
The Transportation and Land Use Toolkit

*A Planning Guide for Linking Transportation to
Land Use and Economic Development*



March 2007

The Transportation and Land Use Toolkit



Introduction.....	2
User’s Guide.....	3
Critical Land Use & Transportation Issues Facing Local Officials.....	4
What is at Stake?.....	5
The Transportation-Land Use Connection	6
Linking Land Use, Transportation and Economic Development.....	7
Municipalities Planning Code	9
Using the Tools with Each Transportation Mode.....	25
Planning for Airports.....	27
Planning for Bicyclists and Pedestrians	34
Planning for Roadways and Bridges	40
Planning for Transit	48
Planning for Rail Freight	56
Planning for Goods Movement	61
Appendix Items	68
I. The (Generic) Project Development Process	69
II. Land Use Library	69
III. PennDOT, MPOs/RPOs and TMAs	72
IV. Other Organizations to Know	76
V. Sources of Funding.....	79
VI. Definitions.....	82
Acknowledgements.....	85

The Transportation and Land Use Toolkit



Introduction

As transportation and municipal officials, we face many challenging issues. Delivering transportation projects and maintaining sustainable communities by themselves are independently challenging activities. Ensuring that the two are mutually supportive is at the very heart of what this toolkit seeks to do.

The very nature of transportation has changed in ways that municipal officials must be sensitive to as they plan for the future of their communities. Having a good understanding of how transportation is evolving and how the various modes interact is instructive for today's municipal official.

PennDOT is committed to helping you as a municipal official build a strong future for your city, town or county. This Toolkit supports our Smart Transportation initiative of addressing transportation and land use from a quality of life approach—including community reinvestment, environmental stewardship and accommodating all modes of travel.

This toolkit represents just one more resource that PennDOT and the Commonwealth of Pennsylvania is promoting to raise awareness of the transportation-land use connection, and the various methods and techniques municipal officials can use in strengthening those connections. As transportation and municipal officials working together, we can ensure that land use becomes the driver for our transportation investments, and that growth is managed and planned for in an orderly and sustainable way.

That is the essence of what this toolkit is all about. We trust it will be a valued resource for you as you plan for the future of your community. Providing the toolkit via our web site allows it to be a dynamic document to which we will add new information, links and best practices. As you use the Toolkit, we encourage you to provide us with feedback and best practices that we can use to enhance its usefulness.

Other PennDOT documents addressing the Land Use/Transportation Link

The Department of Transportation has completed a statewide long-range transportation plan known as the Pennsylvania Mobility Plan. The Mobility Plan sets Pennsylvania's transportation direction through 2030.

Smart Transportation is a quality of life approach to transportation solutions which support economic, social and environmental goals. The Department continues to develop a Smart Transportation approach to the way it does business through 10 main principles or themes. These themes include: Money counts; Choose projects with high value to price ratio, Enhance the local network, Look beyond level-of-service, Safety first, and maybe safety only, Accommodate all modes, Leverage and preserve existing investments, Build towns and not sprawl, Understand the context and plan and design within it, and Develop local governments as strong land use partners.

The Transportation and Land Use Toolkit



User's Guide

The Transportation and Land Use Toolkit has been developed to increase awareness of the planning tools available to help land use planning officials, airport authority members, community advisory groups, and others make smart decisions on how best to shape their community's future from the standpoint of transportation and mobility. It aims to provide comprehensive, user-friendly guidance on the opportunity for linkages between land use and transportation planning.

PennDOT has long recognized the relationship between land use, economic development and transportation. While the responsibility for land use, for the most part, is the domain of municipal government as provided by the Pennsylvania Municipalities Planning Code, PennDOT has made significant progress to integrate sound land use planning goals and objectives through its programs and policies.

It is critically important to note that Pennsylvania's communities are diverse. As such, the toolkit is not a "one size fits all" resource. It recognizes that diversity is Pennsylvania's strength. Communities obviously will benefit most by following the *principles* of this toolkit, recognizing that some of the particular conditions of their community may be unique.

The Transportation and Land Use Toolkit will help users make more informed decisions to identify the transportation consequences of each land use decision and what resources are already available to plan and manage growth. By providing a focused discussion on the multimodal dimensions of land use planning as well as specific guidance on best practices, users will have the information and resources they need to ensure that the land use decision-making process considers the relevant social and economic benefits associated with accepted planning practices.



The Transportation and Land Use Toolkit



Critical Land Use & Transportation Issues Facing Local Officials

Pennsylvania is a state in transition. Concerns about traffic congestion, sprawl, farmland and open space preservation, and land use conflicts are discussed daily in conversations and in newspapers throughout the Commonwealth. Greater awareness of the downsides of poorly planned growth has created renewed interest in smarter land use.

- The conversion of agricultural areas to housing developments or retail establishments has increased pressure on our transportation infrastructure, and traffic congestion threatens both our mobility and the character of our communities.
- The convenience and economies of big box retail, while making goods and services closer and more affordable, often have come at a cost of mobility and increased congestion.
- Sprawl results in many things:
 - The potential loss of land for wildlife habitat and agriculture.
 - A loss of scenic value.
 - An increase in storm water run-off from impervious surfaces.
 - Air pollution from auto emissions.

Both transportation and community planning professionals need to do their part by ensuring that the communities we live in do not develop in ways that diminish the safety and capacity of our transportation system. The need for coordinated planning to discourage sprawl and maximize our existing infrastructure investments is necessary to help avoid inefficient and unsustainable land use development, the loss of open space and increased traffic congestion.

Fortunately, Pennsylvania's communities have a number of planning tools and technologies available to help manage growth and development and exercise control over the use of agricultural, industrial, residential and commercial land. It is the purpose of this document to look at some of these, especially as they can be utilized for transportation-related land use concerns.



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What is at Stake?

The Importance of Transportation as Part of Local Land Use.

Every local land use decision has a transportation consequence:

- New residential developments may require modifications to existing roadway networks to ensure adequate access for motorists, pedestrians and bicyclists.
- New industrial or commercial facilities may require parking and possible accommodations for public transportation and bicyclists in addition to roadway access enhancements.
- Greenfield conversions to retail or residential uses may have a variety of transportation impacts, including the need for turning lanes and traffic signal installations, and trip generation impacts that extend beyond municipal borders.

A municipality's land is perhaps its greatest resource. Changes to the way it is used can permanently shape the community's future. Like any valuable community resource, decisions about its use should be made reasonably and through a process where the community's benefit is paramount. Municipalities need to determine if the investments required to support new development and the modifications to existing development are affordable and sustainable.

What Can Happen if We Don't Better Link Land Use and Transportation Planning?

- Tax dollars can be unnecessarily spent on the infrastructure costs necessary to support new development, such as schools, roads and sewers, instead of reinvesting in our communities. The cost of emergency services, roadway maintenance and other municipal services are financial issues that are of great concern to local municipalities and can be mitigated up front through planning.
- Businesses may be forced to relocate, or not choose to locate in your municipality, because traffic congestion or the lack of airport access restricts their ability to get products to market efficiently. Roadways with a threshold of capacity may open land to new development generating increased traffic and possibly higher levels of congestion.
- Lack of coordinated land use and transportation can result in worsening air and water pollution resulting from additional roadway traffic and stormwater runoff into our streams, rivers and lakes.
- Uncoordinated land use and transportation decision-making can result in park and ride facilities with no transit access, greater pedestrian injuries and deaths, and more time spent in the car per day away from our families.
- The conversion of open space or farmland to large residential subdivisions or big box retail or distribution centers can result in decreased air quality and a loss of community character.

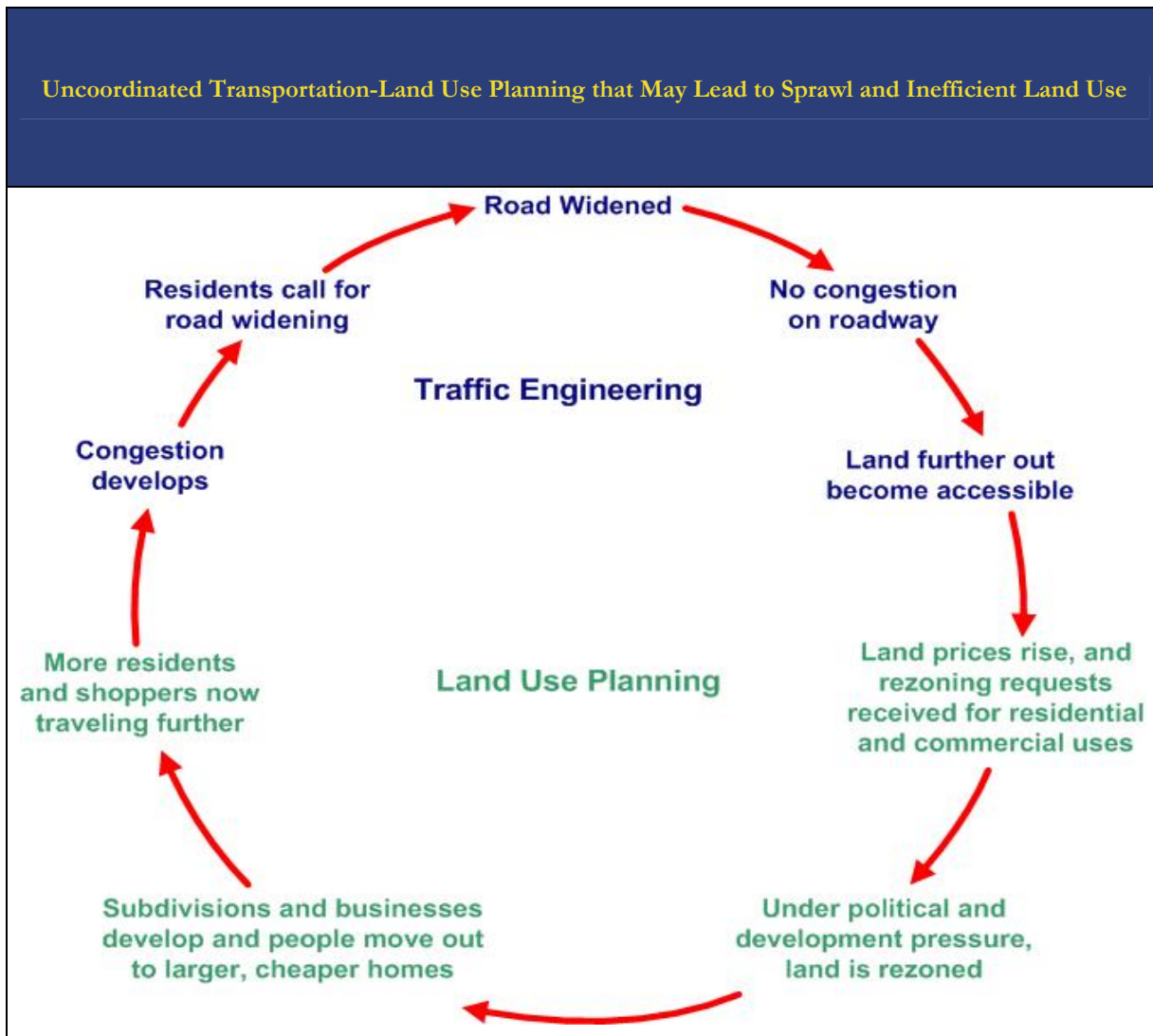
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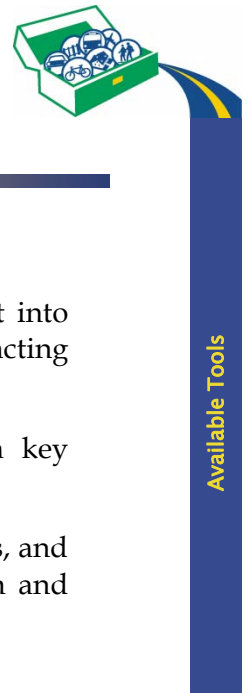
The Transportation-Land Use Connection

The relationship between land use and transportation, if not properly managed, can lead to an unsustainable pattern, as illustrated in the graphic below. Land use decisions and transportation improvements that are not coordinated can lead to sprawl, loss of open space, and traffic congestion, not to mention a growing "spider web" of a transportation system that becomes increasingly more difficult to finance and maintain over time.

Comprehensive plans and development proposals should consider the existing transportation network and its capacity to handle a greater traffic demand. Transportation solutions may need to be explored to minimize congestion. These solutions should consider alternatives that avoid widening that often lead to the scenario below.



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Linking Land Use, Transportation and Economic Development

A core aim of smart land use and transportation planning is to encourage investment into existing communities with a goal of strengthening businesses, preserving jobs and attracting economic development activity in ways that support the community's vision.

The community's land is a precious commodity, and its proper management is a key responsibility of local land use decision-makers.

Transportation facilities like airports, freight and commuter rail, ports, bridges, highways, and transit stations all can serve to bolster a community's appeal to investors. Protection and enhancement of these assets can play a significant role in a community's future.

Examples of improper planning include:

- The conversion of open space or farmland to residential development can create unexpected challenges for local communities, as it often costs local governments more to provide services to homeowners than residential landowners pay in property taxes.¹
- Lack of asset protection that restricts future economic development opportunities. Future freight-related investment may be prevented if non freight-supportive land uses are permitted too close to airports or rail lines.
- The loss of natural, historic and cultural resources can result in a decrease in tourism-generated revenue.

Economic Development Resources

The [Pennsylvania Department of Community and Economic Development](#) (DCED) provides a variety of resources to help you improve your community.

DCED can help link municipalities and counties with:

- **Financial assistance** for community development.
- Information on **community development programs** to identify physical and economic infrastructure improvements to help create attractive, livable places.
- The **Governor's Center for Local Government Services** that serves as an advocate for local governments.
- The **Governor's Action Team** can also help businesses grow in Pennsylvania. They can also help businesses locate in the Commonwealth and ensure that the business community

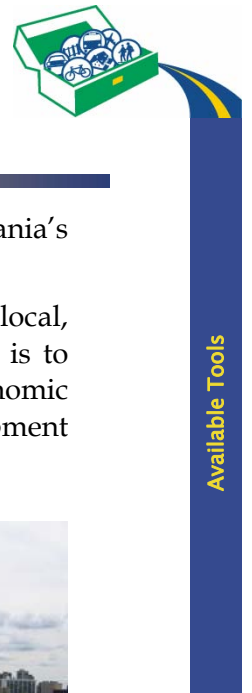
Economic Development Proposals Checklist

Review this checklist when evaluating economic development proposals, recruiting land development partners and creating an economic development plan.

- ✓ Can you articulate your community's strengths and weaknesses to potential investors?
- ✓ What are any potential obstacles for investment and job growth?
- ✓ Are you aware of the potential incompatibilities or conflicts between the needs of businesses in the community and the needs of residents?
- ✓ Do you know whether the transportation system in your community serves local businesses successfully?
- ✓ Are you in communication with your regional local planning agency?

¹ <http://www.smartgrowthamerica.org/openspace.html>
PUB 616 (3-07)

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is aware the various state and federal programs to help strengthen Pennsylvania's commitment to employers and the communities they serve.

- The [Pennsylvania Economic Development Association](#) is the statewide association of local, state, corporate and non-profit economic development professionals. Their mission is to promote sound economic development policies, provide leading edge economic development education, and nurture an effective statewide economic development network to foster the economic health of the Commonwealth.

Commonwealth Keystone Principles

The Keystone Principles & Criteria for Growth, Investment and Resource Conservation provide opportunities for linkages between economic development and coordinated land use and transportation planning. By providing additional guidance to help communities develop strategies that both enhance quality of life and strengthen the local economy, the Keystone Principles provide municipalities with recommendations on how to encourage growth that is cost-effective, sustainable and business-friendly.



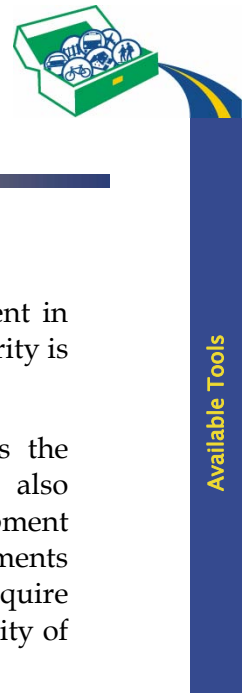
Good planning encourages economic development in ways that complements a sound approach to a community's vision or plan for the future. By directing development to abandoned or undeveloped "infill" sites, or abandoned "brownfield" sites, the Keystone Principles can help municipalities and counties attract investment in areas already served by infrastructure while preserving precious open space. This approach can prevent sprawling development patterns and the negative impacts associated with new low density developments.

1. Redevelop First
2. Provide Efficient Infrastructure
3. Concentrate Development
4. Increase Job Opportunities
5. Foster Sustainable Businesses
6. Restore and Enhance the Environment
7. Enhance Recreational and Heritage Resources
8. Expand Housing Opportunities
9. Plan Regionally; Implement Locally
10. Be Fair

Criteria were also developed to help guide investment in ways that support the Principles and ensure that resources are conserved through the project development and review process.

More information on the [Keystone Principles and Criteria for Growth, Investment and Resource Conservation](#) can be found at www.newpa.com.

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Available Tools

Municipalities Planning Code

Local government has the authority and the responsibility to manage land development in ways that are favorable to the economic and social health of the municipality. This authority is provided for in the **Pennsylvania Municipalities Planning Code**.

The [Pennsylvania Municipalities Planning Code \(MPC\)](#) gives the state's municipalities the authority to conduct land use planning and manage development. The state code also provides the authority to adopt and implement a subdivision and land development ordinance, zoning ordinance and official map, and a transportation capital improvements program. While the MPC does not *require* municipalities to plan or zone, it does require counties to prepare and adopt Comprehensive Plans. (The MPC does not apply to the City of Philadelphia or the City of Pittsburgh; they each have their own enabling legislation.)

The MPC is a valuable resource to help municipalities manage the development and character of their communities. The authority and powers granted by the MPC provide municipal officials with the tools necessary to guide the physical growth of the community and adhere to a desired pattern of development.

The MPC outlines everything from the creation, duties, and powers of a planning commission to the preparation and implementation of county and municipal Comprehensive plans and implementing ordinances. Other provisions include the protocols for ordinance development (e.g., subdivision and land development, zoning, etc.), approval and enforcement, capital improvements, planned residential developments, and traditional neighborhood developments. The code also provides for, and encourages, intergovernmental cooperative planning and implementation agreements.

Planning and Implementation Tools Provided by the MPC

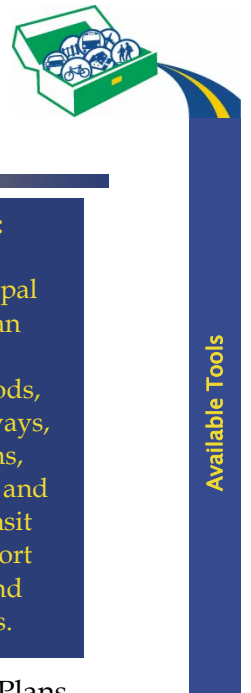
The four most significant tools provided by the MPC are:

1. The Comprehensive Plan ([MPC, Article III, Comprehensive Plan](#))
2. The Zoning Ordinance ([MPC, Article VI, Zoning](#))
3. The Subdivision and Land Development Ordinance ([MPC, Article V, Subdivision and Land Development](#))
4. The Official Map ([MPC, Article IV, Official Map](#))

Tool One: The Comprehensive Plan

The Comprehensive Plan is the general policy guide for the physical development of a municipality. The Comprehensive Plan looks at all aspects of a community, including transportation, and contains a future land use plan to articulate the vision for the community's future. Within the plan, trends and issues are examined and analyzed, and a range of goals, objectives and strategies are developed to help the community attain its vision for the future. (The best comprehensive plans are those that vigorously engage the public as part of its

The Transportation and Land Use Toolkit



development.) Municipalities can also plan on a more regional basis through multi-municipal planning.

The Comprehensive Plan is a guidance policy document and does not directly affect individual properties.

- **Land Use and Transportation Connection.** Comprehensive Plans must contain a discussion on the movement of people and goods as well as a future land use plan; these provide a natural opportunity for communities to consider mobility and transportation linkages as part of a coordinated Comprehensive Plan development process.

MPC Section 301 (a)(3):

The municipal, multi-municipal or county comprehensive plan shall include: A plan for movement of people and goods, which may include expressways, highways, local street systems, parking facilities, pedestrian and bikeway systems, public transit routes, terminals, airfields, port facilities, railroad facilities and other similar facilities or uses.

- **Economic Development Connections.** Planners should ensure that Comprehensive Plans are integrated with any regional economic development plans to ensure consistency of approach.

The Use of Comprehensive Planning to Make Sound Land Use and Transportation Decisions:

- **Technique:** Implement development controls to ensure that community growth is focused where utilities exist or are planned to be provided. Directing growth into corridors where municipal investments (utilities, roadways, etc.) exist or are anticipated provides communities with a method to exert local control over the need for capital investments.
 - ☑ **Best Practice:** [Envision Lancaster County](#) is a coalition of public, private and non-profit organizations joined to implement the Lancaster County Comprehensive Plan. Part of the County's growth management strategy is to maintain the county's compact communities by focusing development to urban areas and village centers through the use of growth boundaries. Compact development can save money for communities because it uses existing infrastructure.
- **Technique:** Plan for transportation simultaneous with land use to coordinate infrastructure investments.
 - ☑ **Best Practice:** [Lycoming County](#) recently completed an automated flood warning system, hazard mitigation plan, as well as a county and multi-municipal Comprehensive Plans. The documents were developed in a coordinated manner, and the Comprehensive Plan includes a thorough discussion of strategies the county intends to employ to address not only transportation issues but land use and economic development as well.
- **Technique:** Use the Comprehensive Plan to define the community's vision and identify the transportation investments that support local economic development and enhance quality of life.



The Transportation and Land Use Toolkit



- ☑ **Best Practice:** The [Borough of California's Comprehensive Plan](#) strongly links land use, transportation and economic development by identifying transportation improvements that will not only enhance mobility but also support the community's land development objectives identified in the Plan.

Multi-Municipal Planning

In 2000, the Pennsylvania General Assembly amended the Municipalities Planning Code to enable counties and municipalities to more easily develop and implement multi-municipal plans.

Some of the benefits of Multi-Municipal Planning and its implementation include:

1. The ability to address regional planning issues such as sewer, water, open space, emergency services and transportation corridors that extend beyond municipal borders. Regionalism can save money by avoiding duplication of efforts. Natural resource preservation is easier when the affected communities already coordinate on other matters of regional significance.
2. Tax sharing among municipalities to cover expenses for facilities or improvements for which the municipalities are responsible or realize benefit. For example, the traffic created by a shopping center near a municipal border results in needed infrastructure investments for two communities. Taxes can be shared by the two communities to finance continued required transportation-related expenses.
3. The authority to establish a Transfer of Development Rights program across municipal boundaries. TDR is described by DCED as "a tool that can be used by a municipality to help make regulation of its development more financially equitable to landowners. The process attempts to deal with the financial burden that zoning changes may place on property owners whose rights are in conflict with the public interest. This is done by giving landowners something of value that they can sell in exchange for not developing their land: development rights. These rights may be sold to a builder who wishes to increase development densities in another area of the community considered suitable for development." ([DCED Planning Series, Zoning](#))
4. Zoning regulations generally consistent with the county or multi-municipal comprehensive plan decrease the likelihood of conflicting land uses at municipal boundaries and increase the total area in which all uses must be accommodated. The MPC doesn't require that municipalities that participate in multi-municipal planning develop a joint zoning ordinance.
5. The sharing of administrative costs related to zoning enforcement and uniform interpretation of the multi-municipal zoning ordinance across municipal boundaries.
6. The cost of infrastructure may be minimized by concentrating development and increasing density.
7. Priority status under the [Land Use Planning and Technical Assistance Program \(LUPTAP\)](#). See appendix for more information about LUPTAP funds.

The Transportation and Land Use Toolkit



For more information on multi-municipal planning (and intergovernmental agreements), consult [Article XI](#) of the Municipalities Planning Code and [Planning Beyond Boundaries](#) by 10,000 Friends of Pennsylvania.

Tool Two: The Zoning Ordinance

The Zoning Ordinance is a powerful tool that can be used to shape the community's character. While a Comprehensive Plan provides a community with a strategic direction, it is the zoning ordinance (along with the Subdivision and Land Development Ordinance) that gives a local decision-maker an important tool to implement the broad directions outlined in the Comprehensive Plan.



The Zoning Ordinance manages the type, location and magnitude of development that can occur. An effective zoning ordinance should be sensitive not only to existing land use patterns, but also to the performance and functional classification of the surrounding highway network and overall transportation system.

- 1. Land Use and Transportation Connection.** Zoning can be used to direct development to locations where it best serves the community and away from locations where development may not adhere to the principles outlined in the community's Comprehensive plan. For example, a zoning ordinance can ensure that land is developed in locations where transportation facilities already exist (such as roadways and public transportation service), and avoid areas where new transportation facilities would need to be constructed.

The Use of Zoning to Make Sound Land Use and Transportation Decisions:

- **Technique:** Use zoning to focus development to the corridors where it is desired and away from where it is unwanted. It is easier to anticipate where transportation system improvements (roadways, intersection improvements, bicycle lanes, bus shelters, crosswalks, etc.) will be necessary if, for the most part, development is directed or delimited.

- ☑ **Best Practice:** Much of Somerset County's growth in recent years has been in the area immediately adjacent to the Turnpike interchange and along PA 601. The County Interchange Area Zoning Ordinance is used to manage development immediately adjacent to the Turnpike interchange. The County's comprehensive plan recommends the creation of a "hospitality village", where

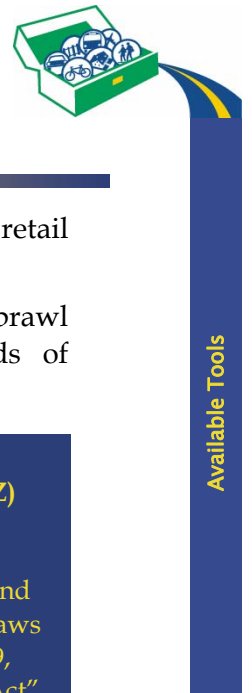
MPC Section 604 (4) & (5):

[The provision of zoning ordinances shall be designed:]

...To provide for the use of land within the municipality for residential housing of various dwelling types encompassing all basic forms of housing...provided, however, that no zoning ordinance shall be deemed invalid for the failure to provide for any other specific dwelling type.

...To accommodate reasonable overall community growth, including population and employment growth, and opportunities for development of a variety of residential dwelling types and nonresidential uses.

The Transportation and Land Use Toolkit



travelers could exit the Turnpike, lodge and walk to area dining and retail establishments.

2. **Technique:** Plan communities that are easily served by transit as a way to minimize sprawl and inefficient land development, as well as better serve the mobility needs of Pennsylvania's aging and disabled communities.

☑ **Best Practice:** The Paoli (Chester County) Community Master Plan calls for the implementation of zoning regulations that recognize the unique nature of [transit oriented development](#) and the mixed use nature of the area. The zoning amendments will foster a stronger and more diversified multi-functional commercial, office and residential center consistent with its role as an intermodal transportation hub. These amendments are intended to promote the development of a unified transit oriented area which includes a transit core, a village business district, and several mixed use transitional districts connected through balanced, walkable development focused on an inviting and functional pedestrian environment.

☑ **Best Practice:** Lower Merion Township is preparing a [Mixed Use Special Transit District](#) zoning overlay ordinance to bring greater economic vitality and pedestrian activity to the area surrounding the Ardmore SEPTA commuter rail station. The goals of the overlay include encouraging mixed-use real estate development oriented to the rail station and supporting new development that includes diverse pedestrian-compatible, higher density, transit friendly designs to encourage economic development opportunities.

- **Technique:** Use the zoning ordinance to specify sensible parking ratios that balance the need for parking with the need to reduce runoff from impervious sources and to minimize the need for excessive municipal land devoted to parking.

☑ **Best Practice:** An initiative of "Builders for the Bay," The [Lancaster County Recommended Model Development Principles](#), endorses an evaluation to ensure that parking lot construction reflect actual demand with a goal of reducing parking lot size to mitigate stormwater runoff.

- **Technique:** Municipalities can manage costs and ensure better coordination with neighboring communities through multi-municipal planning and zoning. Benefits include cost savings from shared services, funding incentives and better ability to protect open space and threatened land.

The Special Case of Airport Hazard Zoning (AHZ)

The power to enact an Airport Hazard Zoning Ordinance is found in Act 164 of the Pennsylvania Laws Relating to Aviation - Chapter 59, Subchapter B, "Airport Zoning Act", not in the MPC. It states that...

...In order to prevent the creating or establishment of airport hazards, every municipality having an airport hazard area within its territorial limits shall adopt, administer, and enforce....airport zoning regulations for such airport hazard area."

The AHZ Ordinance limits the height of objects near an airport in order to ensure safe operations. However, height is only one consideration. It is also important to ensure that land use around the airport is compatible with airport operations.

The Transportation and Land Use Toolkit



☑ **Best Practice:** The Newtown Area Joint Municipal Planning Program is an example of the use of multi-municipal planning approach to control land development in ways that benefit all participating communities. In 2000, the MPC was amended to encourage multi-municipal Planning and zoning. Participating communities are now permitted to share tax revenues and fees and adopt a Transfer of Development Rights (TDR) program. A TDR program can result in more focused development and more efficient transportation infrastructure. [NOTE: TDR is not tied to Multi-Municipal Planning.]

▪ **Technique:** Use the zoning ordinance to require a minimum set-back distance, with a maximum set-back in developing commercial areas.

☑ **Best Practice:** The City of Hermitage in Mercer County has not yet required, but is encouraging developers to build closer to the street (see Bob Evans example, bottom right). This is a development model that is not only aesthetically more attractive, but promotes efficient transportation by providing walkability and potential to be served by public transportation. The Bob Evans example strikingly contrasts with that of the P&C market example below. Establishing shorter set-backs with parking in the rear yard gives improved definition to a street and creates an environment that is more pedestrian-friendly.

The Politics of Parking

No one likes to pay for parking. It is commonly believed that a lack of free parking will serve as a disincentive for some, and businesses will suffer. But free parking, particularly in congested areas, can encourage people to drive instead of walk or take transit and add to congestion.

In communities with on-street metered parking as well as off-street pay parking, pedestrians and bicyclists may benefit from financial incentives to promote increased use of off-street lots.

The provision of well-marked bus stop signs and shelters can also help to entice transit usage.

Local communities should review their parking requirements to ensure that they correctly estimate the number of spaces needed. When parking lots are planned for periods of maximum use, many of those spaces go unused most of the time, resulting in acres of paved land with no real community use.



Large parking areas, deep set-backs and commercial buildings that are not oriented toward the street discourage walkability and use of transit.



The Transportation and Land Use Toolkit



Tool Three: The Subdivision and Land Development Ordinance

While the Zoning Ordinance regulates the use of land and structures, the Subdivision and Land Development Ordinance (SALDO) addresses the division or re-division of a lot, tract or parcel and changes in existing property lines, and the improvement of public or private property, including the layout and the dedication of new streets. Like the Zoning Ordinance, the Subdivision and Land Development Ordinance can be guided by the policies outlined in the municipal [Comprehensive Plan](#).

The Subdivision and Land Development Ordinance establishes reasonable and acceptable design standards, coordinates public infrastructure, such as roadways and utilities, with development, and insures suitable areas for development and public use. These regulations apply to preliminary and final subdivision and land development proposals, and enable planning commissioners and other local officials to identify needed improvements before construction can begin.

MPC Section 501:

“The (subdivision and land development) ordinance shall require that all subdivision and land development plots of land situated within the municipality shall be submitted for approval to the governing body or, in lieu thereof, to a planning agency designated in the ordinance for this purpose, in which case any planning agency action shall be considered as action of the governing body.”

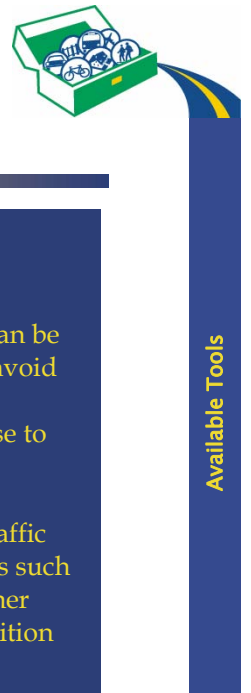
Land Use and Transportation Connection. The Subdivision and Land Development Ordinance serves as the community’s standard for streets, pedestrian ways and bike paths. The Subdivision and Land Development Ordinance provides an opportunity to implement actions from the Comprehensive Plan, particularly the functional planning elements related to design and infrastructure, including transportation.

Examples of how the SALDO can be used to achieve goals related to transportation include:

- Language to require that shopping center design include consideration of transit and pedestrian access and an internal, non-motorized circulation plan;
- Decrease in the number of parking spaces per square foot of office or retail development to encourage the use of transit;
- Improved [access management](#) through such measures as the total number of driveways, sight distance, joint and cross access, and driveway throat length, to name a few;
- Encourage walking and bicycling by requiring standards such as: sidewalks, crosswalks, street furniture, bicycle racks and pedestrian-scale lighting to encourage walking.



The Transportation and Land Use Toolkit



The Use of the Subdivision and Land Development Ordinance to Make Sound Land Use and Transportation Decisions:

- **Technique:** Ensure that the SALDO specifies how roadway access to developments and between abutting land should be **coordinated**.
 - ☑ **Best Practice:** The [Quakertown Area Subdivision and Land Development Ordinance](#), a Multi-Municipal SALDO in Bucks County, requires that streets into and bordering subdivisions are coordinated in order to accommodate potential transportation uses.
- **Technique:** The use of “fee in lieu of” construction of recreational facilities can increase the amount of open space available for landscaping or trail access.
 - ☑ **Best Practice:** The [SALDO for the Township of Upper Saucon](#) in Lehigh County requires new development to either dedicate open space or pay a fee-in-lieu of dedication of open space for local recreational use.
- **Technique:** The SALDO can discourage the use of cul-de-sacs which reduce the total number of routes available to travelers and concentrate traffic onto fewer roads.
 - ☑ **Best Practice:** The [Recommended Model Development Principles](#) for East Hempfield, West Hempfield and Manor Townships discourages the use of cul-de-sacs except when needed to protect natural resources, accommodate infill development, or best serve the community.
- **Technique:** Assume that people will walk. The SALDO can be used to design streets and roads to support the function they serve. Streets, wherever possible, should be designed to encourage walking by providing sidewalks, crosswalks and other pedestrian safety features.
 - ☑ **Best Practice:** The Upper Uwchlan Township Subdivision Ordinance in Chester County requires the construction of sidewalks to connect to adjoining developments, provide access to various community facilities and ensure the safety of pedestrians with respect to prospective traffic.

Traffic Noise

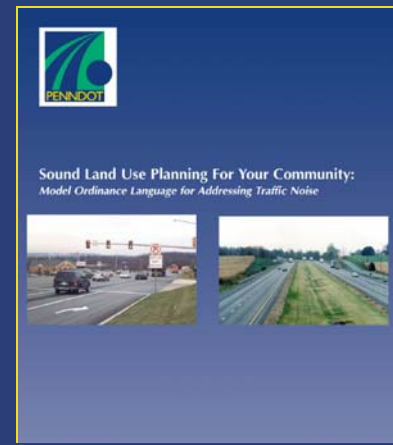
The Subdivision and Land Development Ordinance can be used by municipalities to avoid the development of noise-sensitive land uses too close to the roadway.

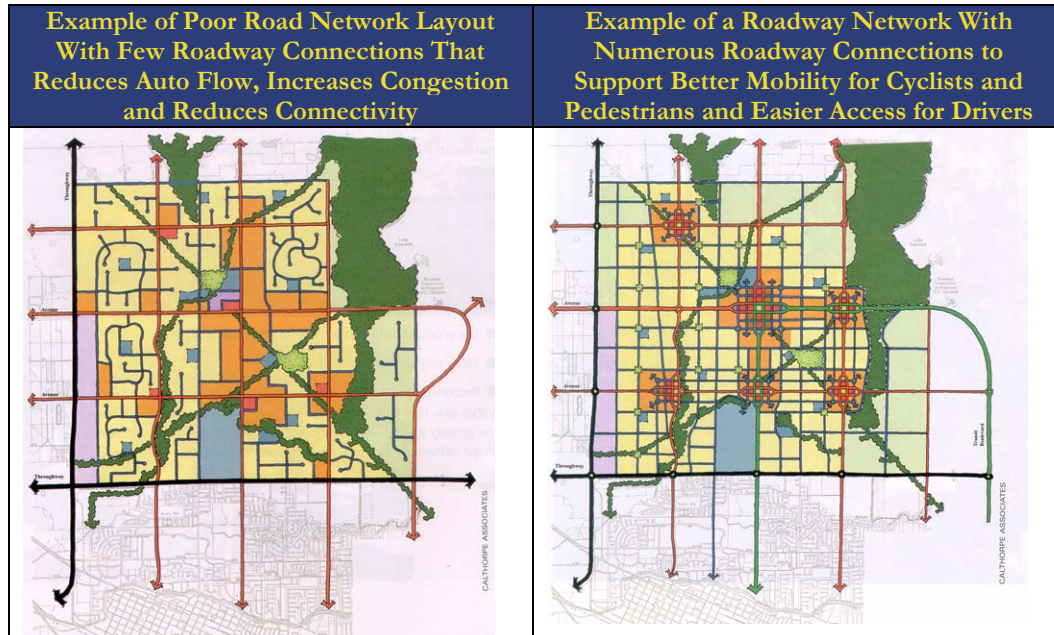
The SALDO can require traffic noise attenuation strategies such as uniform setback and other physical barriers as a condition of new development.

PennDOT’s “Sound Land Use Planning for Your Community: Model Ordinance Language for Addressing Traffic Noise” includes a variety of strategies to help municipalities minimize or avoid traffic noise conflicts.

The publication includes model ordinance language not only for the SALDO, but also for inclusion in municipal Zoning and Official Map ordinances.

It is available from PennDOT or by [clicking here](#).





Urban Land Institute, Ten Principles for Smart Growth on the Suburban Fringe, 2004.

Tool Four: The Official Map

The Municipalities Planning Code authorizes municipalities, including counties, to develop and adopt an Official Map ordinance that delineates the locations of future projects, including streets, pedestrian ways and easements, railroad and transit rights-of-way and easements, watercourses, and public grounds. The map declares the areas that the municipality eventually will need for specified public purposes and indicates the intent of the municipality to acquire land for those purposes.

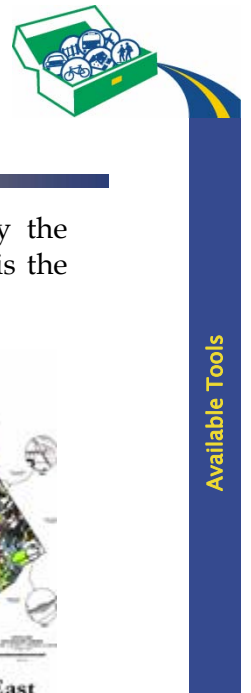
The official map is a tool a municipality can use to notify landowners of existing and proposed public lands and rights-of-way and may cause the municipalities to deny permits for development that encroaches on affected properties. Should this occur, the land owner must be fairly compensated for the taking. The municipality has one year to acquire the property or the reservation for public grounds shall become void.

MPC Section 401(a)(1-6):

“The governing body of each municipality shall have the power to make or cause to be made an official map of all or a portion of the municipality which may show appropriate elements or portions of elements of the comprehensive plan...with regard to public lands and facilities, and which may include, but need not be limited to:

- (1) Existing and proposed public streets, watercourses, and public grounds...
- (2) Existing and proposed public parks, playgrounds, and open space reservations.
- (3) Pedestrian ways and easements.
- (4) Railroad and transit rights-of way and easements.
- (5) Flood control basins, floodways and flood plains, storm water management areas and drainage easements.
- (6) Support facilities, easements and other properties held by public bodies.

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To prepare an official map a municipality must make surveys and maps to identify the location of property sufficient for description and publication in map form. The map is the primary component of an official map ordinance.

A comprehensive plan, an existing or future land use map and a municipal base map are all good references to have on hand, but none is an official map nor is any of these a land use ordinance. An official map is prepared and adopted in accordance with procedures set forth by Article IV of the MPC. For matters before a zoning hearing board and appeals to court, MPC Section 107 (b) defines an official map as a "land use ordinance."



Use for Transportation and Land Use Planning: The Official Map provides communities with a tool to preserve land, properties and rights-of-way for future public use. For example, an abandoned rail right-of-way can be preserved for future rail-trail or transit use through the use of the Official Map.

- ☑ **Best Practice:** Strasburg Borough and Strasburg Township in Lancaster County have actively used their Official Maps in guiding the development of new roadway infrastructure. In one case, the borough was able to get the developer of a 24-unit residential development to follow the borough's street grid pattern. In another example, the township's Official Map was used as a reference in the planned development of a new street parallel to PA 896, a high volume road that carries a significant amount of tourist traffic. The new road will provide benefits to the community in the form of improved access to area businesses and alleviated travel demands on PA 896.

Advisory and Quasi-Judicial Boards Authorized by the MPC

The Municipalities Planning Code provides the authority for the formation of two land use-oriented boards - the Planning Commission and the Zoning Hearing Board.

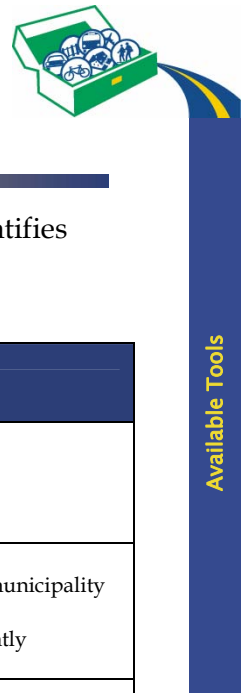
1. The Planning Commission

Planning Commissions advise governing bodies on community development issues, land use and future community growth and often oversee the development of Comprehensive Plans which are then adopted by governing bodies. (MPC, Article II, Planning Agencies)

Planning commissions can help establish the development direction for the municipality they serve, and may be provided with staff resources to analyze trends and administer grants. All members of the commission should be appointed by the appointing authority of the municipality.

Planning commissions may be supported by administrative staff who carry on the day to day functions of the municipal planning agency or department.

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Available Tools

In Pennsylvania, planning commissions take a variety of forms. The table below identifies some examples of Pennsylvania planning commissions/agencies and their duties.

Planning Commission Type	Example	Duties	Notable
Municipal Planning Commission	Damascus Township (Wayne County) Planning Commission	<ul style="list-style-type: none"> • Subdivision and Land Development Ordinance • Zoning Ordinance • Municipal Comprehensive Plan 	<ul style="list-style-type: none"> • Governed by the MPC
Multi-Municipal Planning Commission	Eastern Susquehanna County Partnership	<ul style="list-style-type: none"> • Guide the Development of the Comprehensive Plan • Develop new multi-municipal Zoning and Subdivision and Land Development Ordinance 	<ul style="list-style-type: none"> • Governed by the MPC • Representatives from each municipality serve on the commission • Ordinances are enforced jointly
County Planning Commission	York County Planning Commission	<ul style="list-style-type: none"> • Countywide Comprehensive Plan • County Subdivision and Land Development Ordinance 	<ul style="list-style-type: none"> • Governed by the MPC • Some County Planning Commissions also serve as MPO/RPO for regional transportation planning
Regional Planning Commission	Delaware Valley Regional Planning Commission	<ul style="list-style-type: none"> • Transportation Planning • Regional Planning • Goods Movement • Land Use and Community Planning 	<ul style="list-style-type: none"> • Independent of the MPC • Most Regional Planning Commissions also serve as MPO/RPO for regional transportation planning

2. Zoning Hearing Board

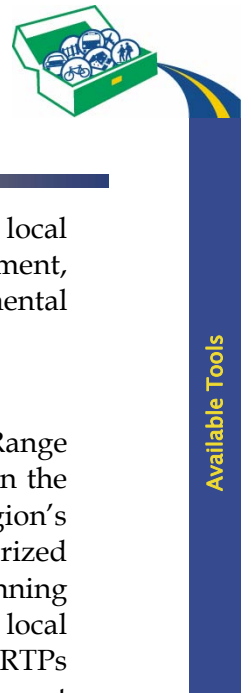
The Zoning Hearing Board hears and acts on applications for variances from zoning ordinances, special exceptions and challenges to the validity of the zoning ordinance. (*MPC, Article IX, Zoning Hearing Board and Other Administrative Proceedings*)

Membership on the Zoning Hearing Board is by appointment of the municipal governing body for a designated term. The meetings of the Zoning Hearing Board are public.

Regional Transportation Organizations and Resources

1. **The Metropolitan Planning Organization (MPO) and Rural Planning Organization (RPO).** Pennsylvania is organized into 23 distinct regions for transportation planning purposes. The primary mission of the MPO and RPO is to provide the forum for cooperative local decision-making on federal transportation funds. These organizations were created to ensure that existing and future expenditures for transportation programs and projects are based on a comprehensive, cooperative and continuing planning and programming process. Contact information for each Pennsylvania MPO and RPO is included in the Toolkit Appendix.
2. **Long Range Transportation Plans.** The [Long Range Transportation Plan](#) (LRTP) is developed by the MPO or RPO and is a 20-year plan providing long- and short-range strategies for an integrated, intermodal system, environmental mitigation and transportation enhancement activities. These plans must be coordinated with other state and regional planning activities. The LRTP must also promote consistency between transportation, land use, and economic development plans.
 - Identify the expected demand of persons and goods for all modes over the planning horizon (typically 20-25 years)

The Transportation and Land Use Toolkit



- Reflect (to the extent that they exist) consideration of other, federal, state and local plans and objectives pertaining to long-range land use, economic development, housing, community development, employment opportunities, environmental resources, and energy.

Overall, the LRTP is an opportunity for a region to invest in its identity and future.

Use for Transportation and Land Use Planning: Projects identified in Long Range Transportation Plans comply with a list of evaluation criteria and policies set forth in the Plan to improve safety and mobility, manage traffic congestion and strengthen the region's economy. This planning process is also an opportunity to highlight local, non-motorized transportation needs and serves as a critical opportunity to link local land use planning and transportation. Often LRTPs contain projects that have been identified as part of local planning efforts, such as bicycle and pedestrian facilities identified in master plans. LRTPs are updated every four to five years, depending on the region's air quality attainment status.

Other Tools and Resources to Help Build the Land Use and Transportation Connection

1. **Traditional Neighborhood Development.** The desire for more efficient land use and reduced sprawl encouraged the Pennsylvania Legislature to include provisions to encourage [Traditional Neighborhood Development](#) in their 2000 update of the Municipalities Planning Code. The benefits of TND include interconnected streets, shorter walking distances to encourage pedestrian activity, provisions for mixed-use development, calmed traffic, open space preservation, the creation of a stronger sense of place, better support for public transit, and greater compatibility of land uses.

Use for Transportation and Land Use Planning: TND results in numerous land use and transportation connections, which strongly support PennDOT's sound land use planning goals. Decreased need for auto trips, increased safety and pedestrian and bicycling trips, and less open space loss all strongly benefit community character and quality of life.

- ☑ **Best Practice:** The Borough of Mechanicsburg (Cumberland County) provides a good example of a [standard TND ordinance](#) to help support mixed land uses and protect open space to preserve the community's character and minimize sprawl.
- ☑ **Best Practice:** Halfmoon Township (Centre County) developed a [TND brochure](#) to highlight the community benefits of TND.

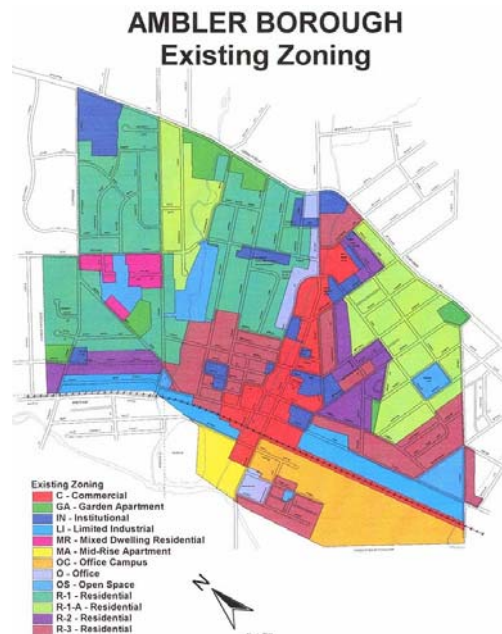
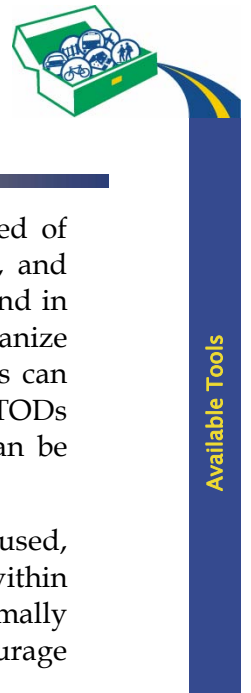


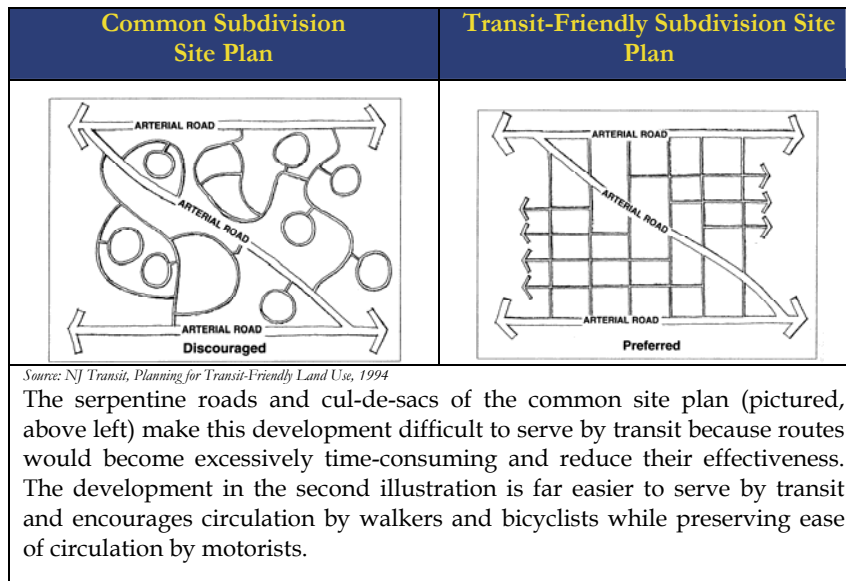
Image Copyright Borough of Ambler, PA
Ambler, PA Zoning Map

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- 2. Transit-Oriented Development (TOD).** Transit-oriented development is comprised of mixed-uses that support and benefit from public transit through location, design, and planning. The concept is not new; in fact many of the design principles can be found in cities built prior to the 1930s. TOD standards are an effort to plan land use and organize development patterns in a way that supports and encourages transit usage. TODs can enhance economic development and promote sustainable patterns of urban growth. TODs are normally first identified in a Master Plan or in a Comprehensive Plan and can be implemented through zoning overlays.

Use for Transportation and Land Use Planning: TODs are strongly transportation focused, often with the transit facility at the center and mixed-use development located within walking distance (typically within a quarter to a half a mile). TODs not only normally support transit in the immediate vicinity of the transit facility, but can also encourage transit service through the community.



- 3. Transit Revitalization Investment Districts (TRID).** The [Transit Revitalization Investment District Act](#) encourages municipal officials and developers to work together to plan and implement Transit Oriented Development. TRID can help municipalities, in conjunction with transit agencies and other economic and community development stakeholders, to finance investments to bring high-density, transit-supportive development.

Use for Transportation and Land Use Planning. TRID can benefit municipalities through a joint planning process that brings developers, municipalities and transit agencies together to support local economic development and neighborhood revitalization. TRID serves as a tool to help municipalities finance investments that enhance the character of the district and encourage private economic investment.

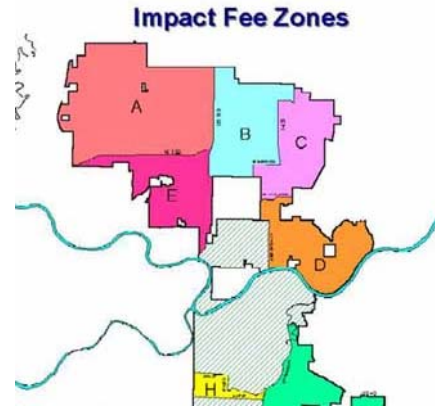
- 4. Impact Fees.** The [MPC](#) provides municipalities with the authority to levy impact fees on new development to help pay for: (1) recreational facilities accessible to the development

The Transportation and Land Use Toolkit



from which fees are paid; and (2) offsite transportation capital improvements, which are other than those on or abutting an applicant's property. The fee for transportation improvements must be based on Article V-A of the MPC. Transportation improvements must be identified in an adopted capital improvement plan for a given service area, and attributable to and necessitated by new development within the service area. Impact fees must be spent for the purpose they were collected: to fund mitigation measures for new development.

Use for Transportation and Land Use Planning: Impact Fees can help municipalities finance much of the transportation infrastructure investments needed to support new development within a designated service area.



☑ **Best Practice:** Cranberry Township's (Butler County) [Impact Fee Program](#) provides a good example of an impact fee resolution.

☑ **Best Practice:** As required by the MPC, East Coventry Township (Chester County) developed a [Roadway Sufficiency Analysis and Transportation Capital Improvement Plan](#) to help the municipality assess transportation impact fees related to new development.

5. **Community Master Plans.** Most Master Plans are developed for downtowns and focus on reinvestment in core communities. Master Plans often begin with a vision and contain a variety of standards for streetscape improvements and design guides for vehicular and pedestrian circulation.

Use for Transportation and Land Use Planning: Master Plans can set standards for crosswalks, lighting, and other amenities to achieve a better vehicular and pedestrian mix in a targeted area. Many master plans address pedestrian safety, bicycle access and parking, and vehicular circulation with the goal to enhance the vibrancy of a specific community. Master Plans can be adopted into the [Comprehensive Plan](#) and the design standards can be included in the Subdivision and Land Development Ordinance.

☑ **Best Practice:** Tredyffrin Township's (Paoli) [Master Plan](#) is a good model for community master planning, providing specific guidance on pedestrian amenities with a significant focus on connections to the commuter rail station.

6. **Facilities Plans.** Facilities Plans, such as Water and Sewage Plans, Solid Waste Management Plans and Recreation and Open Space Plans identify the locations of potential future municipal investments and can direct community growth.

Use for Transportation and Land Use Planning: The siting of sewer and water lines may entice development in areas currently not served by sewer and water. The identification of utility extensions may result in development proposals for new areas to be served by water and sewer. Facilities Plans can serve as a de facto growth management tool by identifying where the community will permit utility extensions. Working with the local transit provider to consider access to and from these new development sites is one way to help minimize potential traffic congestion in future growth areas of the community.

The Transportation and Land Use Toolkit



- 7. Stormwater Management Plans.** The Storm Water Management Act (Act 167 of 1978) calls for counties to prepare a [Stormwater Management Plan](#) for each stream basin for review and approval by the Pennsylvania Department of Environmental Protection (DEP). Following DEP approval, Stormwater management ordinances must be adopted by the governing body as part of the local effort to prevent downstream flooding.

Use for Transportation and Land Use Planning. Stormwater Management Plans can help identify roadway segments and other municipal facilities at risk for flooding. Increased development often results in the increase in impervious surfaces and planning for stormwater runoff is essential. Redevelopment and reuse of existing facilities, as opposed to new construction and development, can help reduce the occurrence of flooding that can be highly disruptive and damaging to the transportation system.

- 8. Capital Improvements Program.** As a companion to the Comprehensive Plan's Future Land Use Plan and the Zoning Ordinance, a Capital Improvements Program (CIP) may establish priorities, estimated costs, anticipated schedule, and responsible parties for project proposals that have been identified in the Comprehensive Plan for implementation. Project proposals may include such items as ordinance updates, park acquisition and development, sewage facilities improvements and transportation infrastructure improvements. The CIP can contain a Transportation Capital Improvement Plan or a transportation infrastructure category containing specific projects.

Use for Transportation and Land Use Planning. Capital Improvements Programs can help municipalities stage improvements that have both land use and transportation consequences, and can serve as a growth management tool by ensuring that the transportation improvements necessary to support development are conceived simultaneously with utility planning.

- 9. Specific Plans.** Under the Municipalities Planning Code, participating municipalities have authority to adopt a specific plan for any nonresidential area covered by a municipal or multi-municipal comprehensive plan.
 - Specific plan shall include text, diagram(s), and implementing ordinances which specify all of:
 - Location, standards, and design for land uses, water, sewer, transportation, and other essential facilities
 - Standards for population density & building intensity
 - Standards for preservation & use of natural resources
 - A program of financing for capital improvements and implementing regulations (zoning, subdivision, etc.); ordinances may be amended into existing ordinances or

Infill Development

One technique to help municipalities increase downtown density and vibrancy and reduce sprawl is through infill development. Defined as new development targeted within established urban areas on land parcels that are either abandoned or used for another purpose, infill can serve as an alternative to traditional sprawl land use patterns.



The Transportation and Land Use Toolkit



enacted separately, in which case they repeal ordinances in effect in the area of the specific plan

- Adoption of a specific plan shall follow MPC adoption procedures for comprehensive plans and ordinances. The adopted specific plan supersedes all other applicable ordinances.
 - Capital projects and development plans may be approved only if consistent with the adopted specific plan
 - Within a specific plan area, only final plan application and approval is required for subdivision or land development.
10. **Appalachian Regional Commission (ARC)**. This federal agency works with counties in the Appalachian region and funds various types of infrastructure projects, including transportation. Projects range in size from the Commission's Appalachian Development Highway System (ADHS), to the smaller projects as typified in its Access Road Program. Pennsylvania has 52 counties within the federally-designated Appalachian Region. These counties generally include those west of Interstate 81 but also include Monroe, Pike and Wayne. ARC counties are represented by Local Development Districts (LDDs) which assist in planning and implementing projects to promote economic development and improve quality of life.
 11. **Transportation Management Associations (TMA)**. TMAs are non-profit organizations comprised of private corporations and public agencies dedicated to achieving reductions in traffic congestion, improving mobility and air quality, and educating employers and their employees about transportation alternatives.

Section V in the Toolkit appendix contains a listing of various funding sources to be used in strengthening the connections between land use and transportation.

The Transportation and Land Use Toolkit



Using the Tools with Each Transportation Mode

In addition to knowledge of the tools available to help communities plan and implement overall strategies to ensure that growth occurs smartly, the following section contains profiles of the modes that comprise our transportation system. The profiles highlight the key aspects of what you need to know about airports, bicycles and pedestrian planning, roadways and bridges, transit, rail and goods movement. Each profile contains a brief description of each mode, and tips for how to use the tools provided by the MPC and elsewhere to incorporate the mode into your growth strategies, best practices and funding opportunities.

Often economic development opportunities result from **transportation connections**. The modal sections of this book can help you work with local businesses to ensure that the transportation network serves their needs and help plan for greater intermodal connectivity. The table below offers some illustrative considerations to be made in strengthening connections between modes.

Considerations for Modal Connectivity

	Highway and Bridge	Rail	Aviation	Ports	Transit
Highway and Bridge	<ul style="list-style-type: none"> • Convenient access to major corridors • Adequate road width and intersection design for large vehicles • Adequate parking • Service and maintenance facilities 	<ul style="list-style-type: none"> • Adequate road capacity • Adequate road width and intersection design for large vehicles • Loading/ unloading docks • Cranes/lifts for truck on rail transfer • Grade crossing control/safety/ separation devices 	<ul style="list-style-type: none"> • Adequate road width and intersection design for large vehicles • Convenient airside/landside access • Loading and unloading docks • Additional parking 	<ul style="list-style-type: none"> • Adequate road width and access to terminals • Cranes/lifts for loading and unloading. • Passenger vehicle parking and access for cruise ships • NHS connectors 	<ul style="list-style-type: none"> • Waiting shelters • Park and ride lots • High density, mixed-use supporting development • Adequate lane width for dedicated busways or turnouts
Rail	<ul style="list-style-type: none"> • Adequate road capacity to serve rail intermodal facility • Grade crossing control/safety/ separation devices • Bridge/structure height and width clearance to allow rail double-stack access • Road access to rail transload and bulk transfer facilities 	<ul style="list-style-type: none"> • Turning wyes to reverse trains • Passing sidings for busy freight movement • Rail interconnection/ classification yards 	<ul style="list-style-type: none"> • Rail line in close proximity to air cargo facility 	<ul style="list-style-type: none"> • Rail sidings providing direct access to terminals and docks • Cranes/lifts to transfer goods • Access from port unloading area to rail intermodal facility • Port access via rail to inland port facility 	<ul style="list-style-type: none"> • Operating agreements to support joint use of freight corridors

The Transportation and Land Use Toolkit



	Highway and Bridge	Rail	Aviation	Ports	Transit
Aviation	<ul style="list-style-type: none"> Adequate road width and intersection design for large vehicles Convenient airside/landside access Loading and unloading docks Additional parking 	<ul style="list-style-type: none"> Transfer equipment Rail line in close proximity to landside transfer facility 	<ul style="list-style-type: none"> Instrument approaches to facilitate landings Adequately sized runways and taxiways Abundant hangar space Maintenance facilities Terminal buildings 	<ul style="list-style-type: none"> Ports become destinations to cruise lines for land-locked patrons 	<ul style="list-style-type: none"> Convenient service to terminals Baggage handling Regular scheduling Service to satellite lots Appropriate signage/information
Ports	<ul style="list-style-type: none"> Adequate road width and access to terminals Cranes/lifts for loading and unloading. Passenger vehicle parking and access for cruise ships 	<ul style="list-style-type: none"> Rail sidings providing direct access to terminals and docks Cranes/lifts to transfer goods Terminal access to cruise ships 	<ul style="list-style-type: none"> Ports become destinations to cruise lines for land-locked patrons 	<ul style="list-style-type: none"> Adequate channel depth and port capacity Locks and dams to facilitate movement between terminals. 	<ul style="list-style-type: none"> Coordination between cruise times and transit traffic Long-term parking for automobiles
Transit	<ul style="list-style-type: none"> Waiting shelters Park and ride lots High density, mixed-use supporting development Adequate lane width for dedicated busways or turnouts 	<ul style="list-style-type: none"> Feeder service to surrounding communities Operating agreements to support joint use of freight corridors 	<ul style="list-style-type: none"> Convenient service to terminals Baggage handling Regular scheduling Service to satellite lots Appropriate signage/information 	<ul style="list-style-type: none"> Provide connections to ports offering cruise services and other passenger formats. 	<ul style="list-style-type: none"> Waiting shelters Information kiosks Signage
Bike/ Pedestrian	<ul style="list-style-type: none"> Properly maintained shoulders Adequate width Dedicated lanes where applicable Crosswalks Proper signal timing Proper signage 	<ul style="list-style-type: none"> Bike racks Boxes for bringing bikes on trains Waiting platforms Automated ticketing machines Ancillary businesses and services 	<ul style="list-style-type: none"> Baggage handling Proper signage Ancillary businesses and services 	<ul style="list-style-type: none"> Consider pedestrian needs at ports with cruise services 	<ul style="list-style-type: none"> Waiting shelters Bike racks High density, mixed-use supporting development Stations located within ¼ - ½ mile of development centers

The Transportation and Land Use Toolkit



Planning for Airports

Pennsylvania’s public use airports range in size from small general aviation airports to large international airports, like Philadelphia International Airport and Pittsburgh International Airport, with thousands of workers and many airlines. Airports, regardless of size, represent a significant asset for the Commonwealth.

Click [here](#) for a listing of all airport facilities in Pennsylvania.

For more information on any of the material in this section, contact PennDOT’s Bureau of Aviation: Phone 717-705-1200 <http://www.dot.state.pa.us>

The majority of Pennsylvania’s 137 public airports serve a “general aviation” function, meaning that the primary users are there to conduct business in the community or for recreation. These general aviation airports are often located in the periphery of communities where available open space is appealing for private development. For this reason, it is important for communities to understand the true value of their local airport and carefully balance growth with transportation resource preservation, public safety and land use compatibility considerations.

Why is it Important to Plan for Aviation?

- To preserve Pennsylvania links to the national air transportation network.
- To maximize the economic impact generated both directly and indirectly by local airports and the business resources it brings to a community.
- To effectively integrate the land use and airspace needs of the local airports so as to preserve it as a public asset and provide a measure of safety on and around the airport.
- To assure uniformity and compliance with Pennsylvania’s Airport Zoning Act of 1984 which sets the framework for establishing height limitations of local development near airports.

Airports Provide for Economic Opportunities

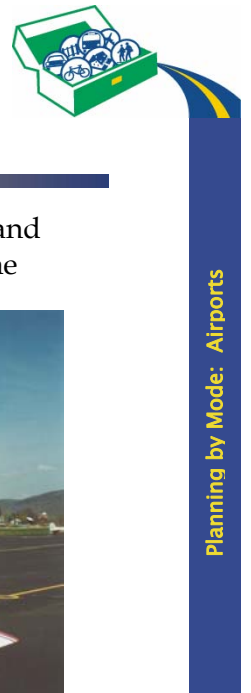
In addition to providing residents and businesses with an efficient link to the rest of the world, the Commonwealth’s airports are an outstanding economic resource for their host community. Opportunities include attraction of

Economic Impact of Selected Pennsylvania Airports

Airport Name	Associated City	Total Employment	Total Payroll	Total Output*
Wings Field	Ambler	121	\$3,962,200	\$6,664,900
Carlisle	Carlisle	32	\$578,900	\$1,242,300
Penn's Cave	Centre Hall	11	\$240,200	\$1,109,700
Erie International	Erie	2,297	\$41,000,000	\$103,700,000
William T. Piper	Lock Haven	79	\$1,423,400	\$5,291,200
Grand Canyon	Wellsboro	5	\$103,000	\$3,784,800
Source: The Economic Impact of Aviation in Pennsylvania, 1999				
* - Total Output is based on an FAA approved methodology that includes direct, indirect and multiplier benefits.				



The Transportation and Land Use Toolkit



on-airport businesses, such as restaurants or maintenance facilities; aviation-related jobs; and spin-off businesses to serve travelers. The table on page 27 highlights how airports fuel the economy of their community.

Airports Require Community Support

There are several examples across Pennsylvania of aviation facilities that enjoy broad community support for local, general aviation (GA) service.

One example includes the Bradford County Airport just south of Towanda in Bradford County. The airport has received financial support from the county and its authority members are composed of representatives from surrounding municipalities. The Bedford County Airport - operated by the Bedford County Air Industrial Park Authority - is another example of an airport that has flourished thanks to a strong relationship with surrounding local municipalities and its location within an Industrial Park.



When airports and municipalities enjoy positive working relationships and common goals, the safety and performance of the aviation facility is strengthened, as is the municipality's public safety and quality of life.

Tools for Preserving Airports

The most important step you can take towards preserving your community airport is to ensure it is considered as you prepare plans for your community. By doing so, you can prevent incompatible land uses that limit the safe operation of the airport. There are a number of tools available to help accomplish this, including the comprehensive plan and zoning ordinances.

The Comprehensive Plan

The [Comprehensive Plan](#) is the appropriate place for municipalities to address issues of compatibility with airports to ensure that the land use planning process considers the needs and benefits of airports.

- Invite a representative from the airport to join into any local effort to develop or update a Comprehensive Plan to ensure that aviation issues are considered during the planning process.
- Consider regional aviation facilities in the documentation of your transportation system, even if it is not located in your municipality.
- Identify the role of the airport in the community/region as part of developing a future vision for your community.

The Transportation and Land Use Toolkit



- Identify measures that can be implemented to protect the airport within the Transportation plan element and Land Use plan elements of the comprehensive plan.
- While developing the Future Land Use Map, verify that the proposed uses comply with state law and federal rules regarding navigable airspace (FAR Part 77 “Objects Affecting Navigable Airspace,” available from PennDOT’s Bureau of Aviation).

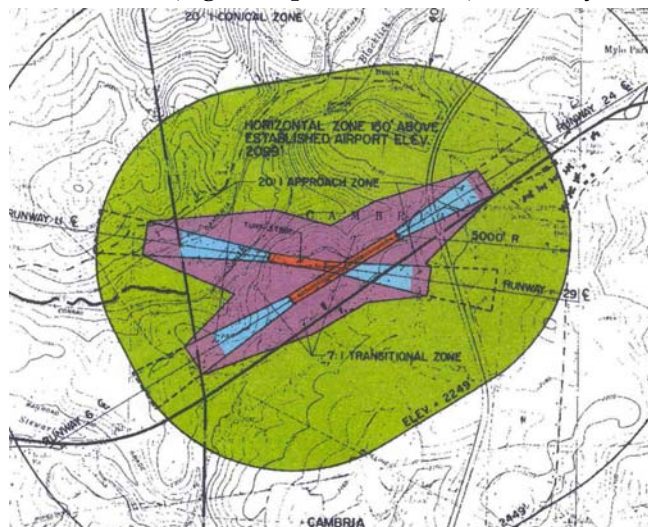
The Airport Master Plan Report and Airport Layout Plan (ALP)

While on-going community and governmental involvement is important, it is critical during an Airport Master Plan study to ensure that the preservation needs and development of this valuable resource are understood and integrated with other planning documents, such as the Municipal and/or County Comprehensive Plans. The Airport Master Plan documents existing and future infrastructure, activity/operations, and proposed capital improvements over a twenty year planning horizon. It represents a blueprint for the airport to forecast future development to meet the ever-changing air travel needs of the surrounding communities. The Airport Layout Plan (ALP) is a series of illustrations that depict the layout of airport facilities. Airspace protection, land-use and property maps are also included in the ALP to assist in land use planning efforts.

Zoning

Used within its limitations, zoning is the preferred method for managing land use to achieve airport-environs compatibility both for height and land use control. The primary advantage of zoning is that it can promote compatibility, while leaving the land in private ownership, on the tax rolls, and economically productive.

Zoning is the only means available to control the height of buildings and other structures (e.g., cell phone towers) that may become a hazard to flight. Zoning is also necessary to limit residential development in areas likely to be impacted by aviation noise and that could threaten the long-term viability of an airport.



The Runway Protection Zone (RPZ)

“RPZs were originally established to define land areas underneath aircraft approach paths...to prevent the creation of airport hazards or the development of incompatible land use.”

An RPZ is an area that begins at a point 200 ft. beyond the end of a paved runway or at the end of turf runways. The length of the RPZ extends 1,000, 1,700 or 2,500 ft. depending on the category of runway and approach. The inner width of a RPZ is located closest to the runway end and varies from 250 to 1,000 ft. The outer width is opposite the inner and varies from 450 to 1,750 ft. As with the length of the RPZ, these dimensions are dependent on the runway category and approach.

Source: [Airport Land Use Compatibility Guidelines, PennDOT Bureau of Aviation](#)

The Transportation and Land Use Toolkit



The PennDOT Bureau of Aviation has developed a [model airport zoning ordinance](#) to serve as a guideline for municipalities to incorporate hazard zoning into their community.

Compatible Land Uses

PennDOT's Bureau of Aviation has also developed [Airport Land Use Compatibility Guidelines](#) to provide guidance to municipalities to protect public safety and preserve the viability of their airports. Generally, development around an airport should not pose a safety hazard to pilots in the air or to persons on the ground. In addition, compatible development around the airport is *not* noise sensitive. Compatibility is determined by the location of the land relative to the runway approach and take-off areas. For example, the following lists some examples of incompatible land uses:

- Land uses with lights that shine upward and could impair a pilot's vision;
- Land uses that produce a glare or smoke that may impair a pilot's vision;
- Land uses that attract large numbers of birds or wildlife, such as water impoundments, garbage dumps, sanitary landfills or sewage treatment plants; and
- Land uses which attract large concentrations of people or those that are sensitive to aircraft noise.

Can I do anything about existing incompatibilities?

Yes, there are corrective actions that may resolve or at least mitigate the impact of incompatible land use on the airport's long term operational efficiency. They fall into three general categories: noise mitigation, operational procedures, and acquisition.

It is best to contact the airport sponsor, your county planning commission, or the Bureau of Aviation to determine which actions are appropriate for your situation.

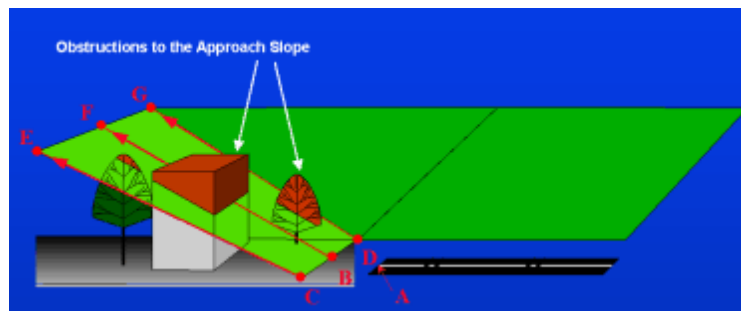


Figure 1: Example of Obstructions Zoning is Intended to Prevent

Other Tools

There are several other planning tools available to municipalities in addition to comprehensive planning and zoning.

The Transportation and Land Use Toolkit



Official Map

The municipality's [Official Map](#) can be used to:

- Identify and protect land around an airport to accommodate future growth, and reserve property for some future public use. Protection of land within proximity of an airport can be established through the use of the Official Map and can be used as a means to create parks and public open space to serve as a buffer around airport activities.
- Establish connectivity to the overall transportation system, including highway and rail.

Subdivision & Land Development

The **Subdivision and Land Development Ordinance** can be used to:

- Mitigate the operating impacts of an airport by requiring enhanced buffer zones to minimize the noise impacts on neighborhoods and/or obstruction lighting to identify hazards in close proximity to the airport to help improve safety for pilots.

Design Guidelines

Design Guidelines can be used to:

- Provide a guide for recommendations found in the municipal subdivision and land development ordinance.
- They can also apply to future airport improvements in order to ensure compatibility with community character.

State Aviation System Plan

The PennDOT Bureau of Aviation's Statewide Airport System Plan (SASP) provides the bureau with the tools it needs to make decisions regarding the preservation, enhancement and promotion of the state's air transportation system. The system plan ultimately helps to form the basis of a long-term strategic development plan for the Commonwealth's airport system.



The SASP's application to municipal government would be to raise awareness of what the system plan is, the airport facilities that are included in it, and the relationship to any development that would impede or impair the performance and safety of a local airport.

Education and Outreach

The bureau also has an 18-minute educational video ("Wings of Dreams") that can be used to educate local planning and elected officials on the benefits of general aviation facilities. The video may be viewed in whole or in part by visiting PennDOT's website, www.dot.state.pa.us and by clicking on [Wings of Dreams - Video](#).

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Funding

Aviation Grant Programs:

The Bureau of Aviation administers three [grant programs](#) for airport development:

- The Block Grant Program (BGP, federal)
- The [Aviation Development Program](#) (ADP, state)
- The Capital Budget/Transportation Assistance Program (TAP, state).

Real Estate Tax Reimbursement: The [Real Estate Tax Rebate Program](#) provides real estate tax relief for public use airports in Pennsylvania.

For More Information:

The PennDOT Bureau of Aviation is organized to assist in the successful development of Pennsylvania's aviation system. The services it provides include:

- o Air service monitoring
- o Grant management
- o Aviation planning
- o Project management and engineering
- o Airport licensing, and
- o Flight services.

The bureau can be reached at the contact information shown below.

[PennDOT Bureau of Aviation](#)

Phone: 717-705-1200

<http://www.dot.state.pa.us>

Additional Publications and Resources

[Aviation Council of Pennsylvania](#)

[Federal Aviation Administration \(FAA\)](#)

[Federal Aviation Regulation \(FAR\), Part 77](#)

[Governor's Aviation Advisory Committee](#)

PennDOT Bureau of Aviation [Airport Planning Guidance](#) and Airport Compatibility Checklist

PennDOT Bureau of Aviation [Airport Hazard Zoning Study](#)



Airports Compatibility Checklist

Has your planning office...

- Discussed comprehensive planning or development proposals with the airport manager?
- Maintained an ongoing dialog with the airport authority on its Master Plan and subsequent updates?
- Created a map showing the airport's traffic pattern and aircraft safety zones?
- Evaluated existing or potential obstructions to the airport's navigable airspace?

Does your Comprehensive Plan...

- Provide an inventory of airport operations and facilities, both existing and planned?
- Include maps that identify airport airspace and airport compatibility zones?
- Include policies to avert incompatible land development adjacent to the airport?
- Consider the regional directions identified by the Long Range Transportation Plan?
- Recognize the airport as an essential public-use facility?

Do your development regulations...

- Prohibit residential development or limit residential density adjacent to the airport?
- Protect airport approaches?
- Provide an inventory of airport operations and facilities, both existing and planned?
- Include maps that identify airport airspace and airport compatibility zones?

Want more information?

Contact the PennDOT Bureau of Aviation at 1-717-705-1260 or www.dot.state.pa.us

The Transportation and Land Use Toolkit



Planning for Bicyclists and Pedestrians

Walking is the most basic form of transportation. Virtually everyone can be considered a pedestrian, including those in wheelchairs and other users of mobility assistance devices. Even most auto and transit trips begin or end with a walking trip.

Cycling serves not only as a recreational mode; for many it serves as basic transportation as well. Bicycling is low-cost and provides mobility opportunities for many who do not have a driver's license or access to public transit. Increased cycling and walking have significant health benefits as well. The role of bicycle and pedestrian modes in our overall transportation system is important, yet especially so in our more built up areas.

Bicycling and walking are important components of Pennsylvania's multimodal transportation system and accommodating them can reduce congestion, improve health and enhance air quality.

PennDOT is currently finalizing an update to the 1996 Statewide Bicycle and Pedestrian Master Plan. The 2007 version will serve as an invaluable resource for accommodating bicycles and pedestrians. Readers may go to the website of PennDOT's Bureau of Highway Safety for more [information](#).

For more information on any material, in this section, contact
PennDOT
Bureau of Highway Safety
and Traffic Engineering;
Phone 717-787-7350
<http://www.dot.state.pa.us>

Why is it important to plan for cyclists and pedestrians?

The benefits of increased walking and cycling include:

- Improved health
- Reduced traffic congestion
- Reduced air and noise pollution
- Reduced need for parking and other auto-supportive investments
- Additional opportunities for tourism development.

Tools for Planning for Bicyclists and Pedestrians

With the growth in the popularity of cycling, and state efforts to redevelop downtowns, ensuring that cycling and pedestrian facilities are available and safely designed is essential.

Comprehensive Plan Checklist

Identify bicycle and pedestrian access in the transportation element of the [Comprehensive Plan](#).



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Identify economic development opportunities associated with improved bike/ped facilities, for example, outdoor recreation and tourism.

Encourage mixed-use development at a pedestrian scale in appropriate areas, which is highly conducive to walking and biking instead of driving.

Encourage the retro-fitting of bicycle and pedestrian facilities, particularly in urban core areas.

Identify special districts such as Tax Increment Financing (TIFs) on the Future Land Use Map that would take advantage of dedicated tax-revenues to improve crosswalks, sidewalk ramps and bicycle racks.

The **Zoning Ordinance** can be used to:

- Require bicycle parking as part of new developments, particularly in high-density residential and commercial areas.
- Create an overlay zone that would introduce additional criteria for enhanced bike/ped facilities, for example, the provision of more frequent crossing opportunities along a particular corridor.

The **Subdivision and Land Development Ordinance** can be used to:

- Require the creation of on- or off-street bike lanes and pedestrian facilities
- Specify materials and construction techniques for bike/ped facilities
- Require design standards that include safe and coordinated facilities, including sidewalks.

Other Tools

Develop a Bike/Ped Master Plan as a supplement to the Comprehensive Plan to provide greater focus on ways to implement best practices.

Low-cost ways to encourage residents to cycle or walk:

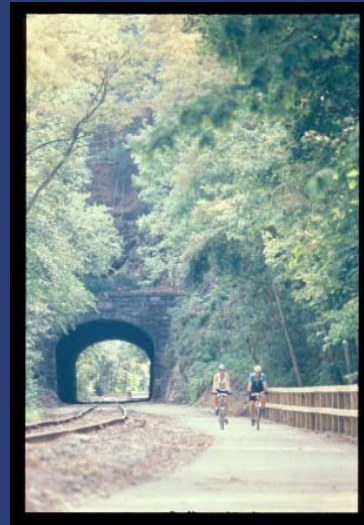
- Sidewalk installation and replacement
- New streetlights
- Improved pedestrian crosswalks

Rail Trails

The conversion of former railroad corridors into public use trails is a Pennsylvania success story. Each year, millions of outdoor enthusiasts now enjoy a growing network of Rail-Trails.

Rail-trails can serve as both a recreational amenity as well as a viable transportation corridor. Rail-trails can be incorporated into transit planning and can serve as a safe thoroughfare for children to get to school.

The Pennsylvania Department of Conservation and Natural Resources (DCNR) can help communities acquire, design, construct and maintain rail trails. DCNR operates a [Rails-to-Trail](#) program to provide local technical assistance to municipalities and counties.



Copyright 2002 York County Convention & Visitors Bureau
Heritage Rail Trail, York, PA

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- Bicycle parking
- Audible pedestrian signals
- Greater enforcement at pedestrian crosswalks
- Proper application of [shoulder rumble strips](#)
- Traffic calming measures (e.g., chokers, speed tables, etc.)
- Improved signage
- Official Map for trails and other linkages for bicycle/pedestrian circulation.

Safety improvements for children and seniors

Work with the school district(s) to develop a Walking School Bus Program to encourage children to walk to school in a group supervised by an adult. (More information on the [Walking School Bus Program](#) is available from the [Pennsylvania Advocates for Nutrition and Activity](#).)

- Paved or widened roadway shoulders
- Reflectors to improve overall roadway visibility
- Signage to identify shared bike/ped-auto routes and remind motorists to expect pedestrians and cyclists
- The use of striping to designate bike lanes
- Visible crosswalks with treatments such as raised pavement, pavers, or high-visibility striping
- Safe drainage grates
- Installation of bike racks for parking
- Curb ramps to enhance accessibility for people in wheelchairs.



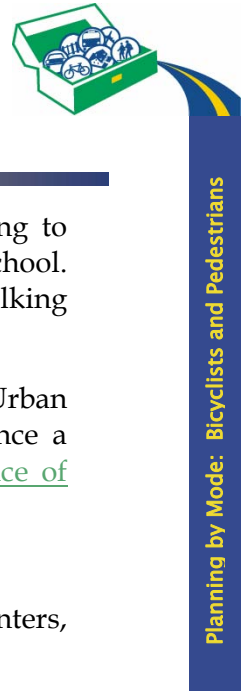
Funding Opportunities

The development of facilities to encourage cycling and walking is usually inexpensive. Sources of funding are available to help increase the accessibility of your community for non-motorized users of the transportation system.

[Transportation Enhancements \(TE\) Program](#). The TE Program is federally funded and is administered in Pennsylvania by the MPOs/RPOs and PennDOT. It is a competitive program to offer funding for projects in twelve eligible categories, including the provision of facilities and safety and educational activities for pedestrians and bicycles. Eligible activities include but are not limited to crosswalk improvements, projects to make pedestrian environments safer and more appealing, and the development of trail facilities.



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[Safe Routes to School](#) is a PennDOT-administered program that directs federal funding to communities with projects that improve the safety of children walking or cycling to school. PennDOT accepts applications for projects that increase the number of children safely walking and bicycling to school.

[Community Development Block Grants](#). The US Department of Housing and Urban Development provides grants to communities to construct decent housing and advance a suitable living environment. These grants are administered by the [Pennsylvania Office of Community Development](#) and eligible activities include:

1. Acquisition of property for public purposes
2. Construction or reconstruction of streets, water and sewer facilities, neighborhood centers, recreation facilities, and other public works
3. Demolition
4. Rehabilitation of public and private buildings
5. Public services
6. Planning activities
7. Assistance to nonprofit entities for community development activities.

Note: Additional Funding Opportunities are Listed in the Appendix

Contact Information -

PennDOT's Bureau of Highway Safety and Traffic Engineering
Phone: 717-787-7350
<http://www.dot.state.pa.us>

Additional Publications and Resources

PennDOT Statewide Bicycle & Pedestrian Master Plan: Bicycling and Walking in PA, A Contract for the 21st Century

PennDOT's [Bike Safe](#) and [Walk Smart](#) web portals

[Pennsylvania Department of Health](#)

Phone: 1-877-724-3258
<http://www.dsf.health.state.pa.us/health/site/default.asp>

[Pennsylvania Advocates for Nutrition and Activity](#)

Phone: 717-439-7371
<http://www.panaonline.org/>

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[Pennsylvania Rails-to-Trails Guide](#)

Phone: 717-787-2869

<http://www.dcnr.state.pa.us/contactdcnr.aspx>

[Rails-to-Trails Conservancy - Northeast Regional Office](#)

Phone: 717-238-1717

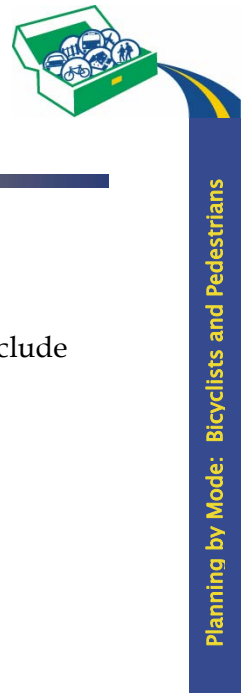
<http://www.railtrails.org/field/northeast/default.asp>

[Pennsylvania Safe Kids Coalition](#)

Phone: 717-763-1661

<http://www.pasafekids.org/>

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Planning for Bicyclists and Pedestrians Checklist

When considering improvements to the transportation system, does your community include the needs of bicyclists and pedestrians?

Does your Comprehensive Plan...

- Include bicycling and walking as part of the transportation element?
- Identify areas for mixed uses in order to encourage walking and biking?
- Identify the location of future bicycle/pedestrian facilities?
- Consider opportunities for recreational biking and hiking?
- Consider the health benefits of providing bicycle/pedestrian facilities in the community?

Has your planning office...

- Considered developing a Bicycle/Pedestrian Master Plan to further support the comprehensive plan?
- Focused on the specific issues associated with providing opportunities for walking and biking?
- Discussed bicycle and pedestrian concerns with your local provider of public transportation?

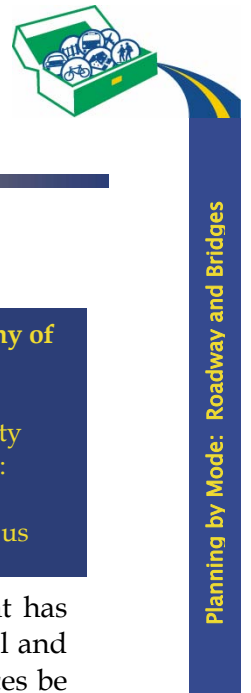
Do your development regulations...

- Require the inclusion of bicycle/pedestrian facilities (e.g., parking, storage, etc.) in new development projects?
- Include a mixed use or village district to provide residents with additional opportunities to walk or ride a bike instead of getting in the car?
- Plan for future volume (e.g., need for crossing guards, etc.)?
- Specify construction materials for bicycle/pedestrian facilities?

Want more information?

Contact PennDOT's Bureau of Highway Safety and Traffic Engineering
Phone: 717-787-7350; <http://www.dot.state.pa.us>

The Transportation and Land Use Toolkit



Planning for Roadways and Bridges

Our network of highways, roadways and bridges constitutes the core of our overall transportation system. These facilities are important components of a community's overall quality of life and economic potential, providing mobility and accessibility to their users. They also serve as key intermodal connections to other travel modes and options.

For more information on any of this material, contact
PennDOT
Bureau of Highway Safety
and Traffic Engineering;
Phone 717-787-5798
<http://www.dot.state.pa.us>

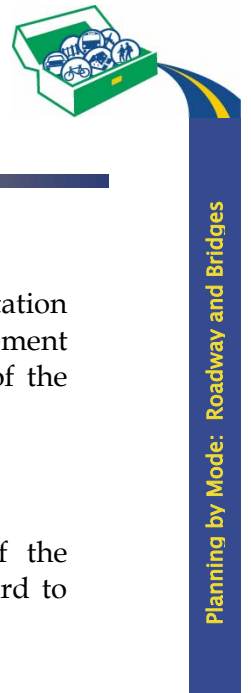
The effect of roadways, highways and bridges on land use and economic development has long been recognized. Since municipal governments operate in a world of limited natural and financial resources, good planning policy dictates that transportation facilities and services be driven by land use and economic development policy.

Why is it Important to Plan for Roadways and Bridges?

- Changes in trading patterns require greater attention to the transportation needs of our communities' shippers and receivers, particularly in relation to roadway geometry and bridge clearance.
- Congestion is increasing overall and some calculate that it costs Pennsylvania motorists \$2.3 billion per year in delays and wasted fuel.
- People are more reliant on the private automobile than ever before with 76 percent of Pennsylvania's work trips made by workers traveling alone in a car. Providing more mobility options to commuters is one way to address traffic congestion.
- An aging and decentralizing population is placing greater demands on the design and performance of our highway network.
- Many of Pennsylvania's local governments operate in a fiscal environment that precludes capacity expansion as an option.
- Highway capacity expansion is not always an affordable and appropriate option to solve congestion. Interconnected street networks, access management and multimodal travel options may be more desirable alternatives for consideration.



The Transportation and Land Use Toolkit



Tools to Plan for Roadways and Bridges

Planning for Roadways and Bridges at the local level should occur in the transportation element of the Comprehensive Plan. The Zoning and Subdivision and Land Development Ordinances play an essential role to implement the land use development objectives of the plan.

Comprehensive Plan

The Comprehensive Plan should be coordinated with the comprehensive plans of the surrounding municipalities, county, as well as MPO/RPO long range plan. With regard to highways and bridges, the Comprehensive Plan should incorporate the following:

- A transportation element, which includes the community's goals, objectives and recommended actions over the life of the planning document as it relates to transportation improvements.
- A description of the community's roadways by classification scheme.
- An inventory of existing transportation conditions, including commutation patterns, and household access to a vehicle, as well as modal conditions for other travel modes (aviation, bicycle/pedestrian, public transportation, rail freight, etc.).
- Identified roadway and corridor deficiencies, including circumstances where corridor deficiencies impact other transportation modes or facilities. Examples include planning for railroad height and width clearances for bridges that span railroad rights-of-way.
- From a transportation perspective, the Comprehensive Plan should address the following issues:
 - What is the composition and spatial location of the municipality's future land uses?
 - How will people and goods be moving to and from these origins and destinations?
 - Are there other modes besides highways in facilitating the movement of people and goods?

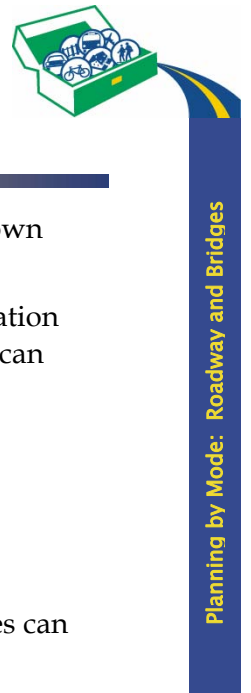


Zoning

When considering zoning's effect on the area roadway network, there are several points to be considered:

- Where appropriate, allow for mixed uses that are developed on a pedestrian scale (as opposed to automotive), which can encourage fewer vehicular trips, putting less pressure on the existing system.
- Use setback requirements and other design elements to promote safety.

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- Use innovative parking solutions, including shared parking lots, to maximize downtown parking.
- Overlay zones for major thoroughfares, their intersection and interchanges, transportation arteries and rail or transit terminals are authorized by the MPC. These overlay zones can provide additional regulations on development along these critical corridors.

Subdivision and Land Development

- Ensure adequate connectivity to the surrounding community - consider the “grid”.
- Require complete streets, particularly in mixed use areas.
- Require [Traffic Impact Studies](#) for large development projects. Data from these studies can also be used as part of larger land use/transportation studies.
- Establish design criteria for new transportation facilities - incorporate Context Sensitive Solutions.
- Focus on safety.

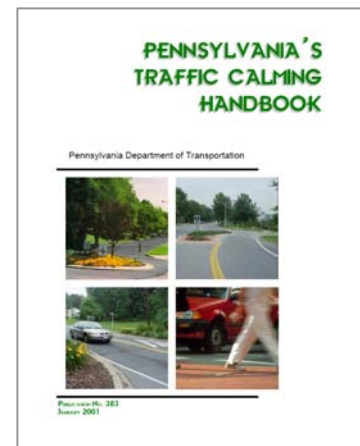
Other Tools

The Traffic Impact Study (TIS) - Use the Traffic Impact Study to determine the impact a new development will have on area traffic flow. Some municipalities require a TIS as part of the subdivision and land development ordinance. The size of the development generally determines if a TIS is needed. The following elements should be included in any TIS:

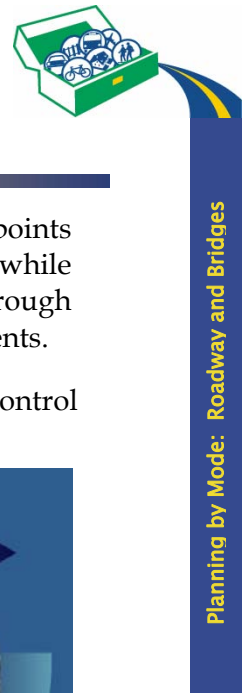
- An overview of the study area's transportation facilities, including signals, public transportation service, roadway geometry, number of lanes, traffic volumes, etc.
- An estimate of how much new traffic will be added to the overall traffic stream as a result of the proposed land development. A description of roadway performance using level of service (LOS) analysis should also be examined and reported.
- Site plan review - Including interior circulation, connectivity to neighboring developments and roadway network, parking supply and any sight distance issues.
- Future demands - projections of future traffic volume.
- Plans for how to address/mitigate any traffic issues associated with the proposed Land Development Plan.

Official Map: Municipalities can develop an Official Map to convey its vision for the layout of future streets to the development community. Developers can then incorporate these features into their development plans.

Traffic Calming - Traffic calming is a technique that is used on roadways to control the volume and speed of traffic. Various techniques are currently used, including channelization and speed humps. The pictured handbook is available online at www.dot.state.pa.us



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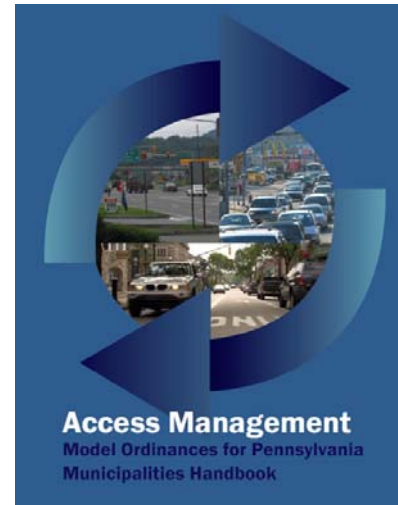


Access Management Ordinances: Reducing the total number and location of access points onto a roadway is an important means of reducing pedestrian/vehicular conflicts while improving roadway safety and capacity. Access management can be accomplished through several means, including driveway and signal spacing, turning lanes, and median treatments.

Municipalities have the authority, though the use of access management ordinances, to control ingress and egress even if they occur on Pennsylvania state highways.

Access management ordinances identify the access standards for roads and give communities greater control over the layout and arrangement of driveways and new streets to ensure compliance with the [Comprehensive Plan](#) or the [Official Map](#).

PennDOT's [Access Management: Model Ordinances for Pennsylvania Municipalities Handbook](#) provides thorough discussion of the benefits of Access Management and contains model ordinances to help municipalities better accommodate growing traffic demand and development while preserving community character.



Highway Occupancy Permitting (HOP) - The HOP process is the method by which PennDOT manages access to state owned and operated roadways. The HOP process itself is a regulatory program where permission is granted to developers to create access to a state-owned roadway. Beyond PennDOT's program, a municipality can also regulate access through its land development and zoning ordinances for ingress and egress to public roads. **An HOP is not a substitute for municipal ingress and egress regulations.**

As part of the permit process, all low, medium, and high volume driveway HOP applicants are required to complete the M-950MPC Land Use Questionnaire Form which asks the applicant the following questions:

- Does the county where your project is located have a Comprehensive Plan?
- Does the municipality where your project is located have a Comprehensive Plan?
- Does the municipality or county where your project is located have a zoning ordinance?
- Has the municipality where your project is located adopted a joint municipal zoning ordinance?
- Has the municipality where your project is located entered into a cooperative implementation agreement?
- Is your project a permitted use by right, as specifically authorized in the applicable zoning ordinance, or have you obtained formal zoning approval?

This questionnaire assists PennDOT in considering land use conditions during the HOP process. The Department may rely upon comprehensive plans and zoning ordinances if planning at the local and county levels are generally consistent.

The Transportation and Land Use Toolkit



Context Sensitive Solutions - PennDOT has embraced FHWA's Context Sensitive Solutions initiative which is committed to changing the way highway projects are developed, constructed and maintained.

Context sensitivity emphasizes the broad nature of solutions to transportation needs by focusing on enhancing the quality of life across the Commonwealth for transportation users, communities and the surrounding environment. This initiative recognizes that not every context sensitive solution includes a design component, and therefore focuses on the process for developing all projects.

CSS is a proactive approach to transportation planning, design and implementation that looks at the broad context transportation plays in enhancing communities and natural environments, be they urban, suburban or rural, scenic or historic.

Key Principals of CSS include:

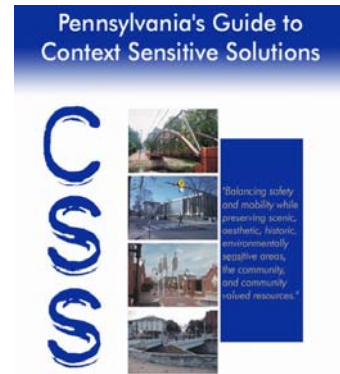
- A collaborative project development process using a multi-disciplinary approach.
- Early and continuous engagement of stakeholders.
- Flexibility in design.
- Minimal impact on the community and surrounding environment.
- Design decisions that achieve safety through reducing risks.

PennDOT is in the process of completing their Guide to Context Sensitive Solutions. For more information, contact the PennDOT Bureau of Design or access [PennDOT's Context Sensitive Solutions website](#).

Intelligent Transportation Systems

ITS encompasses a broad range of technologies that help monitor and manage traffic flow, reduce congestion, enhance safety and provide alternative routes for travelers.

- Examples include on-board navigation systems; electronic toll payment systems (EZ-Pass); integrated signal systems; traffic video/control technologies; and variable message signs.
- ITS technologies can be used to coordinate signal timing to improve traffic flow, making the highway system function better.
- ITS can be used in conjunction with EMS and transit service to provide signal pre-emption and reduce response and travel times.

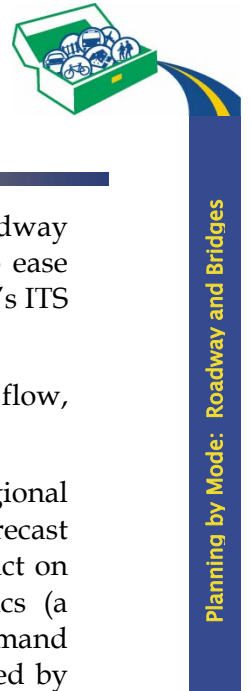


DID YOU KNOW THAT...
ITS technologies are already in use by the residents of your community?

Technologies to enhance the safety and mobility of travelers is more common than you may think. Examples include:

- ✓ OnStar®: GM technology that provides emergency roadside assistance and vehicle tracking;
- ✓ EZ-Pass: electronic toll collection used on the PA Turnpike and other roadway and bridge facilities around the Commonwealth;
- ✓ SmarTraveler.com and Traffic.com provide real time traffic information in the Philadelphia area that can be accessed in advance of travel.

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- PennDOT has developed a variety of strategies to help municipalities manage roadway traffic congestion. ITS can provide supportive, low-cost technological solutions to ease traffic flow in ways that support sound land use planning. Information on PennDOT's ITS strategies is [located on the PennDOT website](#).
- ITS encompasses a broad range of technologies that help monitor and manage traffic flow, reduce congestion, enhance safety and provide alternative routes for travelers.

Travel Demand Modeling - Many of Pennsylvania's MPOs operate and maintain a regional travel demand model. These models are useful planning tools that can be used to forecast order of magnitude changes in travel patterns (primarily auto trips) and resulting impact on traffic, based on proposed transportation improvements or changes in demographics (a surrogate for land use). PennDOT also operates and maintains a statewide travel demand model. This is particularly useful on major roadways in rural parts of the state unserved by regional models.

Funding Opportunities

Sources of non-traditional funding to help pay for roadway and bridge improvements are listed below.

Impact Fees: The MPC provides municipalities with the authority to charge Impact Fees, or fees to help fund offsite transportation improvements necessitated by new development. [Article V-A of the MPC](#) provides municipalities with the requirements to establish impact fees. Off-site road improvements cannot be required of developers without the proper impact fee ordinance in place. A handbook on impact fees will be available from PennDOT in late 2007.

Transportation Development District (TDD): In a TDD, a developer must pay an agreed-upon price to the municipality as a result of the impact of the specific development upon surrounding transportation infrastructure. The funds then go into escrow in order to pay for a transportation improvement.

Transportation Partnership Act: The Transportation Partnership Act of 1985 permits municipalities, acting either alone or in concert with other municipalities, to work with the private sector to identify a Transportation Partnership District to impose fees for property owners and businesses within the district.

Pennsylvania Infrastructure Bank (PIB): Created to help municipalities with funding transportation improvements, the goal of the [PIB](#) is to leverage state and federal funds, accelerate priority transportation projects, spur economic development, and assist local governments with their transportation needs.

The PIB provides low-interest loans to local governments for construction projects; including roadway improvements, bridge rehabs and replacements, and traffic signals.

Note: Additional Funding Opportunities are Listed in the Appendix

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For More Information:

[PennDOT's Program Center](#)

Phone: 717-787-7350

Additional Publications and Resources

[PennDOT Local Technical Assistance Program \(LTAP\)](#) - The LTAP program provides training and technical assistance to help municipalities develop maintenance procedures, essential safety practices, and infrastructure management processes. PennDOT LTAP provides technical information and proven technologies dealing with roadway maintenance and safety methods to meet the growing demands on municipal governments.

[Context Sensitive Solutions](#)

[Access Management Model Ordinances for PA Municipalities](#)

[AASHTO "Green Book" \(A policy on Geometric Design of Highways and Streets\)](#)

[AASHTO Guide on the Development of Bicycle Facilities](#)

[AASHTO Guide on the Development of Pedestrian Facilities](#)

The Transportation and Land Use Toolkit



Planning for Roadways and Bridges Checklist

Is your community planning for needed changes in the road network?

Does your Comprehensive Plan...

- Include an up to date inventory of the roadways and bridges in your community?
- Identify problem areas such as dangerous intersections, congested corridors, or poor access?
- Identify future transportation needs in coordination with the Future Land Use map?
- Consider the potential impact of land use changes on the system?

Do your development regulations...

- Include design elements that promote safety (traffic calming) and are sensitive to the community's character (context sensitive solutions)?
- Require complete streets that include sidewalks and bike lanes?
- Include innovative parking solutions such as shared parking lots?

Has your Planning Commission considered...

- Using an [Official Map](#) to preserve future rights of way based on the Comprehensive Plan (Future Land Use Map)?
- Requiring [Traffic Impact Studies](#) to determine a new development's effect on the network?
- Developing an **Access Management Ordinance** to protect the free flow of traffic on the community's major corridors?
- Developing a strategy for addressing local bridges?
- Including **ITS Technologies** as part of an overall traffic management system?
- Land use regulations to protect noise-sensitive land uses along heavily traveled transportation corridors?

Want more information?

[Contact PennDOT's Program Center](#)

Phone: 717-787-2862

The Transportation and Land Use Toolkit



Planning for Transit

Transit in Pennsylvania exists in many forms. Scheduled fixed-route bus and rail is the most common form of transit in the state. But other forms exist as well, including demand-responsive, intercity bus, paratransit, and other mobility alternatives offered by the Area Agency on Aging or other social service agencies.

For more information on this material, contact
PennDOT's
Bureau of Public Transportation
Phone 717-783-8025
<http://www.dot.state.pa.us>

Obviously there is no “standard” Pennsylvania community. Transit providers in Pennsylvania range from large urban transit agencies like the Southeastern Pennsylvania Transportation Authority (SEPTA) and the Port Authority of Allegheny County to smaller agencies. Pennsylvania also has Transportation Management Associations that provide a mix of fixed-route and demand-responsive service or only one type.

Regardless of the size or character of the community, transit serves two primary user groups. First, it provides mobility for residents who do not own or do not have access to an automobile and therefore must rely on transit as their primary means of travel. Second, it serves those who choose transit over personal vehicles for some or all of their trips.

In addition to providing mobility options for Pennsylvanians, transit has a role to play in enhancing and preserving the character of our communities. By serving as an alternative to driving, transit can help local officials more effectively integrate land use and transportation, and promote compact, livable communities as part of a strategy to reduce or minimize the reliance on automobiles.

Why is it Important to Plan for Transit?

In many communities transit serves a critical function by linking those with limited mobility to the services they need and locations they want to visit.

By providing mobility for those who choose to use transit instead of drive, transit helps create and preserve vibrant, walkable communities with a strong sense of place - communities where people want to live, work and visit.



Transit can help communities save money by reducing the need for costly roadway and parking investments.

Tools to Plan for Transit

Comprehensive Plan

The [Comprehensive Plan](#) is the best place for a community to begin the effort to better accommodate and plan for transit.

The Transportation and Land Use Toolkit



- Think about your community's needs over the next 20 years and what demographic changes are likely to occur that may encourage greater transit use than today.
- Invite a representative from the local transit provider to join the Comprehensive Planning effort to coordinate and communicate needs and plans.
- Identify the role of transit in the community/region as part the future vision for your community.
- Encourage mixed uses and TOD where appropriate.
- Identify specific transit related projects to include in the region's MPO/RPO Long Range Transportation Plan.

Zoning

- Allow for park and ride facilities at appropriate locations in the community.
- Allow for Transit Oriented Development and mixed uses to encourage transit use.

Subdivision and Land Development Ordinance

- Use the local subdivision and land development ordinance to require street grids that support transit and bike/ped access, minimize cul-de-sacs and circuitous routings, and provide for other transit-supportive features like bulb-outs and transit shelters.
- Components of the subdivision and land development ordinance that may be modified to better assist transit include:
 - Adequate roadway widths and turning radii to accommodate buses.
 - Guidance on the design and construction of bicycle lanes and racks.
 - Provisions for bus stops and shelters.
 - Ensuring that pavements at public entrances to shopping centers are designed to accommodate the heavier weight of transit buses to enable good access for transit users.
 - Bus turnout areas to get buses out of travel lanes and make boarding/alighting safer and easier.

What is TRID (the Transit Revitalization Investment District Act legislation passed by the PA General Assembly) and how can it help improve communities?

The Transit Revitalization Investment District Act helps communities plan and implement transit-oriented development. TRID encourages municipalities to partner with transit agencies and developers and offers the possibility of sharing incremental real estate taxes to support transit capital projects in TRID areas.





Other Tools

Bicycle Racks on Buses

Supporting the installation of bicycle racks on the buses of your local provider of public transportation can increase the catchment area and economic "reach" of this form of transportation. The racks offer many benefits, including increasing safety for bicycle commuters and promotion of bicycle use over the private automobile.

Using Transit Oriented Development (TOD) to help improve the community

TOD entails the development of higher density mixed use developments around key transit nodes and activity centers.

TODs can either be established on existing developed land by implementation of transit-friendly enhancements, such as raised crosswalks near the rail or bus station, or within new developments to ensure that accommodations for transit are a design feature. TODs create livable communities with more transportation and housing options while reducing the dependency on the automobile for mobility.

Highlights of TODs normally include:

- Rail or bus station access within a five- to ten-minute walk.
- Mixed-use development comprised of a mix of retail and housing.
- Supportive zoning or other land use ordinances that establish building and street design standards.
- Minimum and maximum parking requirements.
- Pedestrian and cyclist amenities that may include raised crosswalks, traffic signals timed for the safety and convenience of non-motorized users, and bike lanes.
- The use of roadway design and other techniques to help calm traffic and enhance the safety of the corridor for all users.

Transit Oriented Development in Paoli

The Paoli (Chester County) Community Master Plan calls for the implementation of zoning regulations that recognize the unique nature of transit oriented development and the mixed use nature of the area. The zoning amendments will foster a stronger and more diversified multi-functional commercial, office and residential center consistent with its role as an intermodal transportation hub. This district is intended to promote the development of a unified transit oriented area which includes a transit core, a village business district, and several mixed use transitional districts connected through balanced, walkable development focused on an inviting and functional pedestrian environment.



The Transportation and Land Use Toolkit



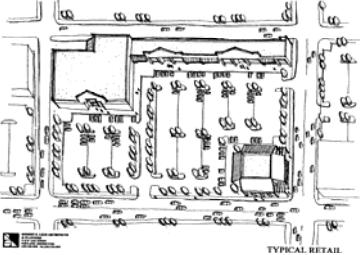
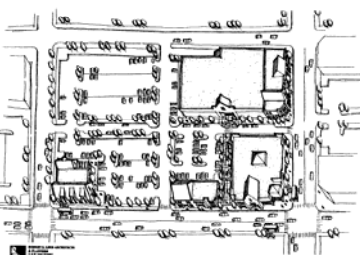
The Use of Land to Encourage Transit

In order for transit to function effectively and efficiently, operating delays must be avoided wherever possible. Street layout can serve as an impediment to efficient transit operations, and the slow speed of transit often serves as a disincentive for some to choose it as a mode.

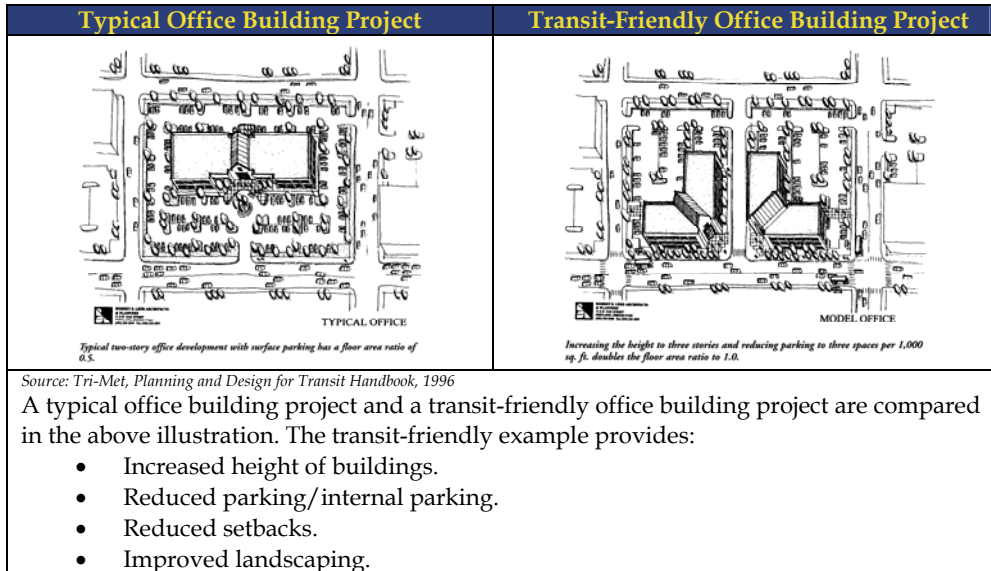
Below are examples of site planning that will support transit use and increase the appeal of transit due to easy site access.

Involving transit providers early in the land development process can help ensure that accommodations for transit service can be identified before construction occurs. The PennDOT [Bureau of Public Transportation](#) can help you identify the transit providers and services in your community.

Examples of Retail and Office Site Planning to Encourage Transit are noted below:

Typical Retail Project	Transit-Friendly Retail Project
 <p data-bbox="370 1150 727 1178">TYPICAL RETAIL</p> <p data-bbox="370 1192 727 1199">Typical one-story retail development with 4.5 spaces per 1,000 sq. ft. has a floor area ratio of 0.25.</p>	 <p data-bbox="857 1150 1214 1157">MODEL RETAIL</p> <p data-bbox="857 1171 1214 1199">Increasing the height to two stories along one street and providing 3.5 spaces per 1,000 sq. ft. doubles the floor area ratio to 0.50.</p>
<p data-bbox="321 1209 760 1220">Source: Tri-Met, Planning and Design for Transit Handbook, 1996</p> <p data-bbox="321 1230 1268 1365">The typical retail project as shown above left is comprised of one-story shops served by separate entrances and a large parking lot. The transit-friendly retail project in the second graphic shows how clustering the stores in a two-story building near the street still provides adequate parking and significantly increases the accessibility of the site to transit and pedestrians.</p>	

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Planning for an Aging and More Transit-Dependent Population

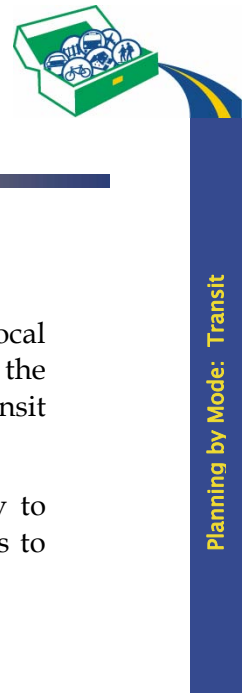
Communities should plan now to meet the future of an aging population. Providing adequate, efficient transit alternatives is an immediate strategy to help meet those needs. The Area Agency on Aging, which is the local representative of the Pennsylvania Department of Aging, can serve as a resource to help communities plan for the needs of older citizens. Each of Pennsylvania's 67 counties has been assigned an Area Agency on Aging office.

Consideration should be given to:

- Ensuring that planning for residential communities for seniors includes consideration of public transit service. Many seniors travel to medical appointments at one or more locations. The siting of medical offices, pharmacies, senior housing, and other facilities that serve our aging population should account for the transportation needs of users.
- Modifying local land use and zoning policies to include transit as an element of land development.
- Partnering with the local transit provider to facilitate and maximize access points to the transit system.
- Providing a checklist for potential developers to ensure that development accommodates current and future transit access.
- Designating a future system of transit corridors on the [Official Map](#).
- Exploring private/public partnerships for transit stop joint development.



The Transportation and Land Use Toolkit



Partnering with Transportation Management Associations

Transportation Management Associations (TMAs) are organizations that work with local communities, transit providers, transportation departments and organizations, and the business community to increase mobility and reduce congestion through the use of transit and other programs to help people make smart transportation decisions.

TMAs can help local communities work with employers and the business community to identify creative ways to reduce congestion by providing information about alternatives to driving alone to work.

Pennsylvania has nine TMAs, which are listed in the Appendix.

Funding Opportunities

The majority of the funding opportunities for transit are provided directly to transit agencies, but there are programs that can be used by municipalities to enhance transit access and better integrate transit facilities into the community.

[Transportation Enhancements \(TE\) Program](#). The TE Program is federally funded and is administered in Pennsylvania by the MPOs/RPOs and PennDOT. It is a competitive program to offer funding for projects in twelve eligible categories, including the provision of facilities and safety and educational activities for pedestrians and bicycles. Eligible activities include but are not limited to crosswalk improvements, projects to make pedestrian environment safer and more appealing, and the development of trail facilities.

[Safe Routes to School](#) is a PennDOT-administered program that directs federal funding to communities with projects that improve the safety of children walking or cycling to school. PennDOT accepts applications for projects that increase the number of children safely walking and biking to school.

[Transit Revitalization Investment District Act \(TRID\)](#). TRID can help municipalities, in conjunction with transit agencies and other economic and community development stakeholders, to finance investments to bring high-density, transit-supportive development. TRID serves as a tool to help municipalities finance investments that enhance the character of the downtown by using a value-capture area to collect incremental real estate taxes for transit and community facility improvements within the TRID area.

For More Information:

PennDOT's Bureau of Public Transportation
Phone: 717-787-3921
<http://www.dot.state.pa.us>

Pennsylvania Department of Aging
Phone: 717-783-1550
<http://www.aging.state.pa.us>

The Transportation and Land Use Toolkit



Additional Publications and Resources

[PennDOT Transportation Enhancements Program](#)

[Center for Local Government Services Growing Smarter Toolkit](#)

[10,000 Friends of Pennsylvania](#)

[DVRPC Transit Oriented Development](#)

[PA Environmental Council](#)

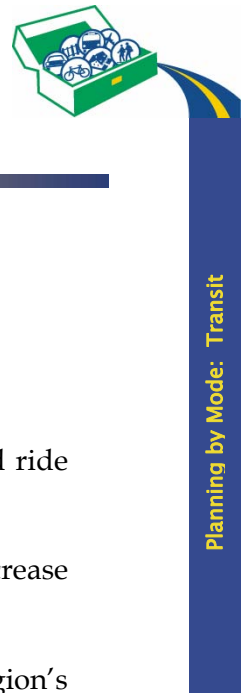
[PA Downtown Center](#)

[Smart Growth Partnership of Westmorland County](#)

[Rail-Volution: Building Livable Communities with Transit](#)

[Pennsylvania Public Transportation Association](#)

The Transportation and Land Use Toolkit



Planning for Transit Checklist

Is your community planning for future transit related needs?

Does your Comprehensive Plan...

- Include an up-to-date inventory of transit facilities and services, including park and ride lots?
- Consider projected demographic changes, such as an aging population, that may increase the demand for transit in the community?
- Include transit-related recommendations that should be included in the region's MPO/RPO Long Range Transportation Plan?

Do your development regulations...

- Allow for mixed-use areas and other transit "friendly" design elements?
- Provide for park and ride facilities, bus lanes, and bus stops?

Has your Planning Commission considered...

- Partnering with a Transportation Management Association to identify creative ways to reduce congestion by providing information about alternatives to driving alone to work?
- Investigating the opportunities for creating a Transit Revitalization Investment District?

Want more information?

Contact PennDOT's Bureau of Public Transportation
Phone: 717-787-3921 – On the web: www.dot.state.pa.us

The Transportation and Land Use Toolkit



Planning for Rail Freight

Not too many years ago, freight railroads were concerned with survival. Now, they're concerned about having sufficient current and future capacity to meet demand. These capacity issues are translating into coordination and communication problems with municipalities and owners of adjacent property as the railroads struggle to provide their services with minimal impact.

For more information on any material, in this section, contact
PennDOT
Bureau of Rail Freight, Ports
and Waterways
Phone 717-783-8567
<http://www.dot.state.pa.us>

Rail not only may provide communities with service to sustain and grow their employment base, but it can also help reduce congestion by removing trucks from the road. These issues require an understanding of railroad location and operating requirements, as well as the interaction between the railroad and the community.

This section of the toolkit provides additional background for discussions with freight railroads (large Class 1s and Short Lines), PennDOT and other Commonwealth resources that can be used to provide the basis for sound decision-making on location, economic development, financing and long range planning.

Why is it Important to Plan for Rail?

- Railroads are increasingly important in the delivery of the raw materials, intermediate products and finished goods that form the backbone of the economic vitality and future of our communities.
- They connect us with larger international markets that allow us to import an increasing volume of manufactured goods as well export products from this country. Both rail and trucks share in the delivery of these goods, often serving to complement each other.
- They are environmentally friendly, particularly in the amount of energy savings per ton/mile of freight compared to trucks.
- Rail carries a growing diversity of goods and Pennsylvania is geographically critical to moving those goods to the Northeast, Mid Atlantic, South and the Midwest.
- The presence of rail within a community requires an understanding of the safety issues raised by interactions between trains and other vehicles and pedestrians. While rail freight service can reduce truck traffic at a macro level, it can increase truck volumes locally in the vicinity of intermodal facilities such as warehouses and intermodal ramps. Local decision-makers need to know the tools that will help increase safety, particularly at grade crossings.

The Transportation and Land Use Toolkit



Tools to Plan for Rail

Comprehensive Plan Checklist

Key rail freight considerations within the planning process include:

- ☑ Inventory local facilities and their purpose. Are they operational or abandoned?
- ☑ Does the rail facility serve local businesses - Are they economic development assets? What is their impact on the local transportation system?
- ☑ During the visioning process, work with strategic planners and other railroad officials to best understand what the future role of the railroad or a given facility is. This is the most important step because it will help determine potential uses along the rail line.
- ☑ Develop specific strategies to protect uses along the railroad, including zoning the property for rail compatible uses, improve grade crossings, mitigate noise issues, and address safety and other quality of life concerns.

Zoning Checklist

The zoning ordinance should recognize the economic purpose of the railroads. Adjacent parcels should be compatibly zoned for industrial, agricultural, and similar uses that can accommodate/promote rail activity and reduce conflicts between rail and residential uses. Other considerations include the following:

- ☑ **Uses:** Properties located adjacent to rail lines can be marketed to industries that are dependant on railroads to ship and/or receive goods.
- ☑ **Availability of other modes** – Railroads do not act in a vacuum and are better able to serve their intended uses when their connections with other modes are made as efficient as possible. Truck access is a critical component of rail freight operations.

Rail Safety

Interactions between the community and rail often occur at grade crossings and along railroad tracks. Municipalities need to know about the devices that are installed along the roads near the railroad tracks to regulate, warn or guide traffic.

Safety devices vary based upon the type of crossing, the year the safety device was installed, and the frequency of service along the line. At some crossings no safety devices exist.

PennDOT's Grade Crossing Unit can help you learn about the safety devices installed at any grade crossing in your community as well as other strategies to help make your county or municipality safer.

PennDOT can also help you educate your community about the dangers of highway-rail grade crossings and on railroad rights of way. Operation Lifesaver is a public education program to reduce collisions, deaths and injuries at rail grade crossings and on railroad rights-of-way.

Some simple tips to minimize crashes in and around railroad facilities include:

- Encourage children never to play on or around train tracks or rail yards. Always expect a train.
- Trains can move anytime. Never crawl under or between trains.
- Trains are heavy and cannot stop quickly. It is often impossible to judge train distance and speed.
- Tunnels and bridges are normally only wide enough for trains. There may be nowhere to go if a train comes.
- Whether you are walking, on a bike, or in a vehicle, you are required to obey the railroad warning signs, flashing lights and gates.



The Transportation and Land Use Toolkit



Subdivision and Land Development Checklist

Rail and rail access design standards are promulgated by the [American Railway Engineering and Maintenance-of-Way Association](#) (AREMA). Development in and around rail facilities should be evaluated to ensure compliance with AREMA standards. As an alternative to incorporating all the AREMA standards into the local ordinance, a municipality could have its ordinance require proof of compliance. Some potential rail-related questions of every proposed land development plan should include:

- ☑ Is the proposed land development appropriate for location adjacent or near an operating railroad?
- ☑ Is there adequate sight distance available, based on the classification of the railroad and any intersecting street?
- ☑ Will the rail use require a [Traffic Impact Study](#)?

Best Practices

Contact PennDOT's Bureau of Rail Freight, Ports and Waterways for local information.

The Bureau works closely with local railroads and often knows about their strategic priorities. They can put local officials in touch with the appropriate railroad personnel. It is in a municipality's best interest to understand such linkages and make sure they are considered when planning for the future or addressing current transportation system deficiencies. Local and state-wide prosperity and quality of life are dependent on the economic distribution of goods of which railroads are key components. The growth or decline of rail operations in any specific area can affect local, regional, and state economies as well as the ability of all transportation modes to work together and meet identified and established needs.



Use the various funding programs available to industry, railroads and communities to enhance rail-related economic development and promote more compatible land use situations.

Financial assistance is available to both railroads and businesses to improve rail infrastructure. Following is a list of the various programs.

The Transportation and Land Use Toolkit



Funding Opportunities

Program	Contact Agency
Rail Freight Assistance Program (RFAP)	Bureau of Rail Freight, Ports & Waterways PennDOT
Transportation Assistance Program	Bureau of Rail Freight, Ports & Waterways PennDOT
Capital Budget Program	Utilities and Right of Way Section PennDOT
Section 130 Program	Program Development and Management PennDOT
Congestion Mitigation Air Quality (CMAQ)	Federal Railroad Administration, USDOT
Railroad Rehabilitation and Improvement Financing Program	Pennsylvania Infrastructure Bank Office PennDOT
Pennsylvania Infrastructure Bank (PIB)	Internal Revenue Service
Section 45 G Tax Credit Program	DCED
Business in Our Sites	DCED
Infrastructure Development Program	DCED
Taxable and Tax Exempt Industrial Revenue Bonds (PEDFA)	DCED
Infrastructure and Facilities Improvement Program	Local Economic Development Agency
Tax Increment Financing	DCED
Tax Increment Financing Guarantee	

For More Information

[PennDOT Bureau of Rail Freight, Ports and Waterways](#)

Phone: 717-783-8567

[PennDOT Grade Crossing Unit](#)

Phone: 717-787-6935

Additional Publication and Resources

[AASHTO Bottom Line Report](#)

[AASHTO Standing Committee on Rail Transportation \(SCORT\)](#)

[Federal Railroad Administration \(FRA\)](#)

[Federal Railroad Administration Office of Safety](#)

[Mid-Atlantic Rail Operations Study](#)

[Operation Lifesaver Inc.](#)



Planning for Rail Freight Checklist

Is your community planning for future rail freight needs?

Does your Comprehensive Plan...

- Include an up-to-date inventory of rail freight facilities and services?
- Consider the future needs of rail freight operators?
- Address the best use of lands adjacent to the railroad (i.e. noise, safety considerations, etc.)?

Do your development regulations...

- Encourage the siting of rail-dependent entities along existing rail-served properties?
- Limit incompatible land uses adjacent to the railroad?

Has your Planning Commission considered...

- Working with local economic developers, industry, private developers and railroads to plan for new rail-dependent industrial development (e.g. rail parks) and to preserve lands adjacent to the railroad for compatible uses?
- Obtaining funding to carry out rail construction and maintenance improvements to resolve needs in the community such as business expansions, safety, etc.
- Inviting railroad representatives to discuss ways of jointly addressing community rail freight issues (e.g., trespassing, crossing safety, etc.)?
- Working with area businesses to identify and address the barriers towards shipping/receiving by rail?
- Consider installing improved safety devices at crossings (i.e. through coordination with the PUC, PennDOT and FRA), or to eliminate redundant crossings?

Want More Information?

Contact PennDOT's Bureau of Rail Freight
Phone: 717-783-8567 - On the web: www.state.pa.us

The Transportation and Land Use Toolkit



Planning for Goods Movement

Moving freight by truck, rail, and waterway allows businesses to accept raw materials for production and get finished products to customers. Quick and efficient transport of freight is the backbone of many local, regional, state, and national economies. Capacity and land use issues related to goods movement are often overlooked but the proper accommodation for freight activities can lead to thriving regional economies with predictable and controlled impacts.

For more information on any material, in this section, contact
PennDOT
Bureau of Rail Freight, Ports
and Waterways
Phone 717-783-8567
<http://www.dot.state.pa.us>

Thought must be given to how local companies that move freight access the transportation system and whether improvements need to be made to reduce conflicts while enhancing the character of the community. This logistics planning has become a crucial component to many business operations.

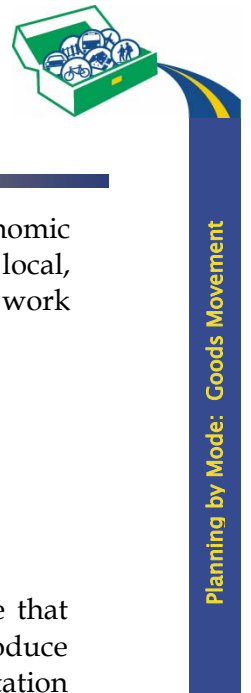
Planning for goods movement requires considering all modes including truck, rail, water, and air. The complexity of freight transportation logistics, however, should not overwhelm planning for it at the local level. Issues such as hours of service, capacity of rail lines, and international facilities are some of the important issues and should be taken into consideration as they relate to municipal goals and land use plans.

Why is it important to plan for goods movement?

- Freight is an important economic generator for a region and locality.
- Different modes play their specific roles in the delivery of the raw materials, intermediate products and finished goods. This forms the backbone of the economic vitality and future of our communities.
- Goods movement is a function of local, regional, and international markets that buy our products or deliver the things we buy. Where each mode fits into the supply chain is an important consideration for planning.
- The growth in the just-in-time freight sector (FedEx, UPS, etc.) has placed an even greater emphasis on the need for easy access to transportation facilities to ensure efficient goods movements.
- Unreliable goods movement service can pose challenges to provide adequate freight transportation services for local businesses.



The Transportation and Land Use Toolkit



Local and state-wide prosperity and quality of life can be largely dependent on the economic distribution of goods. The growth or decline of goods movement operations can affect local, regional, and state economies as well as the ability of all transportation modes to work together to meet identified and established needs.

Tools to Plan for Goods Movement

Comprehensive Plan Checklist

Key freight considerations during the planning process include:

- Document existing freight dependant facilities. Talk to local businesses and those that you might want to attract to the community about the required infrastructure to produce goods. Where are the major shippers? What modes do they use? Is the transportation infrastructure adequate (operational, abandoned, condition)? What is their impact on the local economy and transportation system?
- Are there opportunities to work with local shippers and receivers to help them shift the means by which they transport goods to a mode that better supports community goals?
- During the visioning process discuss the future role of freight providers with the freight community. This will assist in determining how the land around freight facilities might be used, and who might use them.
- Develop specific strategies to protect uses near railroads, cargo airports, navigable waterways, and industrial sites including zoning the property to preserve the land for future industrial uses. This will help to improve the ability to provide future infrastructure improvements, mitigate noise, address safety issues, and other quality of life concerns.

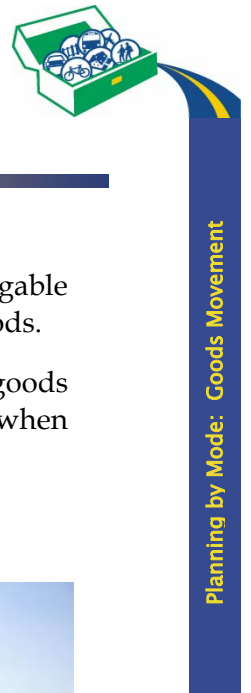


Zoning

A zoning ordinance should recognize the economic purpose and benefit of goods movement infrastructure. Adjacent parcels should be compatibly zoned for industrial, agricultural, and similar uses to accommodate/promote freight activity. Linkages between transportation facilities and warehousing, manufacturing, or freight-forwarding locations are especially critical. Heavy commercial and industrial land uses should be located on sites that have direct access to various modes.



The Transportation and Land Use Toolkit



Zoning considerations include:

- ☑ **Uses:** Properties located adjacent to major highways, rail lines, cargo airports, or navigable waterways should be zoned to attract industries that manufacture, receive or send goods.
- ☑ **Design Standards: Consider the availability of other modes** – All modes of moving goods do not act in a vacuum. Providers are better able to serve their customers when connections with other modes are as efficient as possible.

Subdivision and Land Development Checklist

Rail and rail access design standards are promulgated by the American Railway Engineering and Maintenance-of-Way Association ([AREMA](#)). Highway design standards for heavy truck traffic are prescribed by the Federal Highway Administration (FHWA). Cargo airport design standards are advised by the Federal Aviation Administration (FAA). Waterway design standards are overseen by the U.S. Army Corps of Engineers (USACE). All of these organizations can offer design guidance for investments in and around the relevant transportation facility.



Some potential freight-related questions of every proposed land development plan should include:

- Will the development require a [Traffic Impact Study](#)?
- Are sight distances adequate at crossings?
- Are there issues that require the involvement of federal agencies?
- What potential environmental impacts need to be considered?



Common areas of interaction between local governments and the goods movement community:

- Physical requirements for rights-of-way and bridges
 - Width of right-of-way
 - Height of right-of-way
 - Curve and weight restrictions
 - Water draft
 - Air space
 - Environmental



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- Noise
- Air Quality
- Grade crossing impacts (delay)
- Signal timing (delay)
- Dredging
- Safety
 - Grade crossing impacts (safety)
 - Rail/highway accidents
 - Emergency access
 - Hazardous material movements
 - Turning radii
 - Roadway/lane capacity
- Economic Development
 - Goods movement access for existing/new industry
 - Funding assistance, state or federal
- Land Use
 - Highway impacts
 - Utility Requirements
 - Adjacent use impacts
 - Location of ports and intermodal/transfer facilities
 - Compatibility with County and municipal [Comprehensive Plans](#)
 - Compatibility with Regional Long Range Transportation Plan

Contact PennDOT's Bureau of Rail Freight, Ports and Waterways for local information.

PennDOT's Bureau of Rail freight, Ports and Waterways communicates regularly with railroads and often understands their priorities and operational requirements. If they do not have this information they can put you in touch with the correct railroad operator. In addition, the PennDOT Bureau of Aviation and your Regional Metropolitan/Rural Planning Organization can assist in providing information on all modes related to goods movement.

For More Information:

[PennDOT's Bureau of Rail Freight, Ports and Waterways](#)

Phone: 717-783-8567

[PennPorts](#)

Phone: 717-720-7448

The Transportation and Land Use Toolkit



Additional Publications and Resources

[Pennsylvania Motor Trucking Association \(PMTA\)](#)

[Federal Motor Carrier Safety Administration](#)

[American Trucking Association](#)

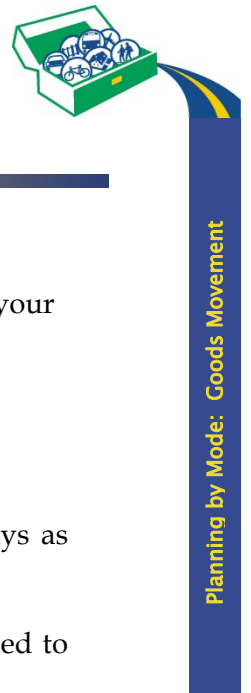
[AAR - Association of American Railroads](#)

[AASHTO - Freight Transportation Network](#)

[The United States Army Corps of Engineers](#)

[Integrating Freight Facilities and Operations with Community Goals \(4.4MB\)](#)

The Transportation and Land Use Toolkit



Planning for the Movement of Goods Checklist

Have you considered how best to accommodate the movement of goods through your community?

Does your Comprehensive Plan...

- Document current patterns of goods movement in and through your community?
- Identify properties adjacent to railroads, cargo airports, and/or navigable waterways as complementary uses on the Future Land Use Map?
- Identify truck traffic as an issue? If so, have alternate routes or modes been identified to resolve the issues?

Do your development regulations...

- Adequately protect properties adjacent to railroads, cargo airports, and/or navigable waterways for future industrial uses?
- Encourage industries to locate where there is good highway and/or rail access?
- Require [traffic impact studies](#) for industrial and commercial developments?

Has your Planning Commission considered...

- Using an [Official Map](#) to preserve properties adjacent to railroads, cargo airports, and/or navigable waterways?
- Working closely with local and regional industries to better understand and accommodate their goods movement needs?

Want more information?

Contact PennDOT's Bureau of Rail Freight, Ports and Waterways
Phone: 717-783-8567 – On the web: www.dot.state.pa.us



Appendix



Appendix Items

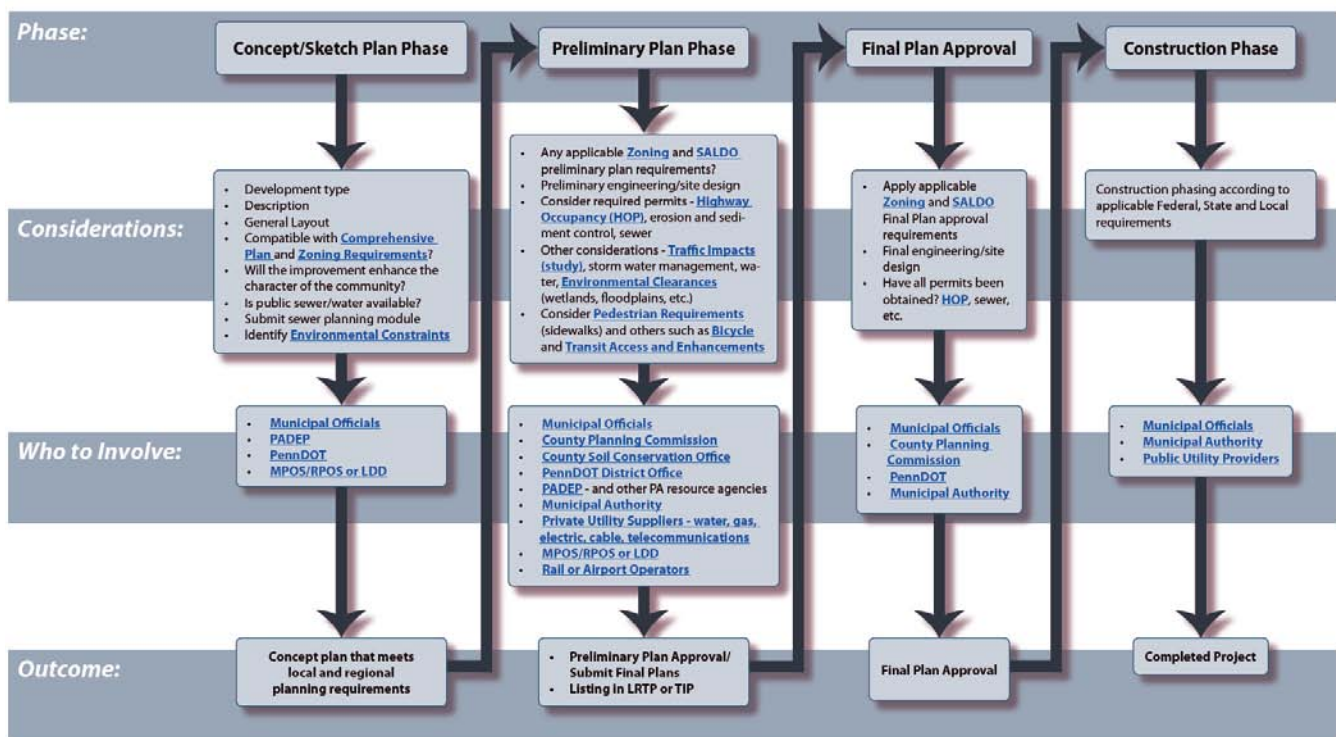
1. The (Generic) Project Development Process
11. Land Use Library
111. Transportation and Land Use Planning Resources: PennDOT, Metropolitan and Rural Planning Organizations, and the Commonwealth's TMAs
- IV. Other Organizations to Know
- V. Sources of Funding
- VI. Definitions



I. The (Generic) Project Development Process

The graphic below highlights the traditional project development process normally required for local land development projects. This process may change slightly based upon the type of project undertaken (i.e., housing or retail development, highway corridor improvement, etc.) and endeavors to give overall guidance on how projects typically move from an idea all the way through to construction and operation.

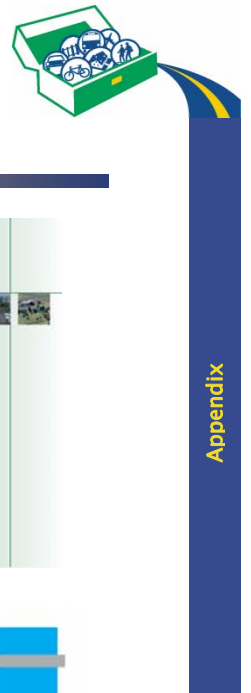
Transportation Considerations in the Municipal Land Development Process



II. Land Use Library

In addition to this toolkit, there are three key land use planning documents that should be in every municipal office in Pennsylvania. Most can be viewed and are available for free download at the Department of Community and Economic Development's NewPA website (www.newpa.com). Use the "community" link to reach the Governor's Center for Local Government Services and click on publications. Hard copies are available for purchase both online or by calling the Center at 1-888-223-6837. The publications provide an additional perspective to the values of sound land use planning and continues the discussion on the linkages between transportation and land use planning.

The Transportation and Land Use Toolkit



The **Pennsylvania Municipalities Planning Code**, also known as the MPC, is the enabling legislation that governs land use planning in the Commonwealth. Within the code are all of the legal details for developing, adopting, and implementing [Comprehensive Plans](#) and land use ordinances, including zoning, subdivision and land development, and an [official map](#).

The MPC [Quick Guide](#) was published in 2005 to help users quickly find the information they need within the code.

The **Growing Smarter Toolkit - Catalog of Financial and Technical Resources** was compiled by the Governor's Center for Local Government Services in 2002. The Toolkit lists the technical and financial assistance programs available to help spur economic development in Pennsylvania.

In addition to transportation, information related to farmland, open space and historic preservation, environmental protection and conservation, infrastructure, and affordable housing is included. There are also sections related to urban revitalization, intergovernmental cooperation and "brownfields."

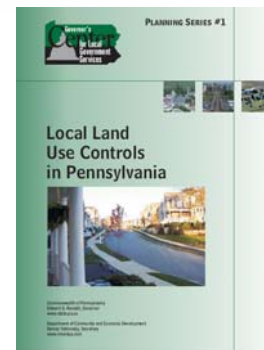
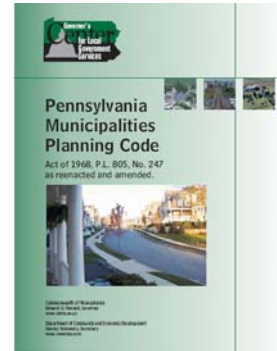
The **Governor's Center for Local Government Services Planning Series** includes 10 separate publications that cover every topic from the Planning Commission to Zoning. Ideally, the municipal library should have a copy of each and all are available online.

Planning Series #1 "Local Land Use Controls in Pennsylvania" provides a concise summary of the tools available to local officials to manage land resources. The quote below is from the introduction and underscores the rationale for the tools and controls addressed in the publication.

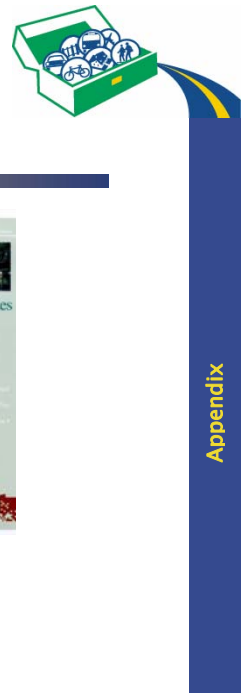
"Land is one of our most valuable natural resources and the way it is used or developed creates a significant part of our physical surroundings. Any change in land use becomes a permanent part of our daily lives in the future. Yet all valuable resources must be used reasonably, economically and equitably to benefit both the property owner's best interest as well as the general public. An important power of local government is to plan for and guide the way land resources are used. This publication is intended to assist local officials in this stewardship endeavor."

Other Products in the Planning Series available from DCED include:

- #2 The Planning Commission
- #3 The Comprehensive Plan
- #4 Zoning
- #5 Technical Information on Floodplain Management
- #6 The Zoning Hearing Board



The Transportation and Land Use Toolkit



- #7 Special Exceptions, Conditional Uses and Variances
- #8 Subdivision and Land Development
- #9 The Zoning Officer
- #10 Reducing Land Use Barriers to Affordable Housing



Planning Beyond Boundaries was developed by 10,000 Friends of Pennsylvania to provide helpful information on the benefits and techniques of multi-municipal planning. Topics discussed include the multi-municipal planning requirements, plan adoption and implementation, model ordinances and best practices.

Other Publications for the Local Land Use-Transportation Planning Bookshelf

Publication	Where to find it
County Comprehensive Plan	County/Regional Planning Commission
Regional Long Range Transportation Plan	MPO/RPO
Statewide Long Range Transportation Plan (The Pennsylvania Mobility Plan)	PennDOT
Regional Economic Development Plan	Local or Regional Chamber Office
Municipal Comprehensive Plan	Local or County Planning Office
Municipal Act 537 - Sewage Facilities Plan	Municipal Authority or municipality
Other local or regional planning studies	Local or County Planning Office
Municipal Ordinances	Local or County Planning Office
Access Management Model Ordinances for PA Municipalities Handbook	PennDOT
Sound Land Use Planning for Your Community: Model Ordinance Language for Addressing Traffic Noise	PennDOT



III. PennDOT, MPOs/RPOs and TMAs

The Pennsylvania Department of Transportation is committed to “Smart Transportation.” This new philosophy is a quality of life approach that embraces a transportation system that supports principles such as community reinvestment, redevelopment over development, walkable communities, environmental sensitivity, reduced energy use and reduced traffic congestion. It is also providing the needed mobility solution in the least costly way to stretch dollars and be able to do more projects.

Consideration of the linkages between land use and transportation is required by the new federal surface transportation program – the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU).

SAFETEA-LU authorizes the Federal surface transportation programs for highways, highway safety, and transit for the 5-year period 2005-2009 and helps set transportation policy that is implemented by PennDOT and the Commonwealth’s MPOs and RPOs.

The legislation reinforces these linkages by addressing such things as improving safety, reducing traffic congestion, improving efficiency in freight movement, increasing intermodal connectivity and protecting the environment.

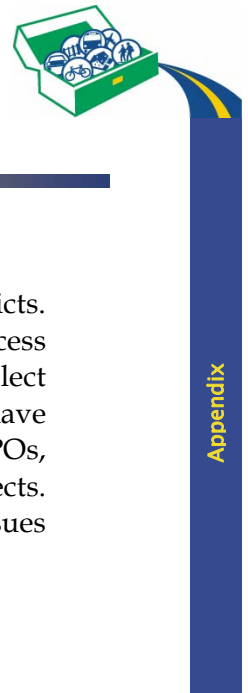
From a local government perspective, renewed attention to joint transportation and land use planning has also occurred due in part to the requirements of the PA Municipalities Planning Code, as well as state financial incentives.

The Federal Planning Factors

Current federal transportation law provides an important framework for transportation. At a policy level it places greater emphasis on transportation plans that satisfy key planning issues relative to transportation’s role with economic development/trade, quality of life, congestion reduction and other key concerns at a national level.

- (A) Support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity, and efficiency;
- (B) Increase the safety of the transportation system for motorized and nonmotorized users;
- (C) Increase the security of the transportation system for motorized and nonmotorized users;
- (D) Increase the accessibility and mobility of people and for freight;
- (E) Protect and enhance the environment, promote energy conservation, improve the quality of life, and promote consistency between transportation improvements and State and local planned growth and economic development patterns;
- (F) Enhance the integration and connectivity of the transportation system, across and between modes, for people and freight;
- (G) Promote efficient system management and operation; and
- (H) Emphasize the preservation of the existing transportation system.

The Transportation and Land Use Toolkit



PennDOT

In addition to the Harrisburg Central Office, PennDOT has eleven local engineering districts. They are the primary contacts for transportation related questions and concerns. To access their web pages go to www.dot.state.pa.us, click on “PennDOT Organizations” and select Engineering Districts and County Maintenance Offices. These Engineering Districts have intermodal officials that work with other transportation modes (e.g., aviation, rail), MPOs, RPOs, municipalities and other community organizations on multi-modal planning projects. The Districts also have rail grade crossing officials that coordinate highway/rail issues including crossing improvements and closures.

District	Address	Phone #
1	255 Elm St Oil City, PA 16301	814-678-7085
2	1924-30 Daisy Street PO Box 342, Clearfield County, PA 16830	814-765-0400
3	715 Jordan Ave PO Box 218 Montoursville PA 17754-0218	1-877-723-6830
4	55 Keystone Industrial Park Dunmore, PA 18512	570-963-4061
5	1002 Hamilton Street, Allentown, PA 18101	610-871-4100
6	7000 Geerdes Blvd King of Prussia PA 19406-1525	610-205-6700
8	2140 Herr Street Harrisburg PA 17103-1699	717-787-6653
9	1620 N. Juniata Street Hollidaysburg PA 16648	814-696-7250
10	2550 Oakland Ave PO Box 429 Indiana County PA 15710-0429	724-357-2800
11	45 Thorns Run Road Bridgeville PA 15017	412-429-5000
12	825 N. Gallatin Ave. Ext. Uniontown, PA 15410-2105	724-439-7315

PennDOT's Planning Partners

PennDOT's planning programs are also carried out in cooperation with regional planning organizations or partners. Known as Metropolitan Planning Organizations (MPOs), they have been designated by the federal government to assist state departments of transportation in carrying out various transportation planning functions. In Pennsylvania, the rural areas are represented by Rural Planning Organizations (RPOs) and function the same as MPOs. These organizations are also responsible for the Commonwealth's long term transportation planning,

The Transportation and Land Use Toolkit



including the development of regional Long Range Transportation Plans and the Transportation Improvement Programs (TIP).

MPOs and RPOs are partners to help with local transportation planning and, like PennDOT, serve as a resource for transportation funding, grant management and best practices. Some have active intermodal and freight planning efforts and have conducted relevant studies for their regions.

There are 23 planning partners in Pennsylvania: 15 Metropolitan Planning Organizations, 7 Rural Planning Organizations, and 1 independent county (Franklin). Contact information for the MPOs and RPOs is listed below.

Metropolitan Planning Organizations

MPO	Location	Phone	Internet
Metropolitan Planning Organization (MPO) for Blair County (Altoona MSA)	Altoona	(814) 940-5978	http://blair.sapdc.org/bcpc/
Centre County MPO (CCMPO)	State College	(814) 231-3077	http://cog.centreconnect.org/CRMPO/
Erie Area Transportation Study (EATS)	Erie	(814) 451-6336	http://www.eriecountypartnership.org/Transportation/erieMPO.htm
Hagerstown-Eastern Panhandle MPO	Hagerstown, MD	(301) 791-3065	
Harrisburg Area Transportation Study (HATS)	Harrisburg	(717) 234-2639	http://www.tcrpc-pa.org/HATS.htm
Johnstown Area Transportation Study (JATS)	Ebensburg	(814) 472-2106	
Lancaster County Transportation Coordinating Committee (LCTCC)	Lancaster	(717) 299-8333	www.co.lancaster.pa.us/planning/site/default.asp
Lackawanna-Luzerne Transportation Study (LLTS)	Wilkes-Barre	(570) 825-1560	www.luzernecounty.org
Lebanon County Metropolitan Planning Organization (Leb. Co. MPO)	Lebanon	(717) 274-2801 x2325	www.lebcounty.org
Lehigh Valley Transportation Study (LVTS)	Allentown	(610) 264-4544	www.lvpc.org
Delaware Valley Regional Planning Commission (DVRPC)	Philadelphia	(215) 592-1800	www.dvrpc.org
Southwestern Pennsylvania Commission (SPC)	Pittsburgh	(412) 391-5590	www.spcregion.org
Reading Area Transportation Study (RATS)	Reading	(610) 478-6300	http://www.co.berks.pa.us/planning/site/
Shenango Valley Transportation Study (SVTS)	Hermitage	(724) 981-2412	www.mcrpc.com
Williamsport Area Transportation Study (WATS)	Williamsport	(570) 320-2132	http://www.williamsport.org
York Area Metropolitan Planning Organization (YAMPO)	York	(717) 771-9870	http://www.ycpc.org

The Transportation and Land Use Toolkit



Rural Planning Organizations

RPO	Location	Phone	Internet
Northeastern Pennsylvania Alliance (NEPA)	Pittston	570-655-5581	www.nepa-alliance.org
Southern Alleghenies Planning and Development Commission (SAP&DC)	Altoona	814-949-6520	www.sapdc.org
SEDA-Council of Governments	Lewisburg	570-524-4491	http://www.seda-cog.org
Northern Tier Regional Planning and Development Commission	Towanda	570-265-9103	www.northerntier.org
Northwest Pennsylvania Regional Planning and Development Commission	Oil City	814-677-4800	www.nwcommission.org
North Central PA Regional Planning and Development Commission	Ridgway	814-773-3162	http://www.ncentral.com
Adams County Transportation Planning Organization (ACTPO)	Gettysburg	717-337-9824	http://www.adamscounty.us/adams/site/default.asp

Pennsylvania's Transportation Management Associations

TMA	Location	Phone	Internet
Oakland Transportation Management Association	Pittsburgh	412-687-4505	http://www.otma-pgh.org
Airport Corridor Transportation Association	Pittsburgh	412-809-3500	http://www.acta-pgh.org
Pittsburgh Downtown Partnership	Pittsburgh	412-566-4190	http://www.downtownpittsburgh.com
TMA Bucks	Bensalem	866-862-7433	http://www.bctma.com
TMA of Chester County	Malvern	610-993-0911	http://www.tmacc.org
Delaware County TMA	Media	610-892-9440	http://www.dctma.org
Partnership TMA	North Wales	215-699-2733	http://www.ptma-mc.org
Greater Valley Forge TMA	King of Prussia	610-354-8899	http://www.gvftma.com
Central Phila. TMA	Philadelphia	215-440-5500	http://www.centercityphila.org/around

The Transportation and Land Use Toolkit



PENNSYLVANIA'S TRANSPORTATION PLANNING ORGANIZATIONS RURAL AND METROPOLITAN AREAS



IV. Other Organizations to Know

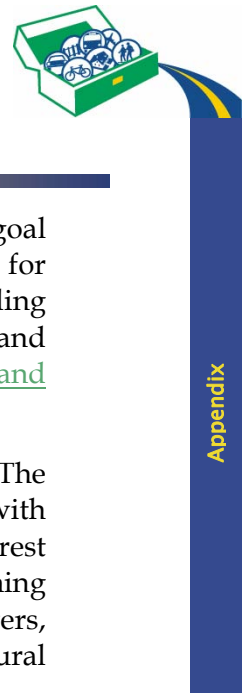
In addition to PennDOT, the Planning Partners and the TMAs, there are many other organizations that affect transportation and land use planning in Pennsylvania. Some of the most prominent are listed below.

American Association of State Highway Transportation Officials. AASHTO is a nonprofit, nonpartisan association representing highway and transportation departments in the 50 states, the District of Columbia, and Puerto Rico. It represents all five transportation modes: air, highways, public transportation, rail, and water. Its primary goal is to foster the development, operation, and maintenance of an integrated national transportation system. It has established the Standing Committee on Rail Transportation and the Standing Committee on Water Transportation. Additionally, it is coordinating national freight planning efforts with the US DOT. www.transportation.org

American Planning Association. The American Planning Association (APA) is a national organization which promotes good planning practices at all levels of community – local, state and national. APA lobbies for national planning policies and monitors changes affecting planning. www.planning.org

Appalachian Regional Commission (ARC). The ARC is a federal-state partnership that works with the people of Appalachia to create opportunities for self-sustaining economic development and improved quality of life. Resources from ARC are provided through the Pennsylvania Department of Community and Economic Development (see below).

The Transportation and Land Use Toolkit



Pennsylvania Department of Community and Economic Development (DCED). The goal of the Department of Community and Economic Development is to foster opportunities for businesses and communities to succeed and thrive in a global economy, thereby enabling Pennsylvanians to achieve a superior quality of life. The Department ensures growth and development in our businesses and communities across Pennsylvania. www.newpa.com and landuselawinpa.com

Pennsylvania Department of Conservation and Natural Resources (DCNR). The Pennsylvania Department of Conservation and Natural Resources is charged with maintaining and preserving the 116 state parks; managing the 2.1 million acres of state forest land; providing information on the state's ecological and geologic resources; and establishing community conservation partnerships with grants and technical assistance to benefit rivers, trails, greenways, local parks and recreation, regional heritage parks, open space and natural areas. www.dcnr.state.pa.us

Pennsylvania Department of Environmental Protection (DEP). The PA DEP is responsible for administering Pennsylvania's environmental laws and regulations. Its responsibilities include: reducing air pollution; making sure drinking water is safe; protecting water quality in rivers and streams; making sure waste is handled properly; supporting community renewal and revitalization; promoting advanced energy technology; and helping citizens prevent pollution and comply with the Commonwealth's environmental regulations. www.depweb.state.pa.us

Pennsylvania Economic Development Association (PEDA). The Pennsylvania Economic Development Association is the statewide association of local, state, corporate and non-profit economic development professionals. PEDA's mission is to promote sound economic development policies, provide leading edge economic development education, and nurture an effective statewide economic development network to foster the economic health of the Commonwealth.

Pennsylvania Fish & Boat Commission. The mission of the Pennsylvania Fish and Boat Commission is to provide fishing and boating opportunities through the protection and management of aquatic resources. Access this site through the PA PowerPort Site at www.state.pa.us

Pennsylvania Game Commission was created by the state Legislature to protect and conserve wildlife; enforce the Game and Wildlife Code, Fish and Boat Code, Forestry Laws and Pennsylvania's Crimes Code; and manage the state Game Lands system, which currently contains about 300 separate tracts comprising a total of more than 1.4 million acres. www.pgc.state.pa.us

Pennsylvania Housing Finance Agency. The PHFA is the Commonwealth's leading provider of capital for affordable homes and apartments and was created to help enhance the quality and supply of affordable homes and apartments for older adults, persons of modest means, and persons with disabilities. www.phfa.org

The Transportation and Land Use Toolkit



Pennsylvania Infrastructure Investment Authority (PENNVEST). PENNVEST provides low-cost financial assistance to communities by funding sewer, storm water and drinking water projects throughout the Commonwealth. www.pennvest.state.pa.us

Pennsylvania Planning Association. The Pennsylvania Planning Association (PPA) is a chapter of the American Planning Association (APA). PPA is a nonprofit, nonpartisan organization for professional planners and planning officials, as well as other organizations and individuals interested in planning. www.planningpa.org

Pennsylvania Rural Development Council. The PRDC aims to enhance communication and the sharing of information; facilitate coordination between the public and private sectors for efficient and effective use of existing and new resources and promote collaboration and cooperation to preserve the quality of life in rural Pennsylvania and assist local communities to meet their rural development goals. www.ruralpa.state.pa.us

Pennsylvania Turnpike Commission. The Pennsylvania Turnpike Commission manages and maintains the Pennsylvania Turnpike. www.paturndot.com

Preservation PA. The goal of Preservation PA is to help Pennsylvania's communities protect and utilize the historic resources they want to preserve for the future.

Public Utility Commission. The Public Utilities Commission ensures safe, reliable and reasonably priced electric, natural gas, water, telephone and transportation service for Pennsylvania consumers, by regulating public utilities and by serving as responsible stewards of competition. www.puc.paonline.com

Sustainable Communities Network. The Sustainable Communities Network is for those who want to help make their communities more livable. www.sustainable.org

Transportation Research Board (TRB). The mission of the Transportation Research Board – one of six major divisions of the National Research Council – is to promote innovation and progress in transportation through research. In an objective and interdisciplinary setting, the Board facilitates the sharing of information on transportation practice and policy by researchers and practitioners; stimulates research and offers research management services that promote technical excellence; provides expert advice on transportation policy and programs; and disseminates research results broadly and encourages their implementation.

United States Department of Transportation (USDOT). The USDOT oversees federal highway, air, railroad, and maritime and other transportation administration functions; components include the Federal Aviation Administration, Federal Highway Administration, the Federal Railroad Administration, and the Federal Transit Administration. www.dot.gov

US Environmental Protection Agency (EPA). The United States Environmental Protection Agency (EPA) implements federal laws designed to promote public health by protecting our air, water, and soils from harmful pollution. EPA accomplishes its mission by a variety of research, monitoring, standard setting, and enforcement activities. EPA also monitors the operations of other Federal agencies for their impact on the environment. www.epa.gov



V. Sources of Funding

The Commonwealth of Pennsylvania, in partnership with the federal government, offers numerous funding programs to help municipalities manage their growth and enhance mobility. Below is a listing of many of the programs available to counties and municipalities. Each program has its own restrictions. To find out more about these programs, contact PennDOT, the Pennsylvania Department of Community and Economic Development, or your local transportation Planning Partner (MPO/RPO).

1. **Land Use Planning and Technical Assistance Program (LUPTAP)**. Provides grant funds for the preparation of community Comprehensive Plans and the ordinances to implement them. The LUPTAP program gives priority to any county government acting on behalf of its municipalities, any group of two or more municipalities, or a body authorized to act on behalf of two or more municipalities

Funding Source: Pennsylvania Department of Community and Economic Development.

Internet: <http://www.newpa.com/programDetail.aspx?id=100>

2. **Local Municipal Resources and Development Program (LMRDP)**. Provides grants to municipalities to improve the quality of life of the community. Eligible uses include construction or rehabilitation of infrastructure, building rehabilitation, acquisition and demolition of structures/land, revitalization or construction of community facilities, purchase or upgrade of machinery and equipment, planning of community assets, public safety, crime prevention, recreation, and training.

Funding Source: Pennsylvania Department of Community and Economic Development.

Internet: <http://www.newpa.com/programDetail.aspx?id=78>

3. **Main Street Program**. Provides grants to municipalities to help a community's downtown economic development effort through the establishment of a local organization dedicated to downtown revitalization and the management of downtown revitalization efforts by hiring a full-time professional downtown coordinator.

Funding Source: Pennsylvania Department of Community and Economic Development.

Internet: <http://www.newpa.com/programDetail.aspx?id=79>

4. **Elm Street Program**. Similar to the Main Street program, the Elm Street Program seeks to help communities strengthen the older, historic neighborhoods that surround Main Street.

Funding Source: Pennsylvania Department of Community and Economic Development.

Internet: <http://www.padowntown.org/programs/elmstreet/>

The Transportation and Land Use Toolkit



5. **Shared Municipal Services Program (SMSP)**. Provides grant funds that promote cooperation among municipalities. Also encourages more efficient and effective delivery of municipal services on a cooperative basis.

Funding Source: Pennsylvania Department of Community and Economic Development.

Internet: <http://www.newpa.com/programDetail.aspx?id=101>

6. **Pennsylvania Infrastructure Investment Authority (PennVEST)**. Provides low-interest loans for design, engineering and construction of publicly and privately owned drinking water distribution and treatment facilities, storm water conveyance and wastewater treatment and collection systems.

Funding Source: Pennsylvania Infrastructure Investment Authority (PennVEST)

Internet: <http://www.pennvest.state.pa.us/>

7. **Transportation Enhancements (TE)**. The Transportation Enhancements Program provides federal funds for improvements to better integrate transportation into the Commonwealth's communities. Eligible activities include pedestrian or cycling facilities, acquisition of scenic or historic easements and sites, landscape and scenic beautification, and mitigation of highway runoff.

Funding Source: US DOT; administered by PennDOT in collaboration with the Planning Partners.

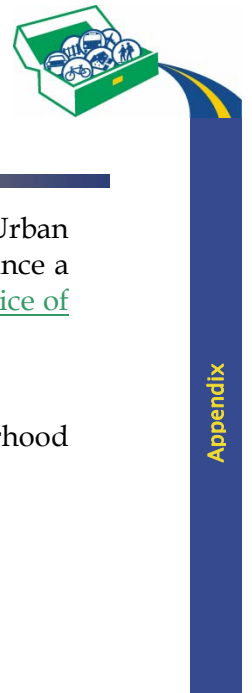
8. **Home Town Streets And Safe Routes To School Programs**. The Home Town Streets Program provides funding for streetscape improvements that are vital to reestablishing downtown and commercial centers. The Safe Routes to School Program works with municipalities and the pedestrian and cycling communities to identify physical improvements to promote safe walking and bicycling to school. Both of these projects are administered by PennDOT in collaboration with the Planning Partners.

Funding Source: US DOT; administered by PennDOT in collaboration with the Planning Partners.

9. **Agility Program**. PennDOT's Agility Program provides the opportunity for agreements between PennDOT and municipalities, counties and MPOs/RPOs (among other qualifying organizations) to exchange services (instead of money) to help partners implement a variety of community improvements. An example of the program's success occurred in Hampton Township, where PennDOT Department forces widened a Township Road, which has subsequently been paved. In exchange, the Township utilized its mobile broom to sweep various state roads within the Township limits.

Funding Source: PennDOT Agility Program

The Transportation and Land Use Toolkit



10. **Community Development Block Grants.** The US Department of Housing and Urban Development provides grants to communities to construct decent housing and advance a suitable living environment. These grants are administered by the [Pennsylvania Office of Community Development](#) and eligible activities include:

1. acquisition of property for public purposes;
2. construction or reconstruction of streets, water and sewer facilities, neighborhood centers, recreation facilities, and other public works;
3. demolition;
4. rehabilitation of public and private buildings;
5. public services;
6. planning activities; and
7. assistance to nonprofit entities for community development activities

Funding Source: US Department of Housing and Urban Development

11. **Pennsylvania Infrastructure Bank (PIB)** - Created to help municipalities with funding transportation improvements, the goal of the PIB is to leverage state and federal funds, accelerate priority transportation projects, spur economic development, and assist local governments with their transportation needs. The PIB provides low-interest loans to local governments for construction projects; including roadway improvements, rail construction and rehabilitation projects, bridge rehabs and replacements, and traffic signals. The construction phase of projects generally receive the highest priority for funding.

12. **Appalachian Regional Commission (ARC)**. This federal agency works with counties in the Appalachian region and funds various types of infrastructure projects, including transportation. Projects range in size from the Commission's Appalachian Development Highway System (ADHS), to the smaller projects as typified in its Access Road Program. Pennsylvania has 52 counties within the federally-designated Appalachian Region. These counties generally include those west of Interstate 81 but also include Monroe, Pike and Wayne. ARC counties are represented by Local Development Districts (LDDs) who assist in planning and implementing projects to promote economic development and improve quality of life.

13. **Transportation Management Associations (TMA)**. TMAs are non-profit organizations comprised of private corporations and public agencies dedicated to achieving reductions in traffic congestion, improving mobility and air quality, and educating employers and their employees about transportation alternatives.



VI. Definitions

The following land use, zoning, and transportation-related terms are used throughout the Toolkit and are defined here for reference purposes.

- Agriculture use** the production, keeping, or maintenance, for sale, lease or personal use of plants and animals. Uses include (but are not limited to) forages and sod crops, grains and seed crops; dairy animals and dairy products, poultry and poultry products; livestock including beef cattle, sheep, swine, horses, ponies, mules, or goats or any mutations or hybrids thereof, including the breeding and grazing of any or all of such animals; bees and apiary products, fur animals; trees and forest products; fruits of all kind, including grapes, nuts, and berries; vegetables; nursery, floral, ornamental, and greenhouse products; or lands devoted to a soil conservation or forestry management program.
- Area and Bulk** a zoning term that refers to regulations that dictate the physical dimensions of a building. **Area** refers to the total area taken on a horizontal plane at the level of the ground surrounding the main building and all necessary buildings, exclusive of uncovered porches, terraces, and steps. **Bulk** refers to the cubic volume of a building.
- Brownfield** an abandoned, idled, or underused industrial or commercial facility where expansion or redevelopment is complicated by real or perceived environmental contamination.
- Buildout** projected development of the buildable land in the study area. For this study's purposes the buildout scenario considered transportation impacts of all of the land being developed as currently zoned.
- Commercial land use** land use types that generally include establishments engaged in retail trade or services.
- Gross building area** refers to the actual amount of land that may be built upon in a given lot. The gross building area is the lot size minus setback and open space requirements.
- Impervious coverage** refers to the percent of the lot area that does not absorb water. Impervious coverage can be determined by dividing the impervious area of the lot by the total lot area.

The Transportation and Land Use Toolkit



Industrial use	this land use generally includes: (1) establishments engaged in transforming raw materials into new products, usually for distribution to other regions and not sold on-site, and (2) establishments engaged in wholesale trade, storage, or distribution with little or no retail trade or service. Because of their shipping, storage and processes that create noise, smoke, smells, or light pollution. Careful consideration on the close proximity to residential areas should be taken into account.
Institutional use	these can include schools, personal care centers, hospitals, places of worship, educational institutions, and government facilities.
Level of service	a traffic engineering term used by the Institute of Traffic Engineers (ITE) that rates a roadway or an intersection's ability to handle traffic flow. The system uses a rating system of A (best) through F (worst). A roadway's level of service is measured by comparing the volume of traffic against the capacity of the roadway. An intersection's level of service is measured by total control delay per vehicle at the intersection.
Light industrial use	manufacturing or storage uses that are characterized by uses of large sites, attractive buildings and inoffensive processes and can be compatible with neighboring residential uses. Differs from industrial by not having processes that have byproducts such as smell, noise, light, having larger lot sizes that allow screening techniques to be used between residential areas.
Lot	a designated parcel, tract, or area of land established by a plot or otherwise as permitted by law and to be used, developed, or built upon as a unit.
Mixed Use Development	refers to the practice of containing more than one type of use in a building or set of buildings. In zoning terms, this can mean some combination of residential, commercial, industrial, office, institutional, or other uses. An example would include a residential building with street front commercial space.
Office land use	a land use that involves administrative, clerical, financial, governmental, medical or professional operations.
Open space	any parcel or area of land set aside, dedicated, or reserved for public or private use or enjoyment or for the use and enjoyment of owners and occupants of land adjoining or neighboring such open space. Developers may be required to meet an open space requirement that ensures that a certain percentage of the lot area will remain as open space.

The Transportation and Land Use Toolkit



Peak period	traffic engineering term that refers to the time period when a certain roadway carries the most vehicles. Peak periods usually occur in the morning, 6 a.m. - 9 a.m., and in the evening, 3 p.m. - 6 p.m. The peaking characteristics of a roadway coincide with the time when the roadway sees the highest use, usually but not limited to the morning and evening rush hours. Roadways and the associated facilities should be designed to satisfactorily handle the peak period.
Retail land use	land use in which merchandise or goods are sold to the general public for personal or household consumption and rendering services incidental to the sale of such goods. An important component of a retail establishment is that it buys goods for resale.
Vacant land	this land use type includes lands that are not presently developed, such as wooded areas, unimproved areas not used for agriculture or recreation, and improved areas or buildings that are not occupied.
Warehousing	a break in bulk point for freight movement characterized by large storage buildings with convenient access to transportation facilities.



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The Transportation and Land Use Toolkit



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