south of the freight center, although there are no major spurs that currently serve the businesses in this freight center.

FREIGHT CENTER BY THE NUMBERS

246 acres of land[24]

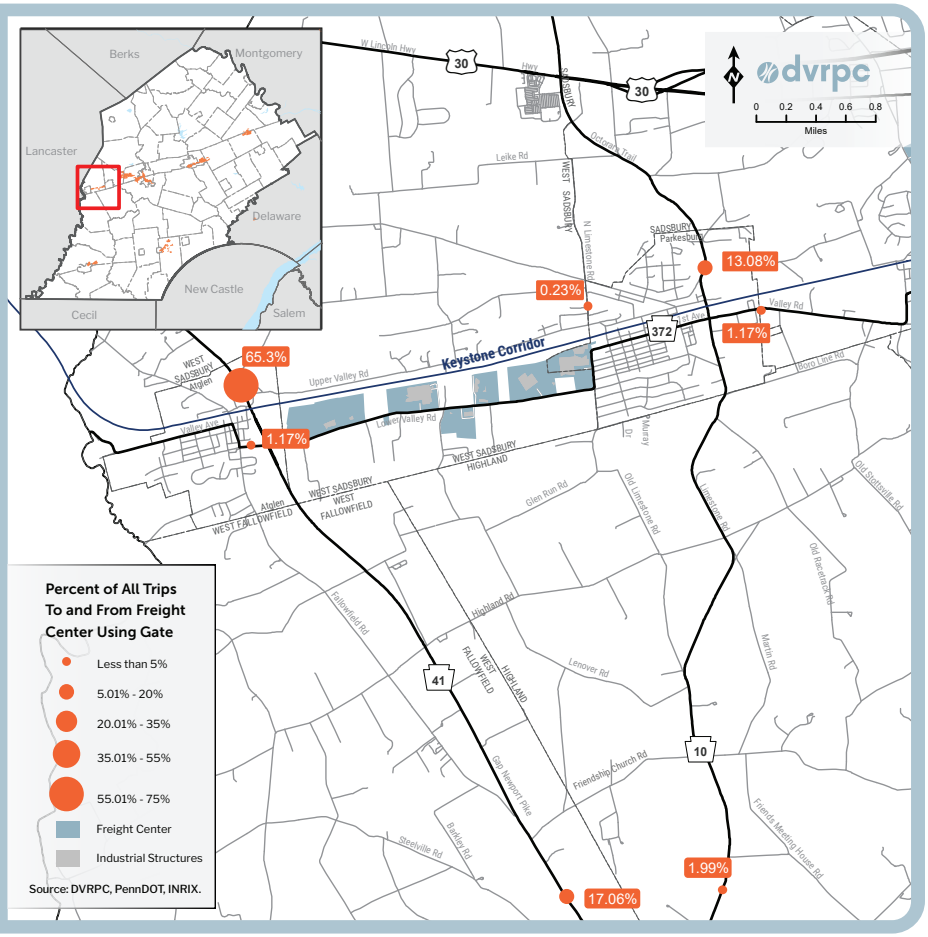
1.33 million sq ft industrial buildings[25]

294 freight employees[26]

103 non-freight employees

Top Gates for Truck Traffic:

- PA 41
- PA 10

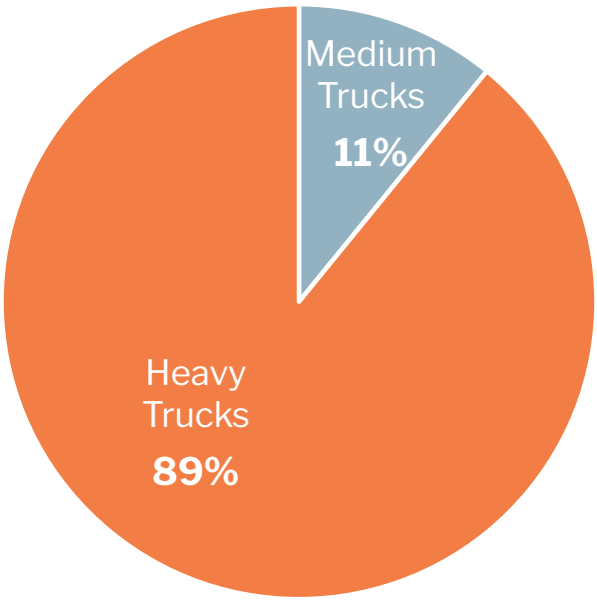


[24] DVRPC, 2020
[25] CoStar, January 2020
[26] NETS, 2015

Freight Movement

A majority (89 percent) of the truck trips in the freight center are heavy trucks, and a limited amount of truck trips in the area are through trips. Heavy trucks are most likely to use PA 41 to the north (69 percent of heavy traffic) and to the south (19 percent of heavy truck traffic) when entering or exiting the freight center. Medium trucks primarily use PA 41 to the northwest (50 percent of medium truck traffic) and PA 10 to the northeast (29 percent of medium traffic) to enter or exit the freight center. There is also a significant amount of heavy truck traffic that travels between PA 41 and PA 10 bidirectionally using Highland Road and Friendship Church Road. This trend is not seen with medium trucks.

Figure 26: West Sadsbury-Parkesburg Freight Center Truck Activity

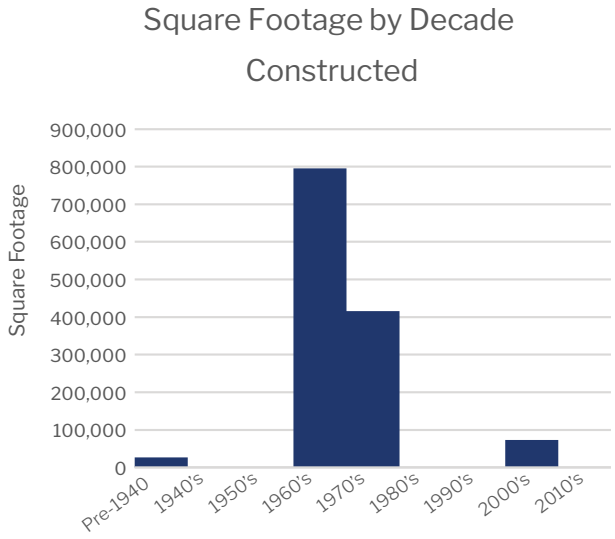


Source: INRIX, 2018

Development Trends

The West Sadsbury-Parkesburg Freight Center has only six freight-intensive developments, a much smaller quantity than that of other freight centers in the region. These industrial developments, however, still contain over 1.3 million square feet of warehouse and manufacturing space. Most of these buildings were constructed in the 1960s and 1970s, although there is a current proposal for over 40,000 square feet of industrial warehouse space that has not yet been built in the freight center.

Figure 27: West Sadsbury-Parkesburg Freight Center Industrial Construction Activity by Decade



Source: CoStar, 2020

Turnpike-Route 29 Interchange Freight Center

HIGH-TECH MANUFACTURING

East Whiteland Township and Charlestown Township

The Turnpike-Route 29 Interchange Freight Center is a High-Tech Manufacturing Freight Center with many research and development, manufacturing, and warehouse sites. It is readily served by rail and also contains 322 acres of quarry. The businesses are accessed primarily by PA 29, the Phoenixville Pike, and the Pennsylvania Turnpike.

FREIGHT CENTER BY THE NUMBERS

430 acres of land[27]

1.2 million sq ft industrial buildings[28]

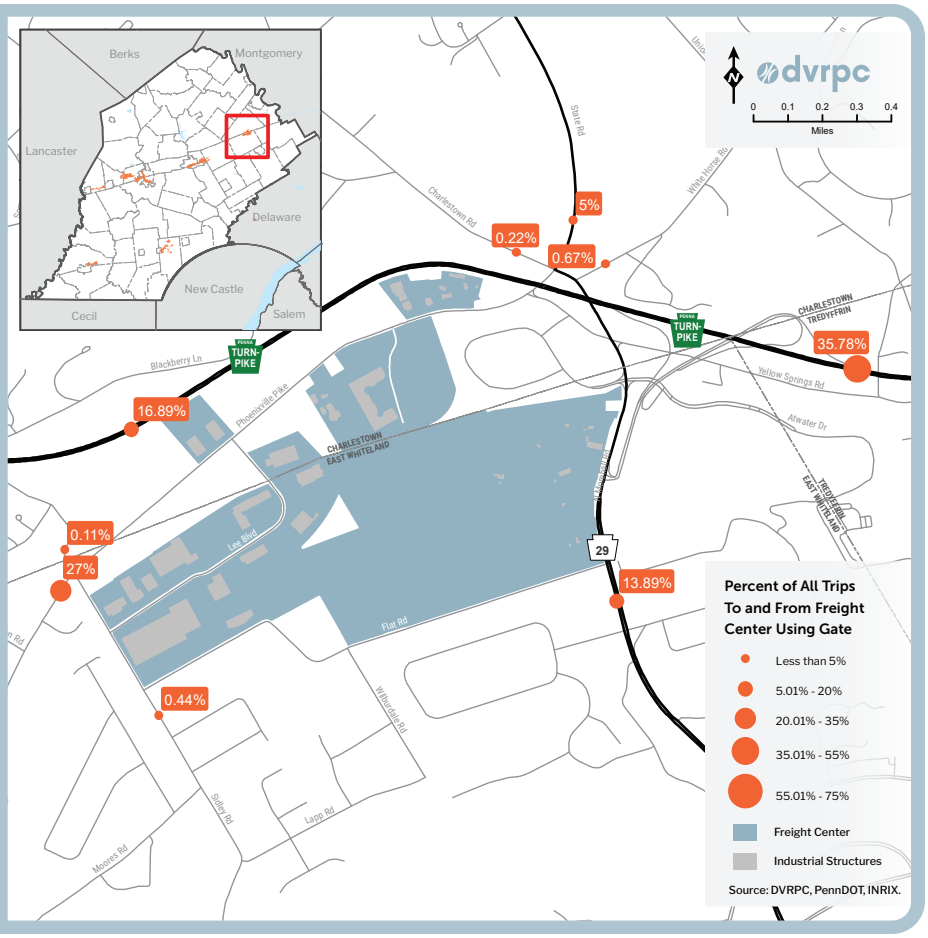
322 acres of quarry[29]

490 freight employees[30]

759 non-freight employees

Top Gates for Truck Traffic:

- Pennsylvania Turnpike
- Phoenixville Turnpike
- PA 29

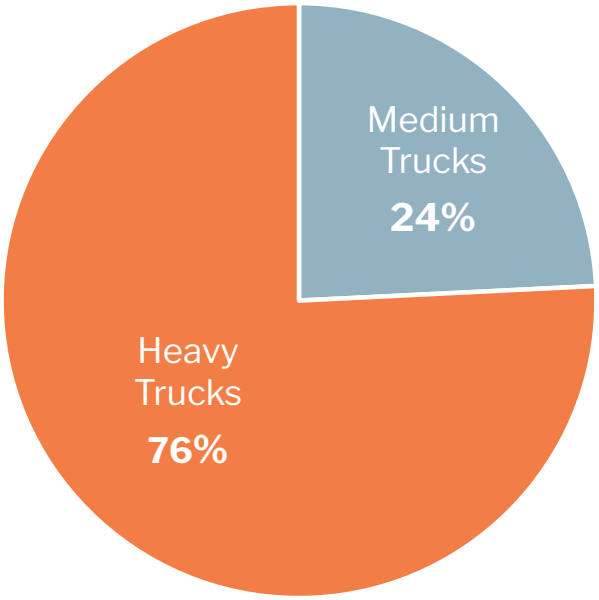


[27] DVRPC, 2020
[28] CoStar, January 2020
[29] Chester County, November 2018
[30] NETS, 2015

Freight Movement

A majority (76 percent) of the truck trips in the freight center are heavy trucks, and a limited amount of truck trips in the area are through trips. Both heavy- and medium-duty trucks are most likely to use the Turnpike to the east (43 percent of heavy truck traffic and 17 percent of medium truck traffic) and the Phoenixville Pike (22 percent of heavy truck traffic and 38 percent of medium truck traffic) when entering or exiting the freight center. Nineteen percent of heavy trucks also use the Turnpike to the west and 24 percent of medium trucks use PA 29 to access the freight center.

Figure 28: Turnpike-Route 29 Interchange Freight Center Truck Activity

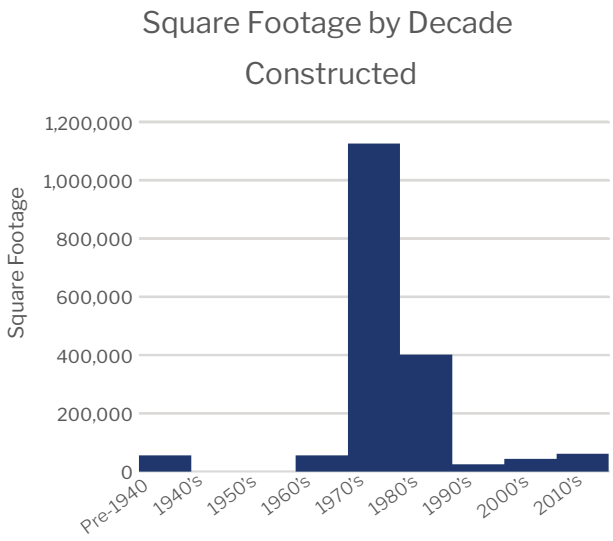


Source: INRIX, 2018

Development Trends

The Turnpike-Route 29 Interchange Freight Center has 26 existing freight-intensive developments. There are over 1.7 million square feet of industrial and flex space with an average warehouse size of around 68,000 square feet. Almost half of the freight center land area is occupied by the quarry on the eastern edge of the center. Minimal development has occurred in or near the freight center in the past decade, but there was a land review proposal for an industrial office building in 2018.

Figure 29: Turnpike-Route 29 Interchange Freight Center Industrial Construction Activity by Decade



Source: CoStar, 2020

CHAPTER 5

Industrial Building Trends

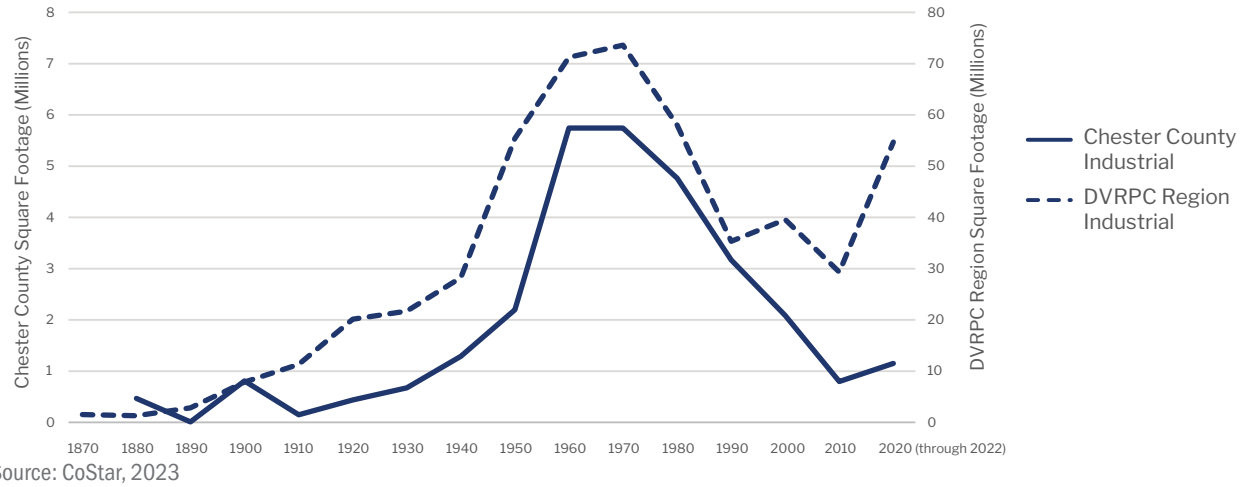
Construction of new industrial structures is shifting away from traditional centers of freight generation. Flex properties are growing in frequency of construction as the county continues to see increasing demand for industrial space. This growth is likely due to the increased demand for e-commerce goods and the warehouses required to deliver products quickly to population centers.

Development Trends

Since 2010, construction of new industrial and flex buildings has moved away from established DVRPC Freight Centers and into surrounding municipalities. These new development locations can be seen in Figure 31. While many new developments are not located near existing freight centers, almost all are adjacent to major road infrastructure—a trend seen across the region. There is still new development in and around the DVRPC Freight Centers, but this development tends to have smaller square footage than average, most likely due to less space for green field development. Proposed new construction seen in the County Subdivision and Land reviews from the last three years also reflects this geographic trend with the notable proposed construction of three warehouse buildings totalling 1.9 million square feet near the interchange of the Pennsylvania Turnpike and PA 100.

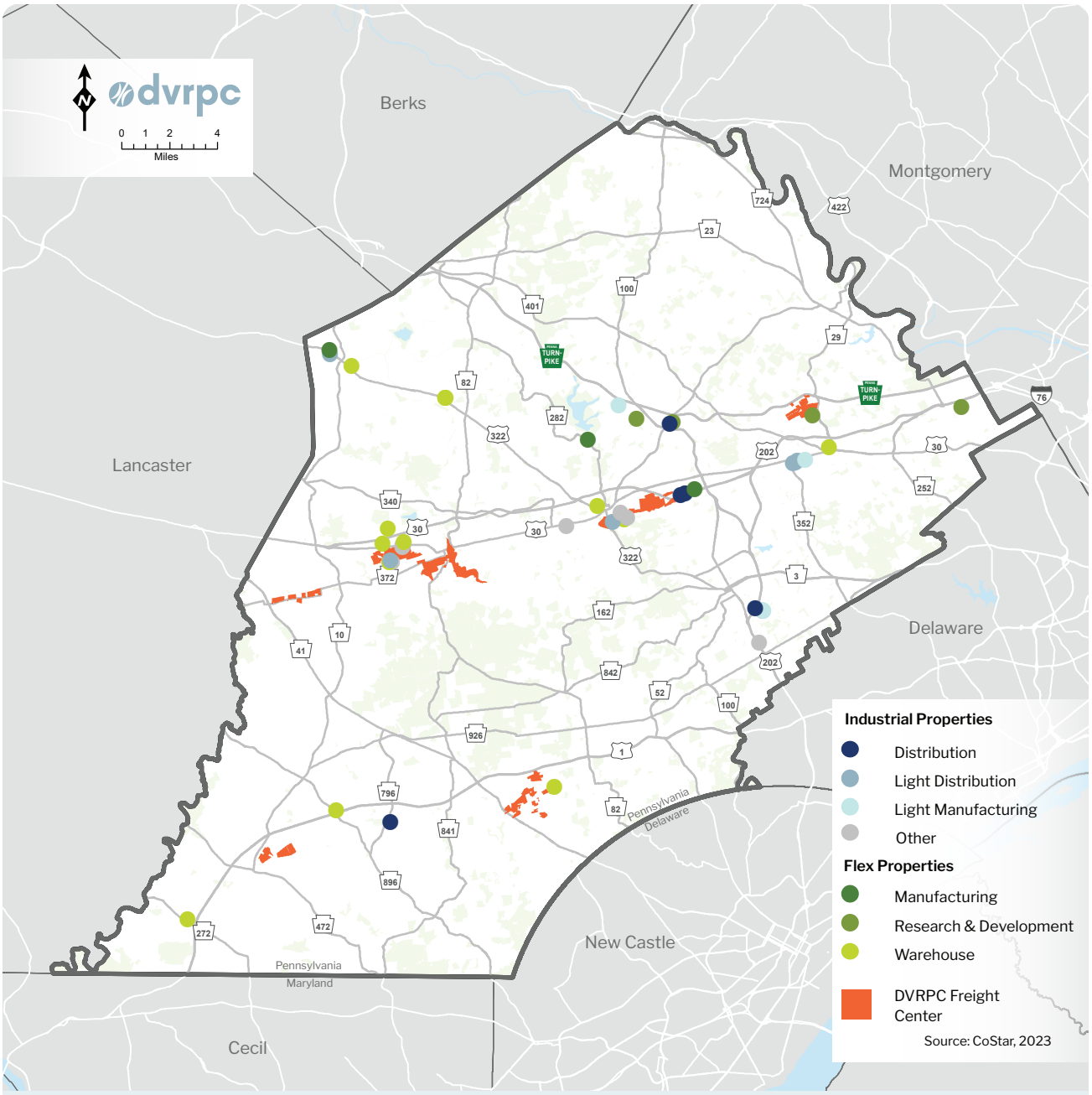
Within the county, industrial property vacancy rates hit historic lows of 2.75 percent at the end of 2022 and the square footage of new industrial and flex space construction since 2020 has already surpassed total construction from 2010 to 2020. Figure 30 shows this industrial building development trend by decade. This trend indicates an increased demand for industrial space that mirrors the development patterns across the region—a trend that Chester County will likely continue to see.

Figure 30: Industrial Building Development by Decade



Source: CoStar, 2023

Figure 31: Industrial Development Since 2010



FREIGHT-INTENSIVE DEVELOPMENT PATTERNS

- Recent construction is moving away from DVRPC-identified Freight Centers
- New development is highly concentrated near major road network
- Increase in the number of flex properties being developed with flex warehouses the most frequent

CHAPTER 6

Outreach and Issue Identification

Outreach to the public and targeted industrial partners helped to identify the needs and priorities of the community. This chapter provides a summary of those efforts, data collected, and highlights some of the ongoing transportation projects in the county that are already addressing some of the identified concerns.

Outreach Collection

DVRPC solicited input about freight activity in Chester County and the concerns of those who drive, bike, or walk and share the roadway with trucks or trains. Input was collected through a Municipal Open House, an issue collection map, presentations in local professional organizations, and targeted outreach to industrial employers.

Issue Collection Map

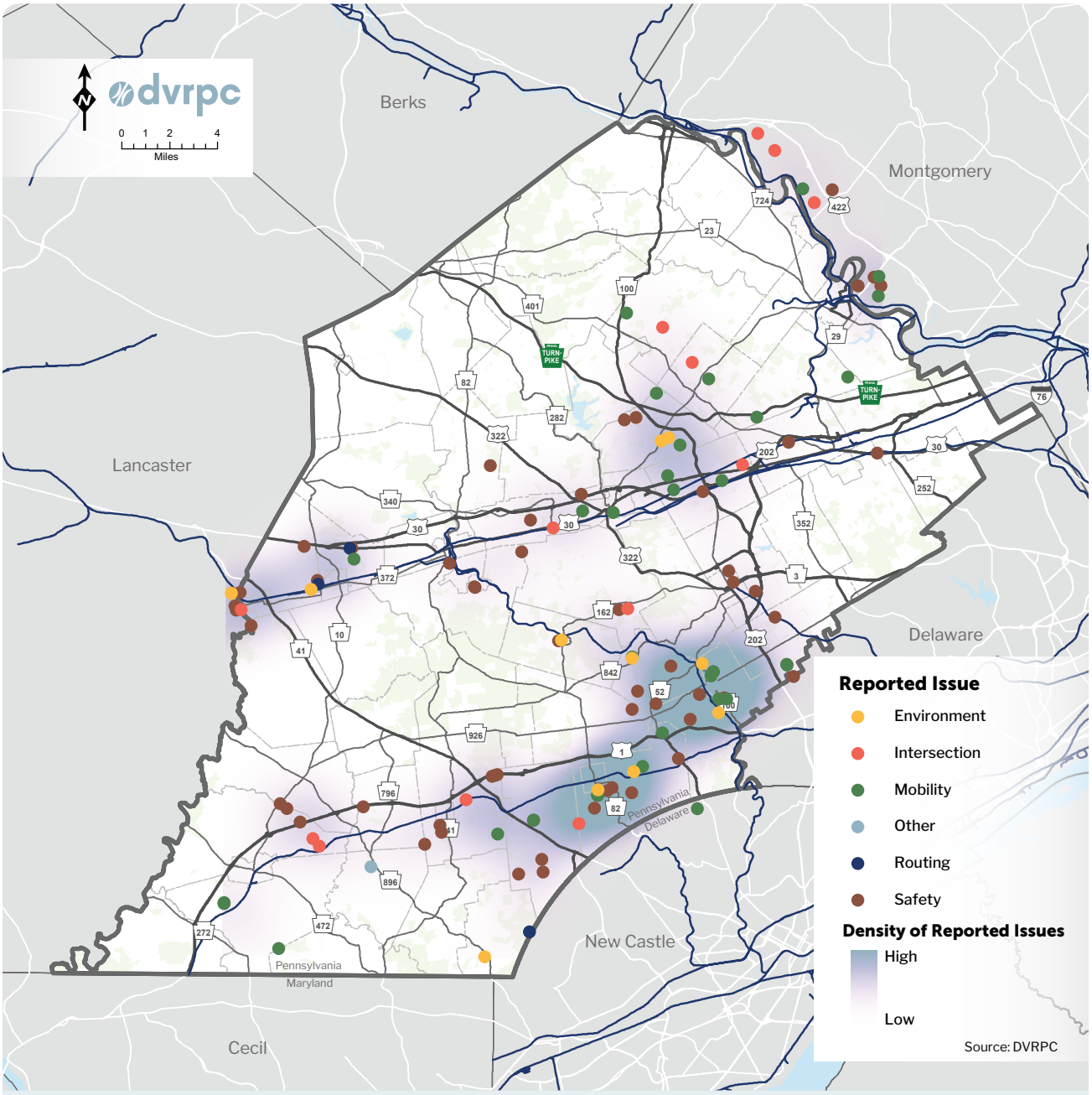
The Municipal Open House was held on October 28, 2021. All municipalities in the county were invited to hear about the initial freight profile created for the Chester County Freight Plan and to share needs and areas of concern with regards to freight activity in their communities. Municipalities, both absent and in attendance, were given an outreach toolkit to share the issue collection map on their social media network and with constituents. This toolkit and presentation material was also shared with the Western Chester County Chamber of Commerce, the Southern Chester County Chamber of Commerce, and the Chester County Chamber of Business and Industry for distribution to their members.

The issue collection map web product collected issues and comments from November 2021 through January 2022. The web map is available for reference and consideration in ongoing county and municipal studies to address transportation issues at www.dvrpc.org/webmaps/chester-county-freight. Figure 32 highlights the issues collected through this process.

The following are top issues that were identified using the issue collection map and during municipal outreach.

- Narrow rural roads have limited visibility, poor pavement conditions, and many instances of speeding. This is especially dangerous for cyclists.
- Users experience challenges with traffic flow at the intersection of US 30 and US 100.
- Trucks disrupt small main streets and considerations for pedestrians are needed.
- Concerns for pedestrian safety on busy truck routes.
- Desire for better signal/signage and designated turn lanes to alleviate delays.
- Rail crossing at PA 926 causes substantial backups and interferes with school traffic.
- Trucks and cars are using minor routes to try to avoid congestion on main routes.
- Trucks not following restrictive signage in some locations.
- Insufficient signage for bridge clearance and weight restrictions in some locations.
- Concern that trucks worsen road conditions and add to congestion.

Figure 32: Outreach Collection Results



ISSUE CATEGORIES

Mobility and Congestion: Locations where congestion is increased due to freight traffic.
Safety: Input on a location or area where you perceive an unsafe condition or behavior by motor vehicles or other road users.
Intersection: Issues with a single intersection's design.
Routing and Signage: Issues with the movements of freight on a given street or neighborhood and with signs directing freight vehicles in response to restrictions.
Environment and Quality of Life: Issues like noise, pollution, trucks colliding with private vehicles, and other impacts to the quality of life for those living or working on a street.
Other: Anything not represented by another category.

A Chester County Freight Plan Industry Survey was also sent out between January 2021 and May 2021 to industrial companies across the county. The goal of this survey was to better understand freight activity at these facilities, trends impacting their businesses, critical infrastructure needs, and challenges that they face moving goods. Ten responses were collected from varying industries. Road conditions, congestion, and access to workforce were key issues that were identified as impacting their operations. The road elements that were identified as most critical to their operations and in need of investment were Interstate Highways and State Highways.

The outreach identified the following top locations of concern for freight activity:

- US 30 Corridor
- Kennett Square
- Borough areas
- Rail crossing at PA 926
- US 100 between PA Turnpike and US 30

Of the issues identified, the following were top issues of concern that were repetitively mentioned and highlighted by the steering committee as important to the county:

- Increased congestion on all roads across the county;
- New industrial development and the potential for increased truck traffic;
- Insufficient designated truck routing;
- Preserving access to rail-adjacent properties for industrial development; and
- Protecting vulnerable road users where trucks interact with other modes.

Current Transportation Projects

Some of the concerns raised around freight priority areas are already being addressed through the region's Transportation Improvement Program (TIP). Below are some of the projects that are planned in the county and are anticipated to address some of the existing freight concerns. Figure 33 displays these highlighted projects across the county. For more details on current TIP projects, visit www.dvrpc.org/tip/pa.

14532 | US 30, Coatesville Downingtown Bypass Reconstruction Design

This project serves as the preliminary design phase of a project to reconstruct and make improvements to approximately 14 miles of US 30. The full length of the corridor is located in West Sadsbury Township, Sadsbury Township, Valley Township, Coatesville City, West Caln Township, Caln Township, East Caln Township, and Downingtown Borough.

87781 | US 30, Coatesville Downingtown Bypass (CER-Eastern Section)

This project provides for the final design, right-of-way, utility, and construction phases of the Coatesville-Downingtown Bypass Reconstruction - eastern section - by reconstructing and widening the mainline shoulders; replacing and widening the mainline bridge superstructures; constructing new ramps; reconstructing, realigning, and lengthening all on- and off-ramps to provide storage length for traffic signals and/or ramp metering; and reconstructing arterial overpasses.

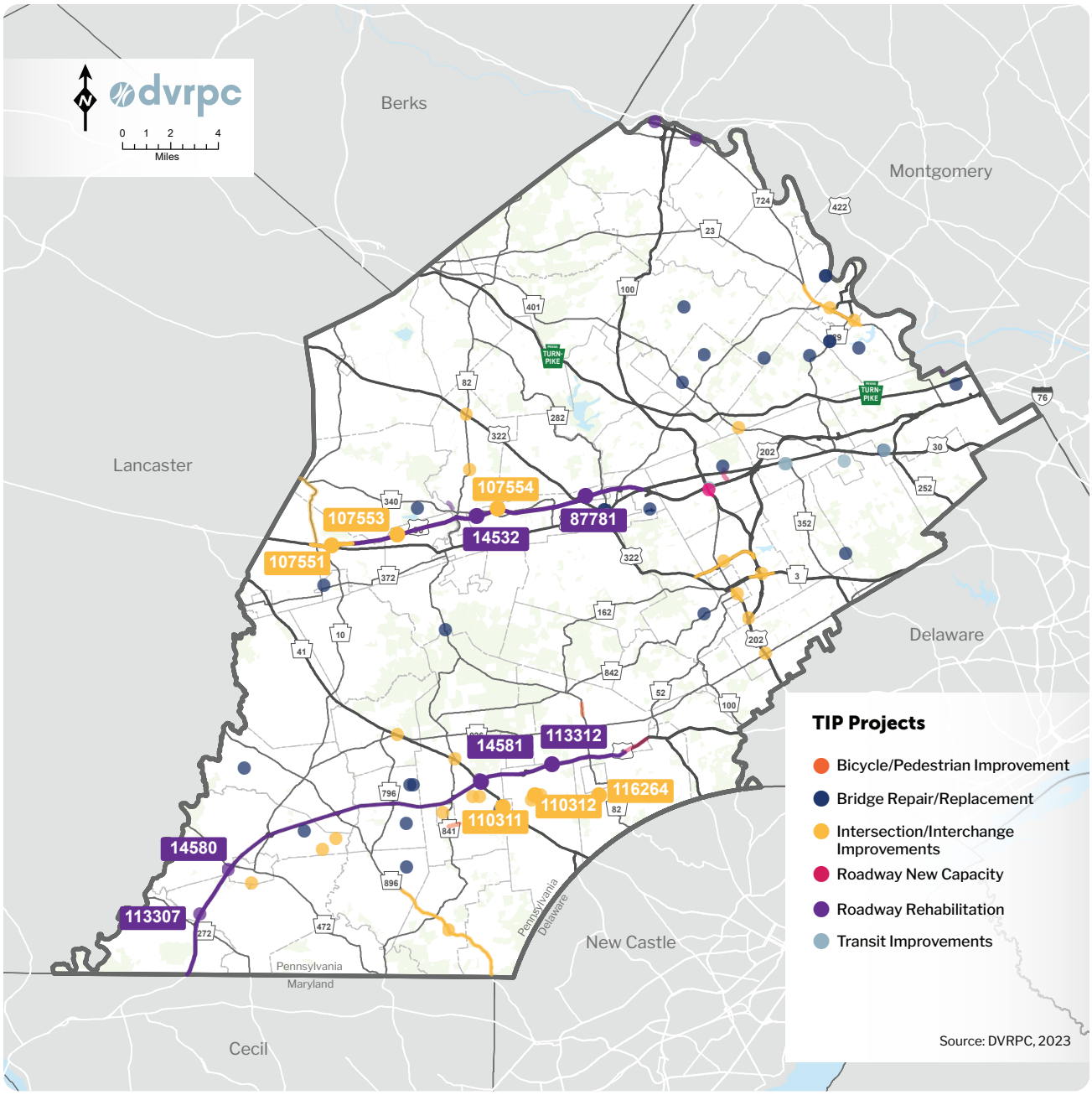
107551 | SR30/SR10 to Business 30 Interchange Improvement

The proposed Octorara Trail/Lincoln Highway (Business US 30) Interchange project is being undertaken in conjunction with corridor-wide improvements planned for the 14.5-mile US 30 Coatesville–Downingtown Bypass. The project extends along US 30 from approximately 1,250 feet west of SR 10 in West Sadsbury Township to approximately 1,500 feet east of the highway's bridge over Old Mill Road in Sadsbury Township. Planned work will consist of the full reconstruction of US 30 to upgrade the existing roadway, which is approaching the end of its serviceable life. Reconfiguration of the interchange with US 30 Business will be considered to address the existing non-conventional split of the two roadways. The project will also address deficient median conditions, shoulder widths, and the functionally obsolete bridges within the project limits. The addition of turning lanes at the SR 10 intersection will be made to improve movement through the intersection, facilitating easier turning movements by trucks that use this corridor.

107553 | SR30 & Airport Rd Interchange Improvement

The planned Airport Road Interchange project is being undertaken in conjunction with corridor-wide improvements planned for the US 30 Coatesville–Downingtown Bypass. Planned work will consist of the full reconstruction of US 30 to upgrade the existing roadway and reconfiguration of the Airport Road interchange to address the short acceleration/deceleration ramp lengths and add the missing westbound entrance and eastbound exit ramps. Turning lanes will be added to Airport Road and West Highland Boulevard will be relocated to align with Highland Boulevard/Airport Road intersection. The project will also address deficient median conditions, shoulder widths, and the functionally obsolete bridges within the project limits. Extended acceleration and deceleration ramp lengths, turning lanes, and intersection realignment will all have the potential to improve truck turning effeciency at this intersection.

Figure 33: Fiscal Year 2023 TIP Projects in Freight Priority Areas



107554 | US30 & PA82 Interchange Improvement

The planned SR 82 Interchange project is being undertaken in conjunction with corridor-wide improvements planned for the 14.5-mile US 30 Coatesville–Downingtown Bypass. The project extends along US 30 from approximately 0.2 miles east of Wagontown Road in Valley Township to 0.1 miles west of the SR 340 bridge over US 30 in Caln Township. Planned work will consist of the full reconstruction of US 30 to upgrade the existing roadway and reconfiguration of the interchange with SR 82 to address substandard acceleration/deceleration ramp lengths and poor geometry of the westbound exit ramp. As a highly traveled freight intersection, these changes will help to move trucks more effeciently through this interchange. The project will also address deficient median conditions, shoulder widths, and the functionally obsolete bridges within the project limits.

110311 | PA 41 at State Road Intersection

This project in Avondale Borough will address the geometry of the intersection, realign the intersection, improve sight distance, improve turning lanes, incorporate ITS, improve sidewalk and pedestrian access, and accommodate heavy vehicle traffic at the intersection.

110312 | Baltimore Pike/Newark Road Intersection Improvements

This project is located in the village of Toughkenamon in New Garden Township, Chester County. It will improve safety by realigning the northern leg of Newark Road at Baltimore Pike and upgrading and modernizing the traffic signal. Dedicated left-turn lanes on all four approaches, as well as a right-turn lane from northbound Newark Road to eastbound Baltimore Pike will be installed and turning radii will be widened to accommodate trucks and larger vehicles at this key freight corridor intersection. Enhancements and driveway adjustments for homes and businesses will improve access management. New sidewalk connections and ADA-compliant curb ramps will be installed.

116264 | Kennett Township Roundabout

This project will install a roundabout at the Five-Points intersection at the convergence of South Union St. and Kaolin Rd., East and West Hillendale Rd., and Old Kennett Rd. in Kennett Township. This project will also include the installation of a perimeter sidewalk, as well as crosswalks, curb ramping, and signage, enabling pedestrians to navigate one travel lane at a time.

115875, 115876, 118184, 118185, 118186, 118188, 118189 | Installation of Railroad Warning Devices

These projects will install railroad warning devices at crossings in New Garden Township, Tredyffrin Township, London Grove Township, West Grove Borough, Oxford Borough, and Lower Oxford Township along the Octoraro Freight Rail Line.

113307, 113312, 14580, 14581 | US 1 Expressway Reconstruction

US 1 is a key freight corridor in the county. These projects consist of pavement rehabilitation and reconstruction; guiderail upgrades; vertical and lateral clearance compliance corrections of overhead structures that will ensure larger vehicle movements; and interchange improvements such as length of acceleration and deceleration lanes and loop ramp radii. Interchanges included in the work are at Sylmar Road, Ridge Road, PA 272, PA 472, PA 10, PA 896, PA 796, PA 841, PA 41, Newark Road, PA 82, and Baltimore Pike.

CHAPTER 7

Action Plan

The project steering committee and outreach to the public and targeted industrial partners led to the development of the action plan. This plan serves as a framework and recommendations for future freight investment in the county and freight consideration in other transportation projects.

Chester County's freight activity is a vital part of the local and regional economies. Yet increased congestion and new industrial and nonindustrial development present significant challenges to supporting an effective and efficient freight system and maintaining the livability and character of the existing communities. These and other challenges such as limited funding—faced by Chester County and transportation agencies and governments across the nation—can be addressed with targeted and effective actions designed to achieve specific goals.

This chapter establishes a framework using goals as an outline to help Chester County focus resources on the freight system. The recommended actions include design recommendations, infrastructure investments, additional planning studies, and policy advancement that supports safe and efficient freight movement and concentrated freight-related development. Each action, when considered with the full spectrum of Chester County's planning activities over the next few years, ultimately serves to support coordinated and community-conscious economic growth.

Understanding the existing freight activity in Chester County as described in this report, the project steering committee identified the following top issues to address as a part of the action plan:

- Increased congestion on all roads across the county;
- New industrial development and the potential for increased truck traffic;
- Insufficient designated truck routing; and
- Preserving access to rail adjacent properties for industrial development.

These issues were incorporated into the Action Strategies and Recommendations using the plan goals as an outline for organization.

Goals

As a part of this action plan, the project steering committee identified six freight goals that embody the principles established in *Landscapes 3*. These goals were developed to represent categories that provide a framework for achieving the vision for the future of freight in Chester County that aligns with existing county goals.

SAFETY	Support and implement freight safety improvements and initiatives.
EFFICIENCY	Increase efficiency of goods movement and maintain reliable mobility for trucks.
PRESERVATION & IDENTITY	Promote education about freight that supports vital industries and county identity, and support industrial redevelopment opportunities that preserve open space.
ENVIRONMENT	Encourage new technologies and infrastructure investment that offer more sustainable options for freight transportation and freight efficiency.
ECONOMIC DEVELOPMENT	Support industrial redevelopment opportunities and infrastructure for economic growth.
COMMUNITY & PLACE	Coordinate with communities to ensure mobility for freight that is consistent with local and regional priorities.

Action Strategies and Recommendations

The following action strategies and recommendations were developed to support the six freight plan goals and provide actionable next steps for the county and municipalities. Many of these actions have multiple benefits that support more than one goal, as seen in Table 3. Similarly, many of these actions address multiple top issues previously identified by the steering committee.

Truck Route Network

The following recommendations stem from the creation of a designated truck route network and require that a network be identified in order to be most effective.

1. **Designate a primary truck route network** so design recommendations can be made for the appropriate level of truck traffic and connectivity across the county. Having a designated network makes it easier to plan for where trucks are needed and also for where they should be restricted. Chapter 8 outlines a detailed process for the network components and process of identification that can be followed by municipalities or the county for truck route designation. A preliminary list of road segments has also been provided for consideration as a primary network in Table 4 and Figure 35.

2. **Incorporate freight into Complete Streets[31] recommendations** so that trucks are considered as a part of design recommendations that promote safety for all road users and take a context-sensitive approach. As is the case with many Complete Streets policies, implementation is very focused on the accommodation and inclusion of vulnerable road users, and justifiably so. However, opportunities exist to go beyond these considerations to create more complete streets that enhance the quality of life for residents and reduce the possibility of conflict between trucks and other road users. This requires that transportation projects adequately consider the role of trucks and goods movement on the street. To better prepare developers and municipalities to address these concerns, it is essential to inventory and designate truck routes and identify considerations around these routes to integrate freight into the fabric of the county rather than treating it as an afterthought.

3. **Encourage concentrated industrial development** in and around existing freight centers, and promote industrial infill development and redevelopment at vacant or underutilized sites near existing freight transportation infrastructure and with workforce access. This can help concentrate freight activity in areas that are already well positioned to support freight-intensive industry and reduce sprawl.

[31] Complete Streets are streets designed and operated to enable safe use and support mobility for all users. Those include people of all ages and abilities, regardless of whether they are travelling as drivers, pedestrians, bicyclists, or public transportation riders. For more information, visit www.transportation.gov/mission/health/complete-streets

Freight Priority Areas

The following recommendations stem from the identification of freight priority areas and require that priority areas be identified in order for subsequent recommendations to be effective.

4. **Identify freight priority areas** for further study and investment. Freight priority areas are typically those where community issue identification overlaps with identified preliminary freight corridors, as these areas represent top areas of concern along the most heavily traveled freight routes. Priority areas can be used to focus transportation funding resources to both improve freight mobility and preserve and protect the communities affected by the presence of freight movement. This plan has already identified areas of concern based on public input, which can be found in Chapter 6, but priority areas do not need to be limited to this list and should be reevaluated over time. The West Chester area has also been identified as a priority area for freight activity by the county for future studies.

5. **Conduct local freight studies** in areas of concern to identify more targeted recommendations that support the safe movement of both people and goods. These studies can identify specific projects and policies that consider freight activity and provide a baseline for advocating for funding support.

6. **Engage in multimunicipal collaboration** to align resources toward identified freight priority areas that cross municipal borders. Goods movement crosses municipal and county borders, with many trips beginning or ending outside of these government boundaries. Collaboration and the alignment of resources, especially in freight priority areas and along freight corridors that cross municipal boundaries, will encourage effective planning for truck movements.

Additional Recommendations

These additional recommendations do not neccessarily rely on the designation of a truck network and freight priority areas, and can be considered in any order. They can be used independently to support the goals of freight movement and communities.

7. **Preserve rail access** as a sustainable mode of transportation by identifying opportunities for industrial business access to rail. This may include supporting investment in maintenance of existing track to support the efficient freight movement that is already serving local businesses. Preserving rail access could also include attracting new rail served industry to the area through the conversion of noncompliant or nonconforming rail-adjacent land uses back to industrial land use.

8. **Upgrade or remove rail grade crossings** to improve or eliminate the interaction between rail and road users. Forty-two percent of at-grade rail crossings in the county contain passive warning devices such as cross-buck signs or lack any type of sign or signal. There is an opportunity to updating grade crossings to include flashing lights or gates to better bring this interaction to drivers' attentions. Fully removing grade crossings can also improve safety by

reducing interaction between modes, but is a more expensive option. Removing grade crossings can also reduce congestion at crossings that hold vehicle traffic up due to long trains like the identified issue at PA 926 and Wilmington Northern Branch crossing.

9. **Promote freight education** about the role and importance of goods movement in the community. Freight plays an important role in prominent industries such as agriculture and manufacturing that are vital to the economy and identity of the county. This plan provides an extensive freight profile that highlights goods movement across the county and the benefits of these industries that can be shared with residents, businesses, and public officials. Another way of promoting freight education would be through events that bring public interest to local industries and encouraging the sharing of operations and equipment. An example of this could be the Kennett Square Mushroom Festival and Growers Exhibit.

10. **Update municipal ordinances** to consider truck parking and queuing needs at proposed new developments that can reduce idling vehicles and conflicts with local traffic and communities. Ordinances could require the coordination of predevelopment activities to consider truck activity in the review of proposed developments. This may include encouraging on-site truck parking or a more in-depth traffic impact study review.

11. **Prepare for electrification** by requiring or incentivizing electrical infrastructure in the municipal code at newly developed or redeveloped sites for electric trucks and refrigerated container storage. Providing this infrastructure will not only incentivize electric fleets such as those becoming more popular for delivery vehicles, but can also be an opportunity to power truck cab air conditioning units so that engines can be turned off and provide connections for refrigerated cargo containers.

12. **Support the freight-intensive industry workforce** through employee access and workforce training. Employee access is a challenge faced by many industrial facilities, and especially warehouse and distribution facilities, since they often require large workforces that work across multiple shifts. Providing vanpool, carpool, or shuttle service options in the county allows local and regional employees the ability to take advantage of these employment positions. Providing local workforce training for these jobs will also benefit local job seekers in the county by providing them with the appropriate skills to fill industrial positions.

Invest in Freight Infrastructure

13. **Invest in freight infrastructure** that supports efficient goods movement in priority freight areas and the designated freight route network. Supporting freight movement along these corridors can reduce congestion and emissions. The following section outlines the funding sources available to help implement many of the identified action strategies.

Table 3: Action Strategies and Corresponding Freight Plan Goals

Action Strategy	Safety	Efficiency	Preservation and Identity	Environment	Economic Development	Community and Place
1. Designate a primary truck route network	●	●				●
2. Incorporate freight into complete streets recommendations	●					●
3. Encourage concentrated industrial development			●	●	●	
4. Identify freight priority areas		●				●
5. Conduct local freight studies	●	●				●
6. Engage in multimunicipal collaboration		●				
7. Preserve freight rail access			●			
8. Upgrade or remove rail grade crossings	●					●
9. Promote freight education			●			●
10. Update municipal ordinances				●	●	●
11. Prepare for electrification				●		●
12. Support the freight-intensive industry workforce					●	
13. Invest in freight infrastructure	●	●		●		

Funding Opportunities

Securing funding is a crucial step toward project implementation. There are a number of competitive grant programs available in the DVRPC region to help municipalities cover the cost of transportation improvements and additional planning studies recommended as a part of this plan. Possible funding sources to support the action strategies and recommendations in freight priority areas are detailed below.

Transportation and Community Development Initiative (TCDI)

The TCDI is an opportunity for DVRPC to support growth in individual municipalities of the Delaware Valley through planning initiatives that implement the region's long-range plan. TCDI grants support early stage planning, design, and feasibility studies. Eligible projects reinforce and implement improvements in designated centers and improve the overall character and quality of life within the region. Among the eligible activities are wayfinding plans and mobility elements of master plans.

Act 89 Multimodal Transportation Fund (MTF)

Many of the recommendations in this plan are multimodal in nature, making these improvements eligible for the Act 89 MTF program. The MTF provides grants to encourage economic development and ensure that a safe and reliable system of transportation is available to the residents of the commonwealth. The program is administered by PennDOT and the Department of Community and Economic Development (DCED) under the direction of the Commonwealth Financing Authority (CFA).

MTF–PennDOT

Eligible projects for PennDOT's MTF program include projects related to streetscape; bicycle and pedestrian facilities; improved signage; and improvements to an integrated transportation corridor in order to improve the productivity, efficiency, and security of goods movement to and from Pennsylvania ports.

MTF–DCED/CFA

On behalf of the CFA, the DCED accepts applications every year between March 1 and July 31 for multimodal projects. Project eligibility for this funding source is similar to that of the PennDOT MTF.

DCED Municipal Assistance Program (MAP)

The DCED MAP provides funding to assist local governments to plan for and efficiently implement a variety of services and improvements. Shared service activities and community planning are eligible for MAP funding. Community planning projects that could be funded through MAP include parts of comprehensive plans and land use ordinances. Activities related to the multimunicipal effort to develop updated ordinances and designate the truck route network and wayfinding system could fall under the eligibility of this funding program.

Transportation Alternatives Set-Aside Program (TA)

TA is a federal program administered by PennDOT and DVRPC. TA provides federal funds for community-based "nontraditional" surface transportation projects designed to strengthen the cultural, aesthetic, and environmental aspects of the nation's intermodal system. Projects must be directly related to surface transportation and be accessible to the public. TA funds are provided on a reimbursement basis. Eligible projects include design and construction of on-road and off-road trail facilities for pedestrians, bicyclists, and other nonmotorized forms of transportation. Projects must be authorized for construction within two years of the grant notification, and they must have formal

community support.

Congestion Management and Air Quality (CMAQ) Program

The DVRPC Competitive CMAQ Program funds transportation projects that will improve air quality and reduce traffic congestion in the DVRPC region. The implementation of the strategies outlined in this plan has the potential to reduce congestion and the number of idling trucks. Projects that demonstrably reduce air pollution emissions and help the region meet the federal health-based air quality standards are CMAQ-eligible. All CMAQ projects must come from the TIP and the program operates on a reimbursement basis, after the work is completed.

Rail Grade Crossing Elimination Program

This program, authorized under the Bipartisan Infrastructure Law, provides funding for highway-rail or pathway-rail grade crossing improvement projects that focus on improving the safety and mobility of people and goods. Eligible projects include grade separation or closure, safety improvements (including technological solutions), and the planning, environmental review, and design of an eligible project type.

Charging and Fueling Infrastructure (CFI) Discretionary Grant Program

The CFI Program is a competitive grant program administered by FHWA to funding supporting infrastructure for electric and alternative fuel vehicles. The CFI Program's funds are split into two categories: the Corridor Program which funds charging infrastructure within a mile of federally designated Alternative Fuel Corridors (AFCs) and the Community Program which funds projects at other publicly accessible locations. For information about application requirements and upcoming deadlines, visit the CFI page on Grants.gov.

Carbon Reduction Program (CRP)

CRP is a new program established by the Bipartisan Infrastructure Law to fund projects that reduce carbon emissions from the transportation sector. Once available, CRP funds in our region will be administered by DVRPC. These funds can be applied to projects that reduce the environmental and community impacts of freight movement.

Medium- and Heavy-Duty Zero-Emissions Fleet (MHD-ZEV) Pilot Grant Program

The MHD-ZEV Pilot Grant Program is being administered as part of the Driving PA Forward Initiative to assist government and non-government entities in replacing their aging diesel fright trucks with ZEVs. This grant is for local fleets predominantly operating in Pennsylvania.

Truck and Bus Fleet Program and Onroad Rebate Program

The Truck and Bus Fleet and Onroad Rebate Programs are both part of the Driving PA Forward Initiative that award rebates for replacing or repowering diesel fleets. Trucks and Buses from before model year 2009 operated by public and private entities are eligible for funding. Replacement vehicles can be newer diesel models, electric vehicles, or use another alternative fuel source. The Trucks and Bus Fleet Program is for fleets of 6 or more vehicles, while the Onroad Rebate Program is intended for fleets of 5 or fewer vehicles.

CHAPTER 8

Truck Network Designation

The Delaware Valley Regional Planning Commission's Freight Planning Program has developed a framework for truck route planning. The designation of this network is a locally owned process that requires a combination of data driven analysis, community engagement, education, and ultimately adoption and application. This process, outlined in this chapter, is the foundation for establishing a truck network to be used for planning and engineering to ensure appropriate consideration in a multimodal transportation system.

The designation of a truck network was an action strategy identified to support three of the six Freight Plan goals. The purpose of this chapter is to define the components of a truck network, define clear steps for the designation of this network, and to initiate the process by summarizing potential primary network components based on known truck activity and the analysis conducted as a part of this freight plan.

Truck Network Components

A truck route network is composed of multiple components that form the system. Not all of these components need to be communicated to road users through signage because some may be established primarily for planning purposes. The following recommended components are consistent with the standards established by DVRPC for truck route networks in communities throughout the region.

Truck-Appropriate Routes

Limited-Access Highways/Regional Freight Corridors

This component of the truck network represents the highest level of the truck-appropriate routes and is composed of regionally and nationally significant through routes. These include all Primary Highway Freight System components of the network, as well as major limited-access facilities or state and U.S. routes that serve regional travel. These facilities are often high-speed facilities that have limited interaction with pedestrians and other nonvehicular modes. The points at which this network interchanges with the surface street network are significant ingress/egress points for freight traffic to access the surface transportation system.

Primary Truck Routes

Primary Truck Routes create redundancy and serve to move trucks from the Regional Freight Corridors network to lower-level routes and final origin/destinations. These routes will require special consideration for the design of transit, bike, and pedestrian activity because they are likely to carry higher volumes of trucks, including tractor-trailers.

Secondary Truck Routes

Secondary Truck Routes fill the gaps in the network, providing key connections to commercial corridors and individual freight generators. Although at a lower intensity than the Primary Truck Routes, this network will need to accommodate trucks that continue to serve commercial and industrial generators. As such, additional consideration should be made in the design of transit, bike, and pedestrian facilities that coexist on these routes.

Last-Mile Connectors

Last-Mile Connectors serve to connect intermodal terminals and high-intensity freight centers to the rest of the freight network. These roads experience high volumes of heavy-duty freight traffic and will need to accommodate significant tractor-trailer volumes.

Truck-Restricted Routes

Also of importance to the truck route network are truck-restricted routes. These are streets that have been identified and/or signed as restricted for all trucks or some trucks based on size or weight.

Geometric and Weight Restrictions

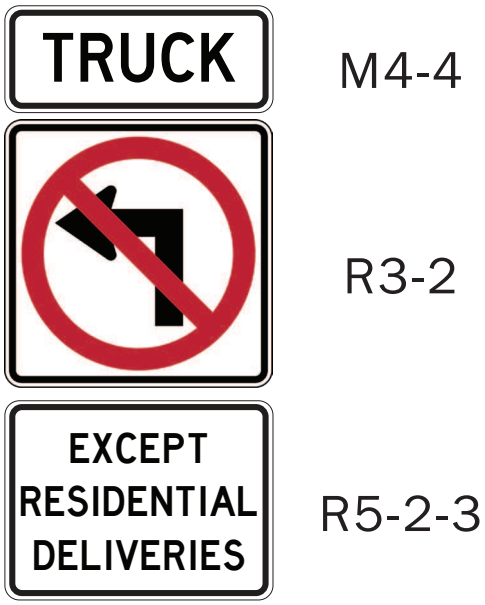
Geometric restrictions may limit the length, width, or height of a vehicle. The national standard trailer width is 102 inches, and 102-inch-wide trailers are permitted on all state roads in Pennsylvania unless there is a geometric constraint. In Pennsylvania, trailers are restricted to a maximum of 53 feet in length for a single trailer and 28½ feet for a twin trailer combination. Signage must be used to specify the length, width, or height limits of a road constrained beyond these standards.

Weight restrictions are applied to roads that are not structurally adequate to support heavy truck loads. These restrictions may apply to, and be posted by, the gross load of a vehicle or the axle weight.

Local Restrictions

Local restrictions are those where a municipality may restrict truck traffic using a “No Trucks” or “No Thru Trucks” sign with the option to allow an exception for local or residential deliveries using an “Except Local/Residential Deliveries” sign as seen in Figure 34. Local truck restrictions can be effective in helping to manage the movement of trucks that are not appropriate for certain streets. It is important that there be clear policy guidance for the use of these restrictions. This policy should include the requirement to undertake analysis about the type of truck behavior being addressed and the impact to the distribution of these trips as a result of any new restrictions. Failure to undertake a complete assessment of the goals and impacts of the truck restrictions prior to issuing them can result in more problems than they solve.

Figure 34: PennDOT Standard Local Truck Prohibition Advance Signage



Source: DVRPC

Designation Process

1 Preliminary Screening

Utilize data and existing knowledge of key generators throughout the network to designate a preliminary network that adequately serves the hierarchy of functions for trucks.

The first step in defining a truck route network is to identify key connectivity and potential route options. This step will produce a draft network of connections that links the top tier Regional Freight Corridors to the key freight generators and attractors. These locations are the points or corridors that truck trips are directly serving and may include industrial properties, commercial corridors, or intermodal terminals.

The network defined in this screening should serve the roles identified in the network component section above. These draft network segments should be matched to compatible existing classification systems that can serve the route function and the current classification of the streets.

Consideration of redundancy in the system is critical for the Primary routes to ensure that these facilities can accommodate through moves across the network in the event of a disruption to the Regional Freight Corridors.

OBJECTIVE

- Understand key generators and connectivity.
- Preliminary network matched to existing classification system.

KEY DATA

- Freight Trip Generation Model, DVRPC
- DVRPC Freight Centers, DVRPC
- Land use/zoning (industrial, Transit Oriented Development, high-density zoning)
- Intermodal Terminals, DVRPC
- Commercial Corridors

2 Data Evaluation

Utilize the preliminary network to further evaluate the individual components of the system and document the nature of activity on segments.

The second step of the process is the evaluation of the preliminary network for activity levels and accommodation of existing trip distribution. This data evaluation step is meant to measure the validity of the initial assumptions. It provides quantitative data to the process, measuring the activity levels for each of the draft network facilities. Truck trip trajectory data provides better contextual information on how trucks currently move through the network and guides decisions on the appropriate facilities to be recommended for inclusion in the final network.

OBJECTIVE

- Quantify route segment activity.
- Confirm route segment role/use.

KEY DATA

- Traffic classification counts, DVRPC
- INRIX Trips (truck trajectory data), DVRPC

3 Review and Adoption

Establish a clear understanding of the purpose of the network, build community consensus, and adopt regulatory standards to ensure the success and utilization of the truck network.

Once a final draft network has been established through the data evaluation step, the network will require additional review. During this step, internal and external stakeholder input is solicited on the recommended network. Formal review of the draft network should be conducted by the Pennsylvania Department of Transportation (PennDOT).

In addition to internal review, this step includes the critical process of public outreach and education on the network. Community education and outreach are intended to aid the public in understanding what the network is and is not and clearly articulating the value of the network designation in designing infrastructure that accommodates trucks while preserving quality-of-life.

The final component of the review and adoption of the network is the act of adopting the network designation.

OBJECTIVE

- Educate the public and promote buy-in on route designation.
- Formally adopt the truck route components.

KEY PLAYERS

- Local communities/residents
- Freight stakeholders
- Elected officials and local planners

4 Application

Communicate the designated network through signage and education plans as well as the implementation of design considerations in infrastructure improvements.

After adoption of the truck route network, the county must act to ensure the system is implemented. There are several applications for a truck route network. The primary use of the network is as a planning and design tool.

The network should also be communicated in county and municipal transportation maps and supported by a signage plan that reinforces the location of both appropriate and restricted routes. Local truck route maps and outreach to key freight generators may also be leveraged to address specific areas of interest or locations where problematic routing was identified in earlier steps. Land use and economic development policies can also be used to complement truck route network planning.

OBJECTIVE

- Communicate new network designation to key stakeholders.
- Implement improvements for truck freight.

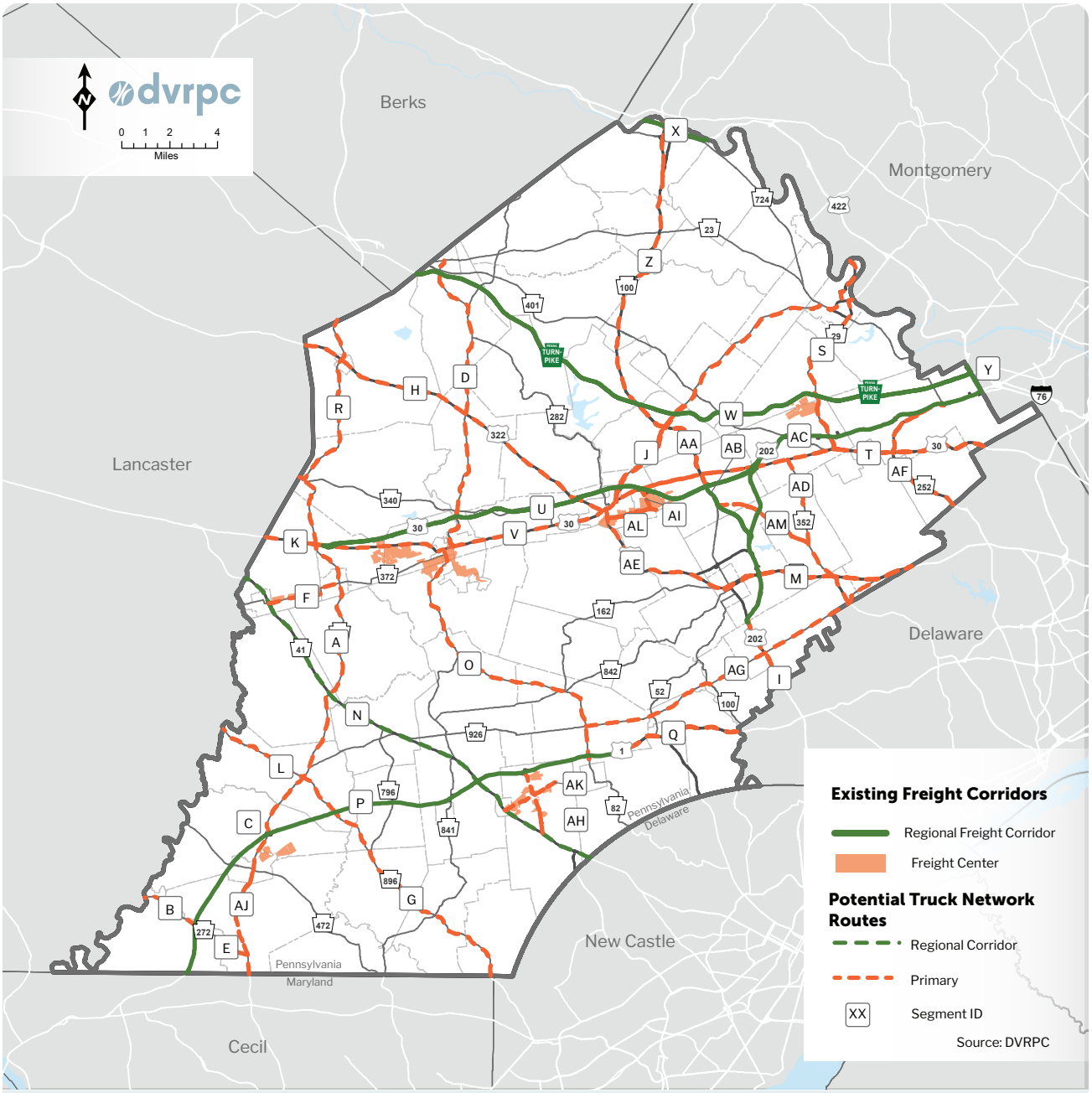
KEY APPLICATIONS

- Incorporation in county design guides and infrastructure planning
- Signage and maps to reinforce route designation for users

Preliminary Truck Network Screening

Potential Primary Truck Network road segments are identified in Figure 35. These roads have a functional classification of Major Collector or higher, carry truck trips that are an estimated 5-20 percent of total traffic on that road, and were identified through an analysis of INRIX truck trips data as currently being common routes utilized by trucks. These segments and their extents are detailed in Table 4. These segments represent those that have been preliminarily screened and evaluated as part of Steps 1 and 2 of the designation process. Further review would be needed to complete Step 3: Review and Adoption and Step 4: Application.

Figure 35: Potential Primary Network Components



CHARACTERISTICS OF POTENTIAL PRIMARY NETWORK COMPONENTS

- Road Classification: Interstate, Arterial Freeway, Principal or Minor Arterial, Major Collector
- Truck Trips: Estimated 5-20 percent of total traffic
- Common/ preferred routes currently being used by trucks as identified through an analysis of INRIX Trips data

Table 4: Potential Network Component Segments

Segment ID	Segment Name	Segment Start	Segment End
A	PA 10	US 1	US 30
B	PA 272	County Border	US 1
C	PA 10	Oxford	US 1
D	PA 82	US 30	County Border
E	PA 272	US 1	County Border
F	PA 372	PA 10	PA 41
G	PA 896	US 1	County Border
H	US 322	US 30	County Border
I	US 202	County Border	US 322
J	PA 113	County Border	US 30
K	US 30	County Border	Bypass Split
L	PA 896	County Border	US 1
M	PA 3	West Chester	County Border
N	PA 41	County Border	County Border
O	PA 82	US 1	US 30
P	US 1	County Border	PA 52
Q	US 1	PA 52	County Border
R	PA 10	US 30	County Border
S	PA 29	County Border	US 30
T	US 30	US 202	County Border
U	US 30 Bypass	Bypass Split	US 202
V	US 30	PA 10	US 202
W	I 76	County Border	County Border
X	US 422	County Border	County Border
Y	US 422	County Border	US 202
Z	PA 100	I 76	US 422
AA	PA 100	US 30	I 76
AB	PA 100	US 30	US 202
AC	US 202	US 322	County Border
AD	PA 352	US 30	County Border
AE	US 322	West Chester	US 30 Bypass
AF	PA 252	County Border	US 202
AG	PA 926	PA 82	County Border
AH	Newark Rd	US 1	PA 41
AI	Quarry Rd	US 30	Boot Rd
AJ	Barnsley Rd	Oxford	PA 272
AK	Baltimore Pike	PA 41	Chambers Rd
AL	Boot Rd East	US 322	Quarry Rd
AM	Boot Rd West	PA 100	PA 352

Photo Source: DVRPC

Conclusion

The existing freight transportation system is an asset to Chester County and supports industries that are vital components of the county's economy and identity. Understanding the freight activity that supports growing businesses and communities is vital to planning for the future of safe, efficient, and reliable transportation infrastructure.

This plan highlights the benefits of freight-intensive industries across the county and proposes investment in the transportation system that capitalizes on existing infrastructure and land use to encourage economic growth while also supporting the safe, efficient, and competitive transport of freight and people. Freight-generating businesses employ many, contribute to almost one-fourth of the county GDP, and are vital aspects of the county identity. Freight that interacts with the lives and travel of residents, though, can have an impact on the environment and sense of community and place.

Freight planning and investment are critical to meet the development and economic growth that the county is experiencing and to mitigate the impacts of changing land use and freight activity. The goals established in this plan set out a framework for comprehensively considering freight and directly support the clear vision established by the Chester County Planning Commission's *Landscapes3 Comprehensive Plan*. These goals are the following:

- Support and implement freight safety improvements and initiatives;
- Increase efficiency of goods movement and maintain reliable mobility for trucks;
- Promote education about freight that supports vital industries and county identify, and support industrial redevelopment opportunities that preserve open space;
- Encourage new technologies that offer more sustainable options for freight transportation and freight efficiency;
- Support industrial redevelopment opportunities and infrastructure for economic growth; and
- Coordinate with communities to ensure mobility for freight that is consistent with local and regional priorities.

The strategies and actions put forth will build upon the existing county efforts to embrace places, enhance choices, and engage communities while continuing to balance preservation and growth. Critical action strategies for accomplishing this are the following:

- Designate a truck network so that context-appropriate design choices can be made that protect all road users;
- Invest in transportation infrastructure along the designated network that supports efficient goods movement;
- Promote infill development and redevelopment that concentrates freight activity near supportive infrastructure;
- Preserve rail access as a sustainable mode of transportation that reduces the number of trucks on the roads; and
- Invest and prepare for electrification and alternative fuels, especially for new and redeveloped sites.

Chester County is a vibrant place to live, work, and visit, and this plan lays the foundation for a future of freight that supports economic development and enhances the quality of life for residents.

Chester County Freight Plan

COUNTY FREIGHT PROFILE

Publication Number:
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Date Published:
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Geographic Area Covered:
Chester County

Key Words:
Freight, Industrial Development, Freight Centers, Truck Route, Freight Rail, Freight-Intensive Industries

Abstract:
At the request of the Chester County Planning Commission, the *Chester County Freight Plan* was undertaken by the Delaware Valley Regional Planning Commission's (DVRPC) Freight Programs with the guidance of a Study Advisory Committee. The purpose was to advance objectives within the Prosper and Connect goal areas of *Landscapes3 Comprehensive Plan*. This plan documents an overview of roadway infrastructure, railway infrastructure, and current conditions analysis; identification of key freight-generating industries and their presence in the county; a summary of commodities and modal movement in the county; industrial development patterns and trends; and overview of freight activity at each of the seven identified freight centers. It also contains an Action Plan that establishes a future vision for freight in the county centered around six goals: Safety; Efficiency; Preservation and Identity; Environmental; Economic Development; and Community and Place.

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