



# The Impact of Transportation in the Logistics Industry

2020

How are land use and transportation affected by the region's booming warehousing clusters?

## The Institute

*Turning Information into Insight*

*A collaboration among Geisinger Commonwealth School of Medicine, Johnson College, Keystone College, King's College, Lackawanna College, Luzerne County Community College, Marywood University, Misericordia University, Penn State Scranton, Penn State Wilkes-Barre, The Wright Center for Graduate Medical Education, University of Scranton & Wilkes University*

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## Introduction

One of the most significant economic transitions occurring in recent years in Northeastern Pennsylvania is the growth of transportation-centric industries – particularly, distribution centers, freight trucking, and other associated industries. A large share of these industries have grown in business parks along the Interstate 81 corridor. Growth has not abated in recent years, and regional developers and economic development agencies have made available additional vacant land suitable for further development, and new business parks or expansions to existing parks have been proposed. Given this industry’s reliance on surface transportation and clustering in business parks outside of the region’s urban cores, there will continue to be numerous implications on land use and transportation planning and infrastructure investment.

This report was prepared as a survey of how this industry has grown in Northeastern Pennsylvania, where further growth can be expected, and what a full build-out scenario may mean for transportation planning in Northeastern Pennsylvania. In other words, in light of this growth in transportation-centric industry and decentralization of employment, what kind of transportation infrastructure and land use planning tools are necessary for continued growth and sustainability?

## Research Methods

For the purposes of this report, the industrial transportation and distribution (or logistics) cluster was defined to include several related industries involving the storage and distribution of goods, road and rail transportation of goods, and related support industries. The industries in the cluster include:

- Warehousing and Storage (NAICS 4931)
- General Freight Trucking (NAICS 4841)
- Specialized Freight Trucking (NAICS 4842)
- Freight Transportation Arrangement (NAICS 4885)
- Support Activities for Road Transportation (NAICS 4884)
- Rail Transportation (NAICS 4821)
- Support Activities for Rail Transportation (NAICS 4882)

Data on traffic (including average daily traffic (ADT) and volume) presented in this report were sourced from PennDOT via the TIRE system.

## Regional Industry Growth Trends

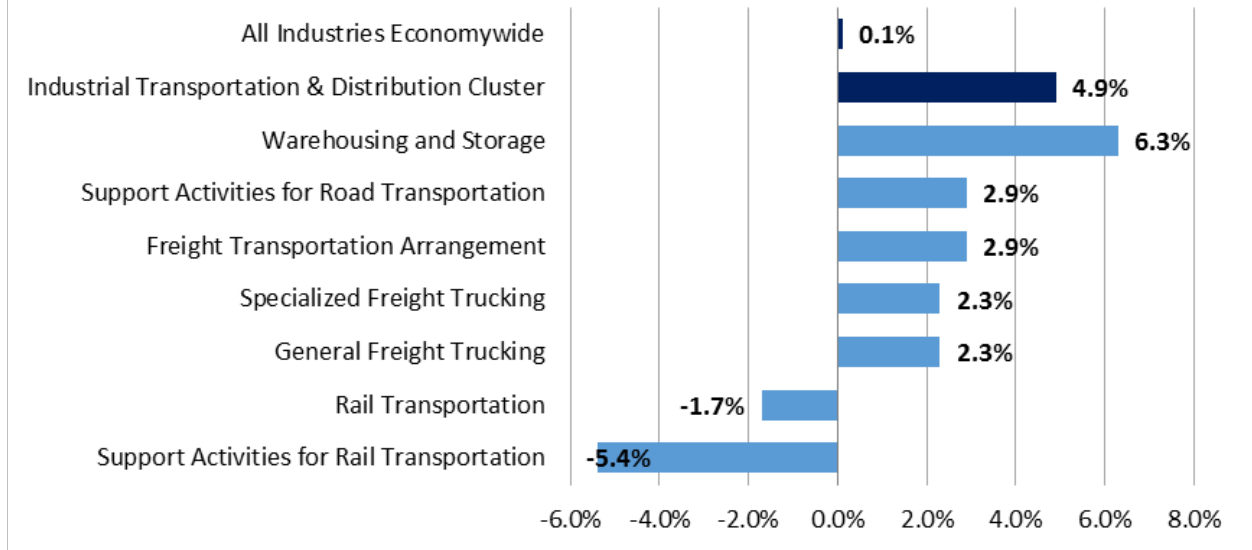
The logistics industry has been a key driver of growth in the Northeastern Pennsylvania economy. The Industrial Transportation and Distribution Cluster is made up of several component industries, including warehouses (which includes distribution centers), freight trucking, rail transportation, and certain support industries. Together, this cluster has seen nearly five percent growth in employment in the two county region in the last decade, compared to an economy wide growth rate of only about 0.1 percent. The warehousing and storage component makes up about 70 percent of total employment in the industry.

| Industrial Transportation & Distribution Cluster: Regional Data (2019) |  |                  |                  |                   |                             |                              |
|--|--|------------------|------------------|-------------------|-----------------------------|------------------------------|
| NAICS  | Industry   | Total Employment | Avg. Annual Wage | Location Quotient | 2009-2019 Employment Change | 2009-2019 Avg. Annual Change |
| 4931   | Warehousing and Storage                          | 12,009           | \$39,362         | 6.25              | 5,519                       | 6.3%                         |
| 4841   | General Freight Trucking                         | 3,462            | \$55,305         | 1.78              | 716                         | 2.3%                         |
| 4842   | Specialized Freight Trucking                     | 610              | \$50,370         | 0.79              | 124                         | 2.3%                         |
| 4885   | Freight Transportation Arrangement               | 465              | \$51,532         | 1.11              | 115                         | 2.9%                         |
| 4884   | Support Activities for Road Transportation       | 394              | \$44,875         | 1.78              | 98                          | 2.9%                         |
| 4821   | Rail Transportation                              | 151              | \$77,969         | 0.44              | -28                         | -1.7%                        |
| 4882   | Support Activities for Rail Transportation       | 40               | \$44,868         | 0.67              | -29                         | -5.4%                        |
|  | Industrial Transportation & Distribution Cluster | 17,132           | \$43,775         | 3.01              | 6,515                       | 4.9%                         |
|  | Total - All Industries                           | 255,143          | \$43,944         | 1.00              | 3,684                       | 0.1%                         |

Data source: Chmura Economics

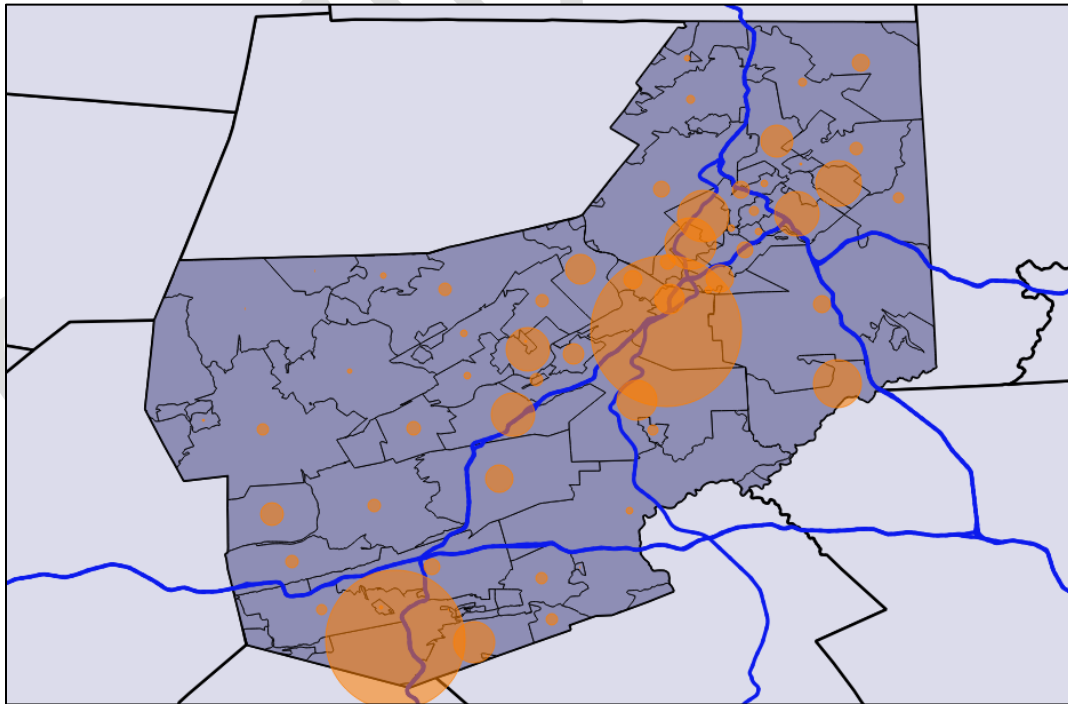
Warehousing and storage also saw the most significant growth of all components of the industrial transportation and distribution cluster, at 6.3 percent in the last ten years. However, several support industries and general and specialized trucking also outperformed region economic growth during this time. Of the subindustries included in the cluster, only rail transportation and rail support activities saw employment contract during this time, indicating the primacy of road transportation for movement of goods by these firms.

## 10-Year Historic Annual Employment Growth



Data source: Chmura Economics

The map below shows ZIP code level employment in the industrial transportation & distribution cluster. Each circle represents the relative employment total of that ZIP code. Symbols are centered within ZIP codes so may not accurately reflect spatial patterns within ZIP codes. Interstate highways are also shown on the map.



Data source: Chmura Economics

## Spatial Pattern of Industry Growth

As shown in the maps above, there are clear spatial patterns of logistics industry employment within the two-county region. Several of the ZIP codes with the highest number and/or most significant growth of industry employment correspond with several geographic clusters of industrial and business parks in the region. These parks or groups of parks are centered on Hazleton and the surrounding areas, Hanover Township in Luzerne County, Pittston and Jenkins Townships in Luzerne County, and the Lackawanna Valley communities of Dunmore, Throop, Olyphant, and Jessup.

As this industry is dependent on transportation infrastructure (primarily road infrastructure), it can be seen that industry developments closely follow the interstate highway system, by which goods can be moved between states by heavy truck. The region's largest cluster in the Pittston area is located near the junction of Interstate 81 and the Northeast Extension of the Pennsylvania Turnpike (Interstate 476). The next largest, in Hazle Township, is located near the junction of Interstates 81 and 80. Lackawanna County's industry cluster in the Valley View area is located along the Casey Highway, near Interstates 81, 84, and 380. Finally, the Hanover Township industry cluster is located close to Interstate 81 approximately equidistant between Interstate 80 and the Pennsylvania Turnpike.

### Future Growth Scenarios

Economic growth in these areas is being driven by a combination of private developers and economic development agencies. However, continued development opportunities appear to be present at each of the major industrial park clusters mentioned above.

#### **Lackawanna**

In the Lackawanna County area, The Scranton Plan's online property database showed at least five available sites in Meya Park, Jessup, ranging in size from 2 to 14 acres. At least four sites in the Valley View Business Park were listed on the database, and numerous development sites appear on maps published by The Scranton Plan for Valley View Business Park in Jessup. Adjacent land is identified for potential development of Archbald Business Park Phase I and II, totaling 257 acres in Archbald.<sup>i</sup> <sup>ii</sup> Each of these sites is proximate to interchanges with US 6, with direct access to Interstates 81, 84, and 380 via US 6.

#### **Pittston**

The vicinity around the interchange of Interstate 81 and the Pennsylvania Turnpike (I-476) also has numerous building opportunities. An online search of properties offered by Mericle Commercial Real Estate Services in the Pittston area yielded 32 properties in the CenterPoint Commerce and Trade Park East, located in Jenkins and Pittston Townships. Of these properties, some were existing buildings or building expansion opportunities, though at least 12 were build-to-suit lots.<sup>iii</sup> This business park and surrounding areas are connected via surface streets to PA 315, which provides access to the Interstates 81 and 476 either northbound or southbound within one mile of the park entrance.

Grimes Industrial Park, located just to the north of CenterPoint East, is located primarily in Pittston Township with a smaller portion in Dupont Borough. A 2014 map published by Penn's Northeast shows a number of building lots available for development, totaling nearly 200 acres. More recent aerial images



of the park indicate that while some recent development has occurred, several significant building sites remain available. Additional vehicle access to this park was expanded through the recent extension of Navy Way Road, providing a direct link to Exit 178 of Interstate 81 near Wilkes-Barre Scranton International Airport.

### **Hanover Township**

The adjacent business parks of Hanover Crossings and Hanover Industrial Estates are located near PA 29 southwest of Wilkes-Barre. Several recent additions to these sites have appeared to reduce the readily available vacant land in the vicinity of the Exits 1 and 2 of PA 29. According to maps updated in January 2019 by Penn's Northeast, there are several small to mid-size buildings and lots still available within this area, as well as a larger property (48 acres) available for development in Hanover Crossings.<sup>iv</sup>

### **Hazle Township/Humboldt**

A large cluster of industrial transportation and distribution jobs is centered around the Humboldt Industrial Park, located mainly in Hazle Township. The park is located on both sides of PA 924, west of Exit 143 of Interstate 81. According to a park map last updated by CAN-DO in early 2020, the areas south of PA 924 are largely developed, though several developer-owned and CAN-DO-owned lots remain available. A greater number of available lots are in the Humboldt North and Humboldt Northwest portions of the development. Excluding developer-owned and under contract properties, 19 properties amount to over 400 acres appear to be available for development according to the CAN-DO map.<sup>v</sup>

Furthermore, published reports have indicated Mericle Commercial Real Estate plans to develop an additional 840 acres on the east side of Route 81 into a business park to accommodate warehousing, flex buildings, and distribution centers. Hazle Township officials have granted a rezoning of this land, which is projected to accommodate up to 6,600 workers according to reports.<sup>vi</sup>

These descriptions do not represent a complete inventory of possible sites suitable or available for industrial transportation and distribution industry development. Instead, they represent an illustration of the significant additional activity that would be present in a full build-out scenario of economic development. Furthermore, other potential sites for development exist in other business parks or elsewhere in the region; the focus of this analysis is on development in and around the largest existing employment centers.

It is beyond the scope of this report to forecast a specific number of industrial transportation and distribution jobs that will be present in the region at any future time point, as many variables exist, including the pace at which the remaining land listed above is developed, development of new industry clusters outside these centers, and uncertainty as to how many jobs will be associated with individual developments, which vary by firm. Furthermore, overall economic uncertainty related to COVID-19 may cause medium to long-term economic disruptions in many sectors that cannot be fully understood at the time of publication.

Nonetheless, it appears likely that the region is poised for future industry growth. Available land and fixed infrastructure already in place (primarily highways) will continue to be available in the coming years. Land available or proposed for industrial development in and around existing parks numbers in the hundreds or thousands of acres in both counties, and many incentives continue to be available, such

as KOZ and/or LERTA status offering tax abatement on some properties. Despite the economic uncertainty brought about by COVID-19, it has also underscored the critical importance and growing prominence of ecommerce, which drives a significant portion of the logistics industry.

## Traffic Patterns

There are several reasons why transportation and distribution industries may be particularly impactful on regional traffic patterns. First, these employment centers are located in business parks outside the densest population centers of the region, necessitating that many employees commute by car. Furthermore, the nature of these firms necessitates the receiving and shipping of goods, primarily by truck. Because much of the freight coming into and out of distribution centers originates from or has a destination outside the region, the Interstate Highway system is of particular importance. The tables below show the most recent average daily traffic (ADT) statistics from PennDOT, as well as either an observed or estimated count of trucks.

| <b>Jessup &amp; Surrounding Area Selected Traffic Statistics</b> |            |        |       |         |
|--|------------|--------|-------|---------|
| Description  | Count Date | ADT    | Truck | Truck % |
| Veterans Memorial Dr. between PA-247 and Meya Dr                 | 6/26/2018  | 1,789  | 282   | 15.8%   |
| PA-247 between US 6 and Alerigi Dr                               | 11/14/2017 | 8,447  | 422   | 5.0%    |
| Valley View Dr.  | 6/26/2018  | 5,048  | 545   | 10.8%   |
| Eastbound Off Ramp from US-6 to PA-247                           | 9/19/2017  | 4,661  | 2,330 | 50.0%   |
| Eastbound On Ramp from PA-247 to US-6                            | 9/19/2017  | 1,320  | 660   | 50.0%   |
| Westbound Off Ramp from US-6 to PA-247                           | 9/19/2017  | 1,423  | 712   | 50.0%   |
| Westbound On Ramp from PA-247 to US-6                            | 9/19/2017  | 4,823  | 2,412 | 50.0%   |
| Casey Highway (US-6) north of PA-247                             | 10/22/2019 | 21,278 | 1,850 | 8.7%    |
| Casey Highway (US-6) south of PA-247                             | 10/17/2019 | 26,050 | 2,503 | 9.6%    |

| <b>Pittston Township, Jenkins Township &amp; Surrounding Area Selected Traffic Statistics</b> |            |        |       |         |
|---|------------|--------|-------|---------|
| Description   | Count Date | ADT    | Truck | Truck % |
| Keystone Ave between PA-315 and Centerpoint Ave   | 11/16/2017 | 15,808 | 2,895 | 18.3%   |
| Suscon Rd between Armstrong Rd and Commerce Rd  | 9/27/2018  | 5,700  | 741   | 13.0%   |
| Navy Way Road between Commerce Rd and Roundabout  | 9/27/2018  | 3,728  | 908   | 24.4%   |
| On Ramp from PA-315 South to I-81 South (Exit 175)  | 9/13/2012  | 8,101  | 566   | 7.0%    |
| Off Ramp from I-81 South to PA-315 South (Exit 175)   | 9/13/2012  | 7,119  | 498   | 7.0%    |
| On Ramp from PA-315 North to I-81 North (Exit 175)  | 9/13/2012  | 8,252  | 577   | 7.0%    |
| Off Ramp from I-81 North to PA-315 North (Exit 175)   | 9/13/2012  | 8,594  | 603   | 7.0%    |
| PA 315 Northbound north of Oak St/Keystone Ave  | 10/31/2019 | 12,949 | 1,277 | 9.9%    |
| PA 315 Southbound north of Oak St/Keystone Ave  | 10/31/2019 | 12,496 | 1,198 | 9.6%    |

| Hanover Township & Surrounding Area Selected Traffic Statistics |            |        |       |         |
|---|------------|--------|-------|---------|
| Description   | Count Date | ADT    | Truck | Truck % |
| Off Ramp from PA-29 West to Main Street (Exit 1)                | 10/19/2017 | 4,646  | 326   | 7.0%    |
| On Ramp from Main Street to PA-29 East (Exit 1)                 | 10/19/2017 | 4,220  | 295   | 7.0%    |
| Off Ramp from PA-29 West to S. Main Street (Exit 2)             | 10/19/2017 | 1,906  | 152   | 8.0%    |
| On Ramp from S. Main Street to PA-29 East (Exit 2)              | 10/19/2017 | 1,931  | 154   | 8.0%    |
| Ramp from PA-29 East to I-81 South                              | 9/4/2014   | 2,481  | 173   | 7.0%    |
| Ramp from PA-29 East to I-81 North                              | 10/18/2016 | 8,062  | 725   | 9.0%    |
| Ramp from I-81 South to PA-29 West                              | 9/4/2014   | 10,840 | 759   | 7.0%    |
| Ramp from I-81 North to PA-29 West                              | 10/19/2016 | 2,184  | 153   | 7.0%    |

| Humboldt & Surrounding Area Selected Traffic Statistics |            |        |       |         |
|---|------------|--------|-------|---------|
| Description   | Count Date | ADT    | Truck | Truck % |
| PA-924 Westbound, west of Commerce Dr                   | 9/20/2018  | 10,196 | 837   | 8.2%    |
| PA-924 Eastbound, west of Commerce Dr                   | 9/20/2018  | 10,230 | 1,606 | 15.7%   |
| Commerce Dr, between Station Circle and Forest Rd       | 9/27/2017  | 4,768  | 319   | 6.7%    |
| PA-924, between Oakridge Rd and County Line             | 5/7/2019   | 6,878  | 569   | 8.3%    |
| Off Ramp from I-81 South to PA-924                      | 9/22/2016  | 5,538  | 388   | 7.0%    |
| On Ramp from PA-924 to I-81 South                       | 9/22/2016  | 3,639  | 254   | 7.0%    |
| Off Ramp from I-81 North to PA-924                      | 9/22/2016  | 4,065  | 285   | 7.0%    |
| On Ramp from PA-924 to I-81 North                       | 9/22/2016  | 5,508  | 386   | 7.0%    |

Data Source: Pennsylvania Department of Transportation via TIRE

Several of the traffic count locations that represent direct access points to business parks (such as Keystone Avenue, Navy Way Road, Veterans Memorial Drive, PA-924, and the Exit 3 interchange ramps between PA-247 and the Casey Highway) have particularly high percentages of ADT comprised of trucks.

### Trends over Time

Data for several recent time points was available for traffic volumes at three key business park access interchanges from the National Highway System – Exit 3 of the Casey Highway, which provides the most direct access to Meya and Valley View business parks, Exit 1 of the South Cross Valley Expressway (PA-29), which provides a link between the Hanover Township business parks and Interstate 81, and Exit 143 of Interstate 81 which provides the most direct access to the Humboldt Industrial Park.

| 2 Year Percent Change in Volume for Selected Business Park Interchanges |               |               |               |               |               |               |                   |
|---|---------------|---------------|---------------|---------------|---------------|---------------|-------------------|
|   | 2015-<br>2017 | 2014-<br>2016 | 2013-<br>2015 | 2012-<br>2014 | 2011-<br>2013 | 2010-<br>2012 | Total %<br>Change |
| Casey Highway Exit 3 Total  | 23.6%         |               | 6.0%          |               | 18.2%         |               | 54.9%             |
| PA-29 Exit 1 (Westbound Off, Eastbound On) Total                        | 22.6%         |               | -4.3%         |               | 6.6%          |               | 25.1%             |
| I-81 Exit 143 Total   |               | 3.2%          |               | 19.0%         |               | 5.0%          | 29.0%             |
| <b>Average of all 2 year time periods:</b>                              |               |               |               |               |               |               | <b>34.3%</b>      |

Data Source: Pennsylvania Department of Transportation via TIRE

Each of these interchanges has seen significant volume change over six years – 55 percent, 25 percent, and 29 percent, respectively. Exit 3 and Exit 1 saw increases in excess of 20 percent over just the most

recent two year time period. Overall, the three interchanges saw an average of 11 percent traffic volume growth between each two year data point.

This traffic volume growth roughly correlates with expansion of the business parks discussed. Further new developments are almost certain to bring about further growth in traffic volumes and/or ADT.

### Commuting

Commuting is also a factor in traffic trends affecting business parks. Due to the location of existing business parks outside the region’s largest population centers, employees frequently commute by private automobile. While public transit serves each of the employment centers analyzed here, many employees might live in areas where they cannot easily access busses that serve the business parks.

In 2019, The Institute’s Planning, Land Use, Transportation, and Infrastructure Task Force published an analysis of workers employed in census tracts covering these four employment clusters (regardless of industry). That report showed that across the four employment centers analyzed, no more than 25 percent of employees live in census tracts served by the bus routes that serve that employment center.

| <b>Key Findings: The Institute’s 2019 Report on Employment Center Commuting Patterns</b> |   |  |   |
|--|---|--|---|
| <b>Employment Center</b>   | <b>Estimated Employment in Selected Tracts*</b> | <b>Employees Living in Tracts with Transit Route that Serves Employment Center</b> | <b>Percent in Tracts with Transit Route that Serves Employment Center</b> |
| Mid Valley   | 3,147   | 673  | 21.4%   |
| Hanover  | 6,298   | 1,576  | 25.0%   |
| Humboldt   | 5,577   | 969  | 17.4%   |
| Pittston   | 6,394   | 1,277  | 20.0 %  |
| <b>Overall</b>   | <b>21,416</b>                                   | <b>4,495</b>   | <b>21.0%</b>  |

\* Employment figures used in this analysis are now at least two years behind current, so employment totals may have changed.

There are nonetheless nearly 5,000 industrial park workers living in census tracts served by direct transit to an employment center, or 21 percent of all workers in the four employment centers analyzed. While some of those residents likely do not live within walking distance of a bus stop or would not be able to use mass transit to commute because of scheduling, it is also likely that at least some industrial park workers could comfortably use transit to commute to work. Overall, commuting to work via mass transit remains low throughout the region.

### Transportation & Land Use Implications

Due to the nature of this industry cluster as land-intensive and transportation-centric, the planning implications are significant. A core component of these firms business involves shipping and transporting goods over long distances, particularly using the Interstate Highway System. Thus, a key planning principle is the orderly and efficient movement of freight from distribution centers to Interstate Highways.

Ensuring that appropriate transportation systems are in place to handle current and future freight and commuter traffic is also essential for the continued success of the firms themselves. Supply chain research has shown that shippers and carriers face significant cost burden from delays and reduced reliability caused by traffic congestion, and the fastest growing form of congestion delay is on urban roads and highways.<sup>vii</sup>

Increased truck and commuter traffic also affects air quality and greenhouse gasses linked to climate change. Between 1990 and 2006, EPA data showed green gas emission growth of 27.6 percent from transportation, the largest growth of any sector except for electric power generation during that time. Within transportation, emissions from medium and heavy-duty trucks and busses grew by 76 percent, higher than any other vehicle type.<sup>viii</sup> Nonetheless, overall air quality has consistently been good in the region according recent years according to EPA air quality data.<sup>ix</sup>

Wear and tear on the region's roadways is another implication of a potentially higher share of truck traffic. Conditions such as fatigue cracking and rutting reduce the life of pavement and worsen travel conditions. Studies have associated increased vehicle weight with pavement damage.<sup>x</sup>

Inadequate facilities for truck parking may also be a growing issue. As truck volumes grow, a need for safe and appropriate truck parking/stopping facilities will also grow.

Continued growth in this industry group will require continued refinement of transportation and land use planning regimes. As freight and commuter traffic grows in parallel to serve new developments that emerge, planning decision-makers must consider both highway capacity as well as transportation alternatives. In order to reduce the burden of business park workers commuting in private automobiles, stakeholders must support efforts to diversify transportation mode share. Public transit, carpools or vanpools, and enhanced bicycle and pedestrian infrastructure connecting nearby population centers with business parks could help alleviate congestion as freight traffic grows. One challenge is a limited provision for bus stops and sidewalks in most existing business parks.

Rail facilities could also be an important asset to both facilitate further economic development and reduce negative impacts of increasing truck traffic volumes. The intermodal freight facility in Taylor, which is in close proximity to the Pittston and Lackawanna County employment centers, offers an alternative mode to reduce highway truck miles, thereby reducing highway wear-and-tear costs and congestion. Opportunities to utilize air freight could also be important given the close proximity of several of these employment centers to Wilkes-Barre Scranton International Airport. Finally, restoring passenger rail service to the area could help alleviate congestion on the Interstate 80 and 380 corridors by reducing the number of passenger car trips from Northeastern Pennsylvania into Northern New Jersey and New York City via those highways. Switching a significant share of these 28,000 commuters<sup>xi</sup> to non-highway modes could help to counterbalance growth in truck volumes due to economic development.

Planning of business parks themselves can also be a useful tool. Industrial parks in Asia have sought to more fully integrate with nearby central cities to create a more symbiotic relationship, in a reversal of the historic American model of economic decentralization reducing the vibrancy of urban centers. The model employed in China also emphasizes mixed uses, including residential development within and near industrial parks.<sup>xii</sup>

## Conclusions, Recommendations, and Next Steps

The logistics industry cluster represents a transformative change to our region, both economically and in terms of transportation needs, and continued growth is expected due to the region's advantageous position relative to the Interstate Highway System and sustained emphasis on ecommerce over brick and mortar commerce in many industries. Continued growth of this industry cluster helps to shape regional transportation priorities, and the region must plan for its transportation network to adequately respond to full build-out of existing and proposed business parks.

Connecting freight traffic with limited access highways as quickly and efficiently as possible should be the focus of highway infrastructure improvements. Several projects have already been proposed, such as an additional interchange along the Casey Highway to serve future phases of development of the Valley View business park in Jessup and Archbald, and extension of PA-424 south of Hazleton to provide an additional access point to Humboldt Industrial Park, enabling diversion of some traffic from Exit 143 to Exit 141 of Interstate 81. Similarly, the recent extension of Navy Way Road provided additional access to Pittston Area business parks directly from I-81 via the reconstructed Exit 178. Projects such as these could help reduce congestion and wear-and-tear on local streets by providing freight traffic with the shortest feasible travel distance to nearby limited access highways, and additional access points to those major highways allows for better system redundancy and alternative routes for diversion of traffic from existing busy intersections which may be at or near their design capacity. Pavement damage could also be prevented by reducing truck miles traveled on local streets that may not be designed for significant truck traffic.

While projects to increase road or intersection capacity may be warranted in some cases, building up highway capacity should not come at the expense of bike, pedestrian, or transit safety and accessibility. There is a need for parallel efforts to grow multimodal transportation options in order to better manage limited highway capacity. As The Institute found in prior research, the limited percentage of workers in several key employment centers who do have transit access to work without a transfer illustrates the need for additional collaboration on new approaches to solving transportation problems and meeting workforce needs of businesses. Work in this area is already underway, such as through planned public-private partnerships between transit operators and private employers. Increasing the reach of fixed-route transit into industrial parks and better coordination or consolidation of services across the several transit providers could also build transit system capacity. Furthermore, local governments can use zoning and subdivision and land use ordinances in order to promote creation of bus stops, sidewalks, and other bike or pedestrian infrastructure in new developments.

There may also be opportunities to integrate additional uses in and around business parks in order to reduce automobile trips. One example is planning for convenience shopping, fast food, daycare, gyms, or service businesses within or adjacent to business parks. New housing or mixed use developments can also be focused on sites near business parks in order to reduce the number of length of automobile trips – the Cranberry Creek development site, adjacent to Humboldt Industrial Park and the newly proposed business park in Hazle Township, is one example already proposed for development. Planners should ensure that existing zoning and land development administration allows for these mixed use opportunities, and developers and economic development agencies can work in partnership to identify appropriate land for new housing development near employment centers when appropriate. Proximity

of housing to industrial development must also balance the need to preserve quality of life for residential areas that may be negatively impacted by truck traffic or noise.

Finally, as increased truck transportation has been associated with greenhouse gas emissions and congestion negatively impacts air quality, long-term planning and policymaking should emphasize transportation of goods using renewable fuels and/or alternative modes where feasible. This includes capitalizing on assets to facilitate rail and air freight, where feasible, and promoting alternative modes of transportation more generally in order to reduce congestion and negative impacts on air quality and infrastructure wear-and-tear.

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## Endnotes

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- <sup>viii</sup> "Transportation GHG Emissions and Trends." U.S. Department of Transportation.
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- <sup>xi</sup> Lackawanna Cut-Off Restoration – Commuter Rail Study. Prepared by GPI for Pennsylvania Northeast Regional Railroad Authority and Lackawanna County Department of Planning and Economic Development. December 2019.
- <sup>xii</sup> Zhao, Sidong, Bi, Xiaojia, Zhong, Yuan, and Li, Lin. "Chinese industrial park planning strategies informed by American edge cities' development path - case study of China (Chongzuo)- Thailand Industrial Park"