

# Municipal Resources

## Driving Smart Growth #23



Photo: Oleksii Hrecheniuk, vecteezy.com

## Objective

To provide an overview of planning for future needs of transportation capacity balanced with land use development

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This historical map shows the interstate interchange and PA 465 Allen Road Corridor prior to the land use transportation study being conducted.

Photo: PASDA Pennsylvania Imagery Navigator

Protecting transportation capacity through land use planning involves strategically directing growth to align with infrastructure capabilities, thereby managing congestion, enhancing mobility, and balancing the overall efficiency of the roadway network in a region. In Pennsylvania, historically land use and zoning planning has been about providing for all uses in a municipality and defining zoning districts that avoid conflict and that align with the existing infrastructure. Later, when large scale developments take place, the municipalities and PennDOT then have to react to manage roadway capacity, congestion, safety issues, and intersection controls. Once an area or region develops, addressing right-of-way, access, intersection, and interchange capacity can become expensive and difficult.

Prior to an area fully developing, a community or group of communities should consider conducting a land use and transportation study that will help them to model different build out scenarios for both undeveloped and underdeveloped land based upon the zoning and subdivision regulations that are in place as well as market trends for the area.

A land use and transportation study involves:

- Defining the geographic study area to be analyzed and problems to be solved,
- Collecting and analyzing the current built environment and zoning to match density with infrastructure capacity,
- Projecting future development on undeveloped and underdeveloped parcels in the study area based upon zoning build out as well as current and projected market conditions or demand,

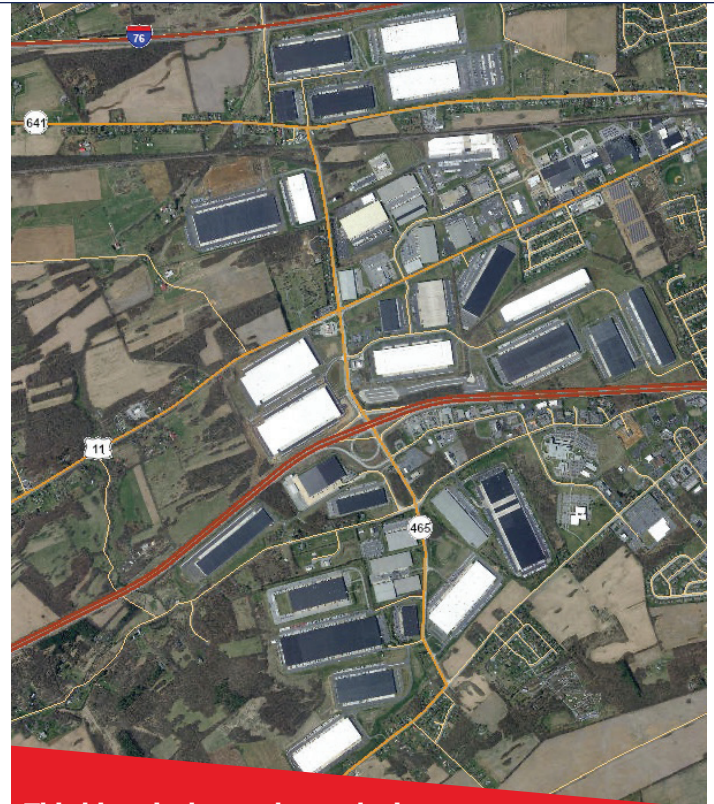
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- Projecting future traffic volumes based upon background traffic growth (traffic from outside the study area) and traffic that would be generated from the future development scenarios,
- Gathering public and stakeholder input on the land use development scenarios and projected traffic,
- Developing build out alternative transportation capacity improvement options including a full build out of existing zoning generated traffic as well as several options with adjusted development plans for comparison,
- Developing planning level cost estimates for each of the buildout scenarios (*The planning level cost should include estimates for all phases of work from including preliminary engineering and environmental studies and the final design.*),
- Gathering additional public and stakeholder input on the build out analysis and project cost estimates, and
- Preparing recommendations for future land use and zoning that is infrastructure sensitive to ensure that the new development's scale and density are balanced with current/future infrastructure capacity. This can also include other public infrastructure like stormwater, water, and sewer. In addition, access management, transit access, and bicycle/pedestrian requirements should also be accommodated in the land use policies as well as the infrastructure plans.

These studies should also consider other policy goals from the municipalities in the area including but not limited to, economic development, environmental sustainability, and resiliency. The Federal Highway Administration (FHWA) promotes a "3C" process Comprehensive – Cooperative – Continuous to ensure land use and transportation planning are effectively linked.

A good case study example of this kind of cooperative and proactive planning was a land use and transportation study that was conducted in partnership between Cumberland County, five municipalities and PennDOT for the I-81 Exit 12 now Exit 44 Interchange area in Cumberland County. The study was completed in December of 1999.

The original study report can be found at: [https://cumberlandbusiness.com/wp-content/uploads/2015/06/I81\\_Exit12\\_LandUseTrafficImpactStudy.pdf](https://cumberlandbusiness.com/wp-content/uploads/2015/06/I81_Exit12_LandUseTrafficImpactStudy.pdf)



**This historical map shows the interstate interchange and PA 465 Allen Road Corridor in 2023 after the development has occurred and transportation upgrades completed.**  
**Photo: PASDA Pennsylvania Imagery Navigator**

### Background:

- Interstate 81 (I-81) is a major north-south freight and passenger corridor running through south-central Pennsylvania, connecting to major metropolitan regions and serving as a key regional economic corridor.
- In the Cumberland County area near Carlisle, what was historically referred to as Exit 12 (later renumbered to Exit 44) lies adjacent to Pennsylvania Route 465 (Allen Road) and provides critical access between I-81 and local road networks.
- In the late 1990's the Carlisle area was beginning to experience significant warehousing growth. The five municipalities around Exit 44 of I-81 had a lot of the property around the interchange historically zoned industrial or commercial. As development pressure began to grow, the municipalities decided to conduct a land use transportation study to develop a plan for development, the interstate interchange, and surrounding roads.

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## Study Purpose & Scope

The **Exit 12 / Exit 44 Land Use Transportation Study** was conducted as a planning effort to:

- Evaluate how land uses near the interchange should be developed and organized to support economic activity while minimizing adverse traffic impacts.
- Analyze transportation conditions and impacts associated with existing and projected land uses, particularly heavy truck-oriented industrial, commercial, and logistics uses that depend on interstate access.
- Provide recommendations on how to balance economic development with efficient transportation operations and safety.

The study focused on:

- **Land Use Allocation:** Identifying appropriate future land use types (e.g., industrial, commercial, mixed-use) consistent with local comprehensive plans and growth projections.
- **Traffic Analysis:** Assessing current and future traffic generation patterns associated with proposed land uses, including traffic volumes on local roads and ramps feeding I-81.
- **Zoning:** Recommending zoning improvements and development policies to balance growth with transportation capacity.
- **Interchange Access & Road Improvement Needs:** Recommending improvements to local roadways (e.g., PA 465, Walnut Bottom Road, PA 641) and ramps to support safe, high-capacity access to/from I-81.

## Land Use Findings

The study determined:

- **Industrial and Logistics Emphasis:** The area adjacent to the interchange was suitable for **intensive industrial uses** (warehousing, distribution, research, and engineering facilities), leveraging proximity to the interstate for freight

access. These uses were seen as compatible with economic development objectives and anticipated freight growth.

- **Zoning Changes and Access Improvements:** These were recommended to help balance development with future planned capacity.
- **Land Use Buffering:** Encouraged landscape buffers and design standards to protect adjacent residential or less-intensive land uses from industrial impacts.

## Transportation & Access

- **Access Management Strategies:** Recognized the importance of directing truck traffic to designated arterial routes (e.g., routing freight via PA 465) and limiting access points that could create conflicts on local roadways.
- **Interchange Improvements:** Recommended needed road and ramp improvements — including signal timing, turn lane enhancements, and revised intersection designs — to accommodate projected growth in traffic volumes while maintaining safety.

## Implementation Outcomes

The study led to funding being programmed by the MPO and PennDOT to advance between \$40 and \$50 million in infrastructure improvements to concentrate freight related growth at that interchange. In addition, land use policy changes were adopted by the municipalities including zoning changes to support the implementation of the plan.

The roadway improvements were constructed, including a new interstate interchange. Although there are a lot of trucks in the area as a result of the subsequent industrial development that took place, traffic congestion is minimal due to the smart planning and access management improvements that the municipalities agreed to in the plan. Today there is over 42 million square feet of warehouse space within a mile radius of the interchange and the area serves as an economic engine for the region.