Railroad Corridor Preservation and Transit-Oriented Development

Final Report

Mid-Ohio Regional Planning Commission
City of Columbus

ACP VISIONING & PLANNING

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October 4, 1999

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1. Introduction

A. History

In April of 1999, the Mid-Ohio Regional Planning Commission (MORPC) launched a project to prepare model legislation for the preservation of railroad corridors and encouragement of transit-oriented development (TOD) in central Ohio. This project follows a long range planning process undertaken in 1995 by MORPC and the Central Ohio Transit Authority (COTA) to identify transit needs of the Central Ohio area through the year 2010. Building on this study, a new planning effort by COTA entitled *Vision 2020* was created to project the transit needs through the year 2020.

An oversight committee working with MORPC facilitated a series of collaborative meetings to assure a comprehensive approach to the model legislation. Participants in the meetings included: MORPC, COTA, the City of Columbus, Ohio Rail Development Commission (ORDC), Ohio Department of Transportation (ODOT), the Ohio State University, representatives from the railroads, the development community, residents, community organizations, and other businesses and citizens with an interest in rail corridor preservation and development.

The series of consensus building meetings along with research and analysis of model TOD ordinances and standards from around the United States resulted in a TOD Zoning Overlay Ordinance that reflects the expectations of the City of Columbus. The planning effort provided a forum for discussion of development opportunities and concerns associated with TOD and railroad corridor preservation.

The Columbus City Council may consider the TOD Zoning Overlay as an amendment to the city's zoning code. Adoption of the overlay is the next step in promoting transit-oriented development in Central Ohio.

B. Organization of the Document

Following this **Introduction**, there is an **Executive Summary** that provides an overview of the planning process, answers why rail corridors should be preserved and transit-oriented development encouraged, describes the project goals and planning process and explains the planning context behind this study. The **Executive Summary** also includes a summary of COTA's *Vision 2020* Plan and highlights major recommendations for rail corridor preservation and TOD.

Following the **Executive Summary**, there is a chapter on **Recommendations** for rail corridor preservation and TOD. The chapter begins with a discussion of rail corridor preservation that includes planning for preservation, federal legislation, and shared use of rail corridors. **Recommendations** for transit-oriented development include an overview, a TOD Zoning Overlay District and the role of affordable housing in a TOD. Methods for implementing TOD such as comprehensive planning, tools, financing, and incentives are also

presented. The **Recommendations** conclude with an analysis of local case studies.

The final chapter of the report, **Background**, provides the supplemental information on rail corridor preservation and research data utilized in the planning process and development of the TOD Zoning Overlay District. Information regarding rail corridor considerations, such as merger impacts, rail abandonment and preservation, rails to trails, intent to abandon, and state mechanisms is presented. In addition, the chapter identifies existing rail corridors within Central Ohio. The last chapter also outlines thoroughly researched TOD best practices and includes an overview, issues in planning for transit-oriented development, case studies, and TOD regulation guidelines.

An **Appendix** includes the following supporting information: Glossary, Bibliography, and Subject Index.

2. Executive Summary

A. Overview

Mechanisms are in place at the Federal level to preserve abandoned railroad corridors, although the actual preservation or transfer of right-of-way must occur through a negotiated process. Where it is unlikely that a particular corridor will be abandoned, it is critical that local agencies work with rail companies to secure use of existing right-of-way for transit opportunities such as commuter rail. COTA is currently doing this and this report will serve as another tool. Although transit-oriented development (TOD) has been utilized in many parts of the country over the past two decades, this is not true for Central Ohio in part because local legislation to encourage TOD in Central Ohio is lacking.

In an effort to address the need for this type of legislation, to encourage development that is transit-oriented, and to preserve existing rail corridors for future commuter rail, MORPC designed a comprehensive approach to study the issue.

This report is a final result of the study. Involvement from MORPC, COTA, City of Columbus, ORDC, ODOT, other agencies and communities, railroad representatives, and the public ensured that a variety of interests were represented in the two-part consensus building process. Part one of the consensus building process focused on strategies for preserving rail corridors and part two focused on TOD.

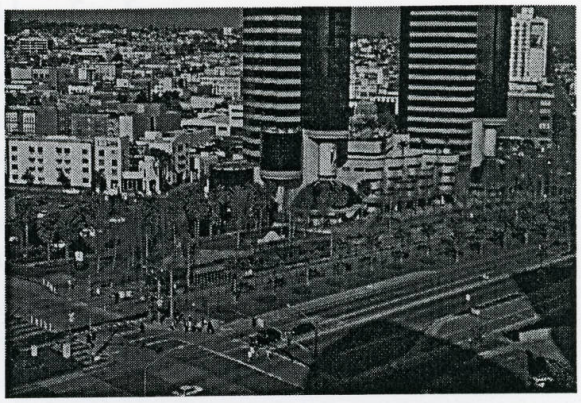
A technical study prepared by COTA and MORPC, *Vision 2020*: Transportation for a Great Community, recommends four major transportation improvements for the Columbus area, including the construction of eight commuter rail lines. In addition, a multi-modal transit terminal for the downtown area, increased bus service, and use of intelligent transportation systems is planned.

The Columbus Comprehensive Plan recognizes the current transportation system will need to expand if it plans to continue to provide safe and efficient movement of people and goods. The plan strongly endorses the improvement of transit operations and encourages development that enhances the performance of transit operations.

B. Why Preserve Rail Corridors and Encourage Transit-Oriented Development?

The preservation of rail corridors is an important step in laying the groundwork for a light rail system in Central Ohio. In the *Vision 2020* Plan, COTA recognized that it will need to purchase rights-of-way within the planned corridors or negotiate operating agreements with the existing railroads to operate over their tracks. With the merger between CSX, Conrail and Norfolk Southern, opportunities for negotiations are favorable. The ability to utilize existing and contiguous rail corridors for future transit needs is more desirable and less intrusive than attempting to design new transit corridors.

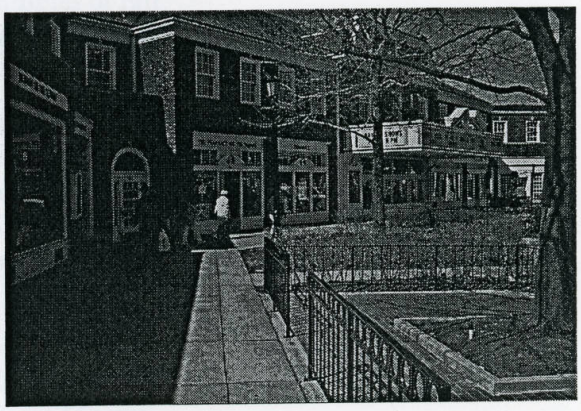
The transit-oriented development concept is simple: moderate and high density housing, along with complementing public uses, jobs, retail and services are concentrated in a mixed-use development located at strategic points along the regional transit system. The location, design, configuration, and mix of uses in a TOD provide an alternative to traditional development by emphasizing a pedestrian oriented environment and reinforcing the use of public transportation. Standard subdivision designs as we know them incorporate winding streets and long linear street blocks that force people onto arterial roads for local shopping, errands, and recreation. TODs seek to combine trips by locating many destinations within walking and biking distance in a pedestrian friendly environment. Historically, zoning codes have isolated residential from retail and employment areas to avoid perceived or actual conflicts between uses. However, through innovative urban design guidelines and pedestrian focused development, strong neighborhood identity is created where more choices (walking, biking, and shopping) are available to residents that increase the area's safety, friendliness, and livability.



The San Diego Trolley has been a major catalyst for transit-oriented development in several locations around the metro area, including the downtown. Source: ACP, 1997.

The TOD approach provides strategies for locating high-density employment-oriented development adjacent to transit stops and moderate density residential development in surrounding areas. The concentration of jobs and housing provides a larger base from which to draw transit customers. The larger customer base justifies more frequent transit service throughout the day and into the evening. Economic vitality is stimulated by a diversity of retail and commercial services. It is suggested that mixed-use developments increase the desirability of housing in an area by providing services and entertainment opportunities for residents. The number of vehicle trips, congestion on roadways, and dependence on the automobile are reduced as walking, biking, and transit become more attractive choices.

Studies have shown that Americans are willing to walk a half mile or less (about ten minutes), to meet basic services/needs etc., such as from a rail transit station to a place of work. This half-mile radius becomes a crucial defining characteristic of TOD centers. This distance can be extended by creating "interesting, pleasant urban spaces and corridors". Clearly, maximizing the number of potential riders within a half-mile of a transit station and providing a pleasant walking environment are critical.



Shaker Square east of Cleveland is a historic example of a very successful transit-oriented development. Source: ACP, 1999.

Creating an environment of mixed uses has numerous benefits. It provides for the consolidation of several trips if stops can be made at a grocery, banks and day care between the transit station and home. It creates an environment that is synergistic – where residences support local retail and entertainment uses, which are also supported by daytime work places – creating a 12-hour to 24-hour activity day, even in the suburbs. All of this can be accomplished through appropriate design, attention to detail and support for a positive, pedestrian-friendly, built environment.

Transit-oriented development ultimately reduces traffic congestion, creates exciting living and working environments, and encourages transit ridership by appropriately increasing density at key locations in an otherwise low-density area.

C. Project Goals and Planning Process

The overall goal of the planning process was to develop model legislation which provides a variety of techniques to preserve rail corridors for future transportation use and which encourages transit-oriented development. A regional collaborative process involving MORPC and the task force was utilized in building a consensus for railroad corridor strategies and transit-oriented development. Through a series of meetings and workshops, the task force discussed and reviewed information and made recommendations concerning the development of the model legislation.

- **Project Kickoff**: On May 24, 1999, a meeting of the task force, including the staff and team, was held to introduce the project outline and goals.
- **Introduction to Rail Corridor Preservation: Rail Planning Perspective:** On June 17, 1999, the task force participated in a workshop that provided an overview of transit planning with a focus on rail corridor development issues. Successful examples of rail corridor preservation and conversion projects were included in the discussion.
- **Introduction to Legal Issues**: An analysis and overview of legal concepts surrounding rail corridor preservation and transit-oriented development was presented to the task force on June 28, 1999. Emphasis was placed on rail corridor preservation legislation including laws, ordinances, review processes, mandates, and authorities that relate to Central Ohio.
- **Introduction to Transit-Oriented Development:** On July 12, 1999, the task force reviewed a "best practices" summary report of TOD development techniques from around the United States including case studies of areas implementing, or planning to implement, TOD regulations. Discussion involved factors related to density, permitted uses, parking, pedestrian and bicycle access, and urban design. Implementation mechanisms such as incentives and bonuses were also discussed.

- **Goal Setting and Structuring of the Model Legislation:** The task force met to identify issues and primary goals of the proposed model ordinance and to consider preliminary recommendations on August 2, 1999. Both the level of regulation and structure of the ordinance were discussed. A draft report based on the consensus achieved during the meeting was developed.
- **Review of Draft Report:** Three specific case studies were chosen for application of the TOD regulations and model ordinance. The task force met to review the conceptual plans of the case studies, supporting information and the model ordinance on August 30, 1999. Following this review (and revisions) the final document was accepted by the task force at the final meeting on September 20, 1999.

D. Planning Context

Over the past several years Central Ohio has experienced rapid development as a result of a strong and growing economy. The COTA *Vision 2020* Plan expects this trend to continue for the next 25 years as the population is projected to increase by 400,000 people, or 38 percent, with 225,000 new jobs anticipated. The following trends are noted in the *Vision 2020* Plan.

1. Population Growth

The growth occurring in Central Ohio is not uniform. In 1980 over 60 percent of the jobs were located in what is called the urban core. By 1995 the percentage dropped to 45 percent. Similarly, in the same time frame the population living in the urban core region declined from 50 percent to 35 percent. The established communities in the inner suburbs such as Bexley, Upper Arlington, Clintonville, Grandview Heights, and others are experiencing this same population decline. Most of the growth is occurring outside Interstate 270.

New residential and non-residential growth is expected to occur in the north, northwest, northeast, and southeast areas. Approximately 32 million square feet of retail and 40 million square feet of office space is anticipated for the Easton, New Albany, Polaris, and Tuttle Crossing areas. In contrast, new industrial growth and expansion of existing facilities, such as Rickenbacker, is forecasted for the southern area of the county. The *Vision 2020* Plan concludes that although the central business district will remain a nucleus of activity, new development will be focused well outside the urban core.

As growth occurs in Central Ohio, the regional travel conditions will change, leading to more congestion and stress on the highway network. COTA's *Vision 2020* Plan predicts a 40 percent increase in the number of vehicle trips between 1995 and 2020. However, the average volume capacity of the highways is only expected to increase by 29 percent between 1990 and 2020. The total distance that

vehicles will travel is also expected to increase by 51 percent as growth continues outward and the number of vehicle hours traveled is expected to almost double, increasing 93 percent due to congestion and increased trip lengths.

2. Land Use Impacts on Rail Transit

The location of transit stations is influential to the success of the transit system. The station area creates an opportunity for more intense development that contains higher densities of people that will utilize the rail transit system. Likewise, the station areas have demonstrated the ability to influence land use patterns around the stations (COTA *Vision 2020* Plan, p. 47).

Studies show that there is a public preference for rail when in place, over bus (p.47). Development scenarios created around the transit station areas indicate what kind of impact the land use pattern has on transit ridership. For example, the north corridor contains major traffic generators like the Ohio State University, Northland Shopping Center, Polaris, and the Ohio Exposition Center that will likely have a high demand for transit. The north corridor also exhibits the most number of work trips going to and from downtown Columbus. Other development including retail, office, industrial and a mix of single- and multi-family residences will contribute to the demand for transit.

E. Connection with *Vision 2020* Plan

COTA's *Vision 2020* Plan builds on a 1995 planning process completed by MORPC and COTA that identified transit needs through the year 2010. *Vision 2020* projects transit needs for the Central Ohio area through the year 2020 by addressing bus expansion, intelligent transportation systems, commuter-rail, and downtown circulation.

The bus expansion element includes the implementation of suburban transit centers to serve low-density development, construction of park and ride facilities, and local, cross-town, express and neighborhood circulation services. In addition, three central city transit centers that include supportive land uses such as day care and personal training centers are planned.

Intelligent transportation system technologies such as real-time passenger information, signal priority, smart card technologies, and an automatic vehicle locator system would improve COTA's service and make transit more appealing to the public.

The projected increase in population in Central Ohio will be accompanied by increased traffic congestion. To accommodate the transportation needs of Central Ohio, COTA proposes to implement commuter rail service in eight travel corridors in Central Ohio. Trains would operate daily at frequent intervals to transport passengers downtown and to the region's other attractions. The proposed vehicle

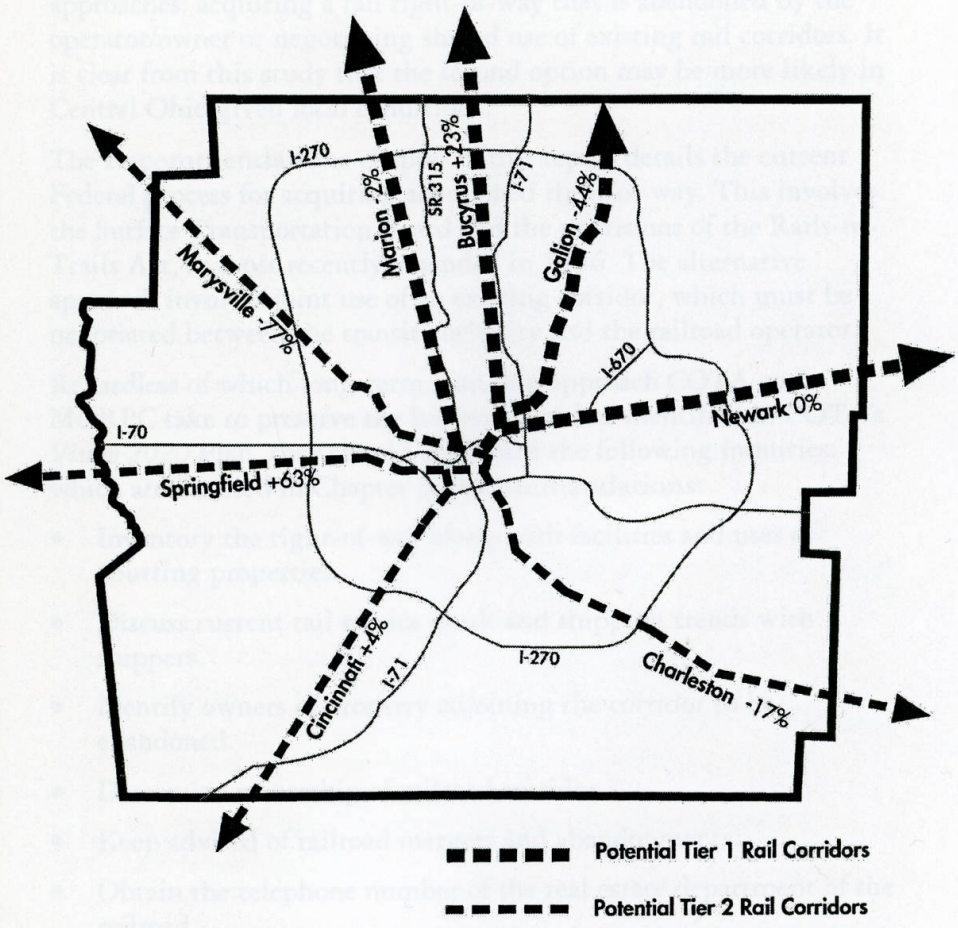
technology for the rail corridors is diesel-propelled rail transit with user friendly vehicles that provide comfort in seating. The system would also require a complementing bus feeder system to help bring customers to the rail stations.

The corridors include north, northwest, northeast, east, west/northwest, southeast, southwest, and west rail service lines that would terminate at a proposed downtown Multi-Modal Terminal (except the north corridor service line which travels on Goodale Avenue, turns south on High Street and then onto Sycamore Street). The Multi-Modal Terminal is planned near the intersection of High Street and Nationwide Boulevard. The future rail corridors are classified as either Tier I Rail Corridors or Tier 2 Rail Corridors. COTA plans to construct the Tier I Rail Corridors first with the north corridor (Worthington to Downtown) operating by 2005, the northwest corridor (far northwest Columbus to Downtown) by 2008, the northeast corridor (Westerville area to Downtown) by 2011 and the east corridor (far east Columbus, Whitehall, Bexley, to Downtown) by 2014. COTA plans to lay additional track in the north, northeast and northwest corridors whereas the east corridor will utilize existing freight track. A summary of the Tier I Rail Corridors as explained by the *Vision 2020* Plan follows:

- **North Corridor:** The north corridor parallels Interstate 71 and contains the highest amount of travel of the region. The proposed passenger rail service would utilize the existing freight rail corridors used by CSX and Norfolk Southern. The location of stations along the corridor is based on population distribution.
- **Northeast Corridor:** The northeast corridor originates at the Multi-Modal Terminal and runs along Cleveland Avenue, towards I-270 and Westerville. The passenger rail service would utilize the abandoned Mt. Vernon freight rail corridor. The line would connect into the north corridor south of Seventeenth Street. This corridor could potentially service the Easton area, expected to generate 40,000 jobs when completed.
- **Northwest Corridor:** The northwest corridor begins at the Multi-Modal Terminal, radiates northwest along State Route 315 and terminates in the Sawmill/I-270 area. The line would provide service to the Ohio State University by utilizing the existing CSX freight rail corridor.
- **East Corridor:** The east corridor utilizes existing freight track and originates at the Multi-Modal Terminal, travels east along Broad Street and terminates at Taylor Station Road. This corridor will be jointly used between COTA and the rail freight operators. Future plans for the corridor could include service to Port Columbus and the city of Newark.

The Tier I Corridors may be extended to adjacent counties. If the demand for service in the adjacent counties is high enough, the Tier 2 Rail Corridors will then be implemented. The plan relies on the success of COTA in purchasing existing rights-of-way within the corridor areas

and/or negotiating operating agreements with the railroads to operate on their tracks. The following map represents the proposed regional rail corridors.



This map identifies Regional Rail Corridors according to COTA's Vision 2020 Plan, as well as forecasted changes in rail activity due to the recent CSX and NS merger. Source: Summary of the Vision 2020 Plan.

COTA also examined downtown circulation needs and developed two options to better serve the people travelling downtown. Both downtown circulation options include rail transit supplemented with bus circulator loops.

The *Vision 2020* Plan identifies themes that are also present in TOD such as transit centers, circulation services and commuter rail. The *Vision 2020* Plan emphasizes supporting land uses around transit centers that will encourage transit ridership and pedestrian activity, a key element in transit-oriented developments. A multi-modal transit facility located downtown that provides office space and retail opportunities would create a mixed-use environment that reinforces the use of public transportation.

F. Major Recommendations

1. Rail Corridor Preservation

Preserving rail corridors for future transit use involves two key approaches: acquiring a rail right-of-way that is abandoned by the operator/owner or negotiating shared use of existing rail corridors. It is clear from this study that the second option may be more likely in Central Ohio given local conditions.

The **Recommendations** chapter of this report details the current Federal process for acquiring abandoned right-of-way. This involves the Surface Transportation Board and the provisions of the Rails-to-Trails Act, as most recently amended in 1996. The alternative approach involves joint use of an existing corridor, which must be negotiated between the transit authority and the railroad operator.

Regardless of which long-term planning approach COTA and MORPC take to preserve the key rail corridors identified in COTA's *Vision 2020* Plan, they should undertake the following inquiries: which are detailed in Chapter 3, **Recommendations**:

- Inventory the right-of-way along with facilities and uses of abutting properties.
- Discuss current rail service needs and shipping trends with shippers.
- Identify owners of property adjoining the corridor to be abandoned.
- Determine ownership of railroad corridor.
- Keep advised of railroad mergers and abandonments.
- Obtain the telephone number of the real estate department of the railroad.

2. Transit-Oriented Development

Imagine dropping off the kids at day care, stopping by the bank, getting a coffee and muffin, and hopping on board a commuter train to the office – all without using your car. That is one of the opportunities offered by creating transit-oriented development in mixed-use centers at transit stops.

A TOD area encompasses as much as 500 acres around a proposed transit station. In many cases in Franklin County, this will be an area already urbanized. As a result, infill development and re-development will often be priorities. Regardless, TOD offers the opportunity to encourage a new way of growth for Central Ohio which can reinvigorate our older neighborhoods with vital, pedestrian-friendly activity centers, and provide for new development in greenfields that provides for the pedestrian and not just the car.

Regulations for TOD are centered on the concept of providing a mix of employment, retail and service, public/institutional, and residential land uses around the transit facility at densities that will support transit use. Land uses within a TOD should be compact and centrally located around a core that contains the transit facility. The highest density development should occur at the core of the TOD and decrease accordingly as distance from the core increases. Land uses that are not transit-supportive should be discouraged in the core or adjacent districts.

The environment should include walkways, bicycle paths and pedestrian amenities that will encourage transit riders and residents to combine trips. Buildings should be designed with visually interesting facades to attract transit customers. Additional urban design elements such as landscaping, street trees and pedestrian scale lighting that emphasize the pedestrian are encouraged or required. Multi-level parking structures are preferred in transit-oriented developments over surface parking. Shared parking should be encouraged and in each district a maximum number of parking spaces shall be indicated.

Adoption of a TOD Zoning Overlay District would provide the means for implementing development guidelines that will encourage transit use.

Implementation must extend beyond adoption of the zoning recommendations to include a proactive effort that encourages TOD development. This could include COTA or a non-profit development corporation to facilitate and/or encourage co-development. The public sector should become a player, particularly in the area of land assembly, perhaps as an investor, and through other creative financing tools (e.g. TIF).

3. Recommendations

A. Overview

Preserving rail corridors and encouraging transit-oriented development (TOD) are both very complicated strategies that will require long-term patience. They will also require public support, including financial resources.

But the payoff for Central Ohio will be an improved and expanded transit system, reduced congestion and air pollution, and an enhanced urban fabric. The TOD concept offers the opportunity for creating true urban villages where people can live, work, play and raise a family in a pedestrian-friendly environment.

All of these benefits have occurred in several of this country's major metropolitan areas The lessons learned will assist Central Ohio undertake this exciting addition to the region's quality of life and competitiveness as an economic center.

The recommendations are presented in the following sections:

- Rail Corridor Preservation
- Transit-Oriented Development
- Local Case Studies
- Implementation

B. Rail Corridor Preservation

1. Planning for Preservation of a Rail Corridor Likely to Be Abandoned

There are at least two ways that communities can be made aware of potential rail right-of-way abandonments. One is through merger filing, where the railroads cite their abandonment plans. The other is through the Surface Transportation Board abandonment process, as outlined below. What follow are specific actions which are recommended to facilitate the evaluation of its preservation options for a rail corridor, including continued service or interim use. The actions are aimed at obtaining corridor specific information in advance of an abandonment case. Doing so could be helpful, since there may not be sufficient time to gather critical information once a case begins.

- **Inventory the Right-of-Way Along with Facilities and Uses of Abutting Properties:** The first step toward corridor preservation is to map and assess all rail corridors. This has been done as part of this study effort and the map found in Chapter 4 **Background** outlines the general characteristics of rail corridors in and around Columbus.
- **Discuss Current Rail Service Needs and Shipping Trends with Shippers.**

- **Identify Owners of Property Adjoining the Corridor to be Abandoned:** These may be opponents of any particular preservation plan. Moreover, the nature and extent of the property interests held by each owner should be determined to allow for an evaluation of the exposure to "takings" claims posed by any given conversion effort.
- **Determine Ownership of Railroad Corridor:** By using old railroad maps, often obtainable through railroad historical societies determine the name of the railroad that originally assembled the right-of-way. Try to determine when the railroad acquired the right-of-way. Knowing this information will help distinguish between the particular segment of track that is of interest from other segments built by the same railroad. The next step is to go to the land records division in the county where the railroad is located and identify the name of the railroad company that acquired the land in the grantee index. Every piece of property acquired by the railroad, the name of the grantor of the property, the date of the transaction and the method of transaction (deed, lease, condemnation or other) will be found in this index. This should also list where you can find the title. The title, will indicate under what terms and conditions the railroad acquired the property from its previous owner, such as "simple fee" or "reversionary easement." Also, a copy of the railroad charter granted by the state to the railroad should be obtained. The charter may contain language governing the disposition of rights-of-way. This, will inform the exposure to "takings" claims noted immediately above.
- **Keep Advised of Railroad Mergers and Abandonments:** Public agencies and others who are interested in maintaining railroad corridors for future transportation system needs should maintain an active listening posture. This simply means staying attuned to railroad merger and abandonment plans. This can be accomplished in several ways. Railroads are required to produce System Diagram maps annually that identify which lines are currently slated to be abandoned. However, there are exemption procedures employed by railroads that don't necessarily define these potential abandonments. Therefore, it is important to be on the mailing list of the Ohio Rail Development Commission (ORDC) to stay abreast of rail planning activities and developments in Ohio. Railroads are required to give notice of potential abandonments to the Surface Transportation Board (STB) and other agencies such the National Park Service and the Ohio Historic Preservation Office (OHPO) as well as the ORDC. Agencies should identify who in the Central Ohio region are already receiving advance notification of pending abandonments and ensure that a process exists whereby this information is disseminated quickly and efficiently to potentially affected parties, including rails-to-trails and user groups such as shippers.

- **Obtain the Telephone Number of the Real Estate Department of the Railroad:** If the corridor is sold, this department will handle the sale.
- **Rails-to-Trails Conservancy:** The Rails-to-Trails Conservancy (RTC) is a public interest activist group interested in preserving railroad corridors for public use as linear parks and hiking/biking trails. This group is an excellent resource for information related to railroad corridor abandonments and preservation activities including the latest legal issues related to rail corridor preservation. It is suggested that public agencies interested in railroad corridor preservation become a member of the RTC and attend workshops and seminars to stay abreast of current legislation and court decisions.

2. ISTEA to TEA-21

Besides the Trails Act, this national interest in rail corridor preservation has been reflected in a number of statutory provisions, including provisions in the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) and its successor, the Transportation Equity Act for the 21st Century (TEA-21). ISTEA required the development of state and regional transportation plans to ensure that federal-aid transportation projects were consistent with national transportation objectives. The law specified that these plans consider preservation of rights-of-way for future transportation corridors. The TEA-21 legislation now supersedes ISTEA. TEA-21 maintains the basic programs and tenets forth under ISTEA, including the preservation of corridors.

3. Purchasing or Sharing Railroad Corridor With Existing Freight Carrier(s)

In light of the fact that only one, limited railroad corridor abandonment is anticipated in the study area within the next several years, the more likely route for acquiring a useable right-of-way and trackage rights for passenger rail is through negotiations that would lead to the purchase or sharing of one or more existing corridors.

This information strongly suggests that corridor purchase is not a viable option during the planning horizon of this project based on anticipated freight corridor usage at this time. If purchase does become a possibility, there still are significant financial implications due to the costs of both purchase and the possibility that upgrades may be needed to tracks, signals and other facilities. Non-cash options (land swaps, zoning approvals for freight rail facilities, etc.) could be explored to address some of these cost issues.

Purchase will raise concerns over the potential for liability, particularly under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). Any potential purchase

should be evaluated through a comprehensive legal and environmental "due diligence" review.

A better, and more feasible alternative to corridor purchase may be having commuter rail share the corridor with existing freight service. COTA reports that this option is being seriously explored. While corridor-sharing is a viable option, experience elsewhere indicates that there are several areas of concern. These include:

- In other areas of the country, freight lines have been unenthusiastic at best, and opposed at worst, to proposals for sharing lines.
- Concerns have been raised about the quality of passenger service in shared corridors because freight shipments have been given priority on shared tracks.
- There are also safety concerns regarding sharing arrangements due to the weight differential between freight trains and commuter rail.

C. Transit-Oriented Development

1. Overview

Transit-oriented development (TOD) with its mix of land uses is an alternative to the typical suburban community – low densities and auto-dependent. Design guidelines help establish a community that is less dependent on the automobile and more likely to utilize transit. It brings balance to the typical suburban pattern. Creating a TOD Zoning Overlay District is the first step in encouraging TOD projects. The overlay would be superimposed over any existing regulations and would regulate permitted uses, density, parking, and other development standards to ensure that TOD occurs.

Under Ohio law, home rule municipalities (cities and villages) have very broad authority so long as they do not directly contradict the Ohio Revised Code. Thus, municipalities should encounter few problems in enacting TOD ordinances and regulations: they may create TOD zones and apply a full range of zoning and design review regulations in these zones.

While townships and counties have more limited authority, it is not so limited that they may not also use their land use powers – albeit to a lesser extent – for this same purpose. Townships may create TOD zones, but design review within these zones could be problematic. While townships could achieve design review in TOD zones via the Planned Unit Development (PUD) mechanism, the PUD would require the approval of the landowner(s).

The overlay district guidelines developed during this process are intended to promote the development of TOD projects. More specifically, the guidelines include the purpose, scope and intent of

the overlay district and set forth a variety of land use regulations such as permitted uses, density and parking. A variety of development standards are provided to ensure a pedestrian friendly environment that emphasizes transit, walking and bicycling.

Incentives to encourage development such as fast tracking of permits and reductions in the amount of required parking are discussed following the TOD Zoning Overlay District section. Providing incentives to developers is another method to encourage TOD development.

The residential development component of TOD should include affordable housing. Providing housing opportunities for all income levels is an important factor in developing a transit-friendly environment.

Two major issues exist for TOD development. There are significant problems with coordination among multiple jurisdictions once outside Columbus. And, although ORC Chapter 3746 addresses liability concerns regarding brownfields, the larger social and economic concerns and thus, market-viability of brownfield sites, remains a potential issue.

A. Principles of TOD

The following principles serve as a basis for defining and structuring TOD.

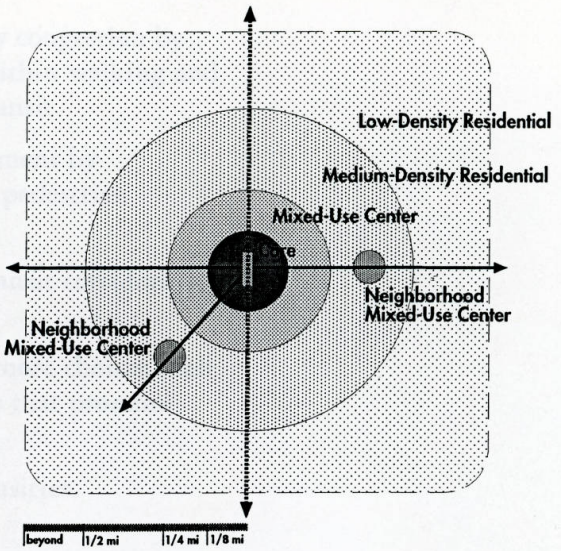
1. Use transit and transit stops as a basis for concentrating, organizing and shaping development at the regional level.
2. Make a more efficient use of land encouraging infill and redevelopment along transit corridors and within existing neighborhoods and directing growth to under-utilized land before developing the countryside.
3. Integrate uses (residential, commercial, office, institutions) and place them within walking distance of transit stops.
4. Provide a street network that connects all local destinations in a pedestrian-friendly traditional street environment.
5. Provide a mix of housing types, densities, and costs.
6. Protect the environment by preserving sensitive habitats, riparian zones, and high quality open space.

B. TOD Structure

The following principles define TOD development:

1. The TOD center has a core development area focused on the transit station. A one-eighth-mile radius defines the core. Within this 31-acre area are found the highest densities of development. The major land use is commercial and office, but residential uses are integrated as well.

2. The second development area, surrounding the core, is the mixed-use center. A one-quarter-mile radius of the transit station – about 95 acres, defines the mixed-use center. This has slightly lower densities. Residential becomes a more dominant use in this area, but commercial and office are still appropriate.
3. An area of medium density surrounds the mixed-use center. A one-half-mile radius of the transit station defines the medium density residential area. This is about 376 acres.
4. Single-family residential uses are typically found as the background development pattern, reflecting the neighborhoods that surround a TOD.
5. Neighborhood mixed-use centers are found within a half-mile of the transit center on a major arterial. Commercial uses that support a neighborhood are found in these centers, including retail, personal services and professional offices. Higher density housing is also appropriate in these centers.
6. Throughout all of these development areas, pedestrian supportive design and connections are extremely important.



A conceptual drawing of a transit-oriented development area, focusing on a rail station and with varying density and land use based upon distance from the station. A 1/4-mile distance is equal to a 10-minute walk.

2. TOD Zoning Overlay District

The following model is presented as a starting point in consideration of adopting zoning provisions to encourage TOD. This model is intended to be modified by the community to reflect locally defined priorities and issues. Certain sections of the zoning district are left blank for that purpose. A community's planning staff, legal staff and Planning Commission should work together to prepare an acceptable zoning district before submitting it to the community's zoning adoption process.

A. Purposes

The purposes of the TOD Zoning Overlay District are the following:

1. Encourage and direct development that is transit supportive.
2. Reinforce the use of public transportation by locating higher-density mixed-use development, including employment oriented businesses and higher density residential uses, adjacent to transit stops.

3. Reduce automobile dependency and roadway congestion by combining trips and locating destinations within walking and biking distances - all interconnected with transit.
4. Provide an alternative to traditional development by emphasizing mixed-use development that is pedestrian oriented.
5. Encourage infill and redevelopment along transit corridors in existing neighborhoods.
6. Enhance neighborhood identity by creating more choices such as walking, biking and shopping to residents that promote safety, friendliness and livability.
7. Provide a mix of housing types, costs and densities.

B. Scope of Authority

The TOD Zoning Overlay District is an overlay district and shall be superimposed on the existing zoning districts established by the community zoning ordinance/resolution. All regulations of the zoning ordinance/resolution applicable to such underlying districts shall remain in effect. Where a conflict occurs between regulations, the TOD Zoning Overlay District shall govern.

C. Definitions

For the purposes of this Zoning Overlay, the following definitions shall apply:

1. **Development** – The physical alteration of a tract of land, including buildings, structures, grading, and other related changes.
2. **Drive-Through Facilities** – Facilities allowing transactions for goods or services without leaving a motor vehicle.
3. **Floor Area Ratio** – The amount of enclosed gross floor area in relation to the amount of site area, expressed in square feet. For example, a floor area ratio of 0.5 means one square foot of floor area for every two square feet of site area.
4. **Gross Density** – The measure of the number of dwelling units permitted per acre of land area, minus dedicated right-of-way.
5. **Mixed Use Development** – A type of development containing a variety and intermixing of uses (residential and non-residential) that complement the surrounding communities. The land uses are designed to work together to result in an attractive place to live, work, shop and recreate.
6. **Overlay Zoning District** – A zoning district that encompasses one or more underlying zones and that imposes additional or alternative requirements to that required by the underlying zone.

7. **Park and Ride Lot** – A parking structure or surface parking lot intended for use by persons riding transit or carpooling.
8. **Pedestrian-Friendly Environment** – An environment that promotes pedestrian interaction by emphasizing connectivity through walking and biking paths as well as visually interesting buildings, designs and amenities.
9. **Podium Apartments** – A multi-family structure in which parking is located below the living quarters such as on the ground level.
10. **Shared Parking** – The sharing of a given parking supply by land uses that generate different peak parking time demands, such as entertainment and office uses.
11. **Site Coverage** – The part of a development site occupied by buildings.
12. **Transit-Oriented Development (TOD)** – A development approach locating higher density, mixed uses at strategic points along the regional transit system. The design and location of a TOD and the mix of uses emphasize a pedestrian-friendly environment and reinforce the use of public transportation.
13. **Transit Station** – A public transit station served primarily by a light or commuter rail train. The station may contain bus line service, park and ride facilities, and retail and service establishments.

D. Intent

The area subject to the TOD Zoning Overlay District shall encompass an area surrounding a transit station or located along a transit line, as determined by a development plan *(see Section K or as determined below).*

The Zoning Overlay may be comprised of any of the following four sub-districts:

1. **Core Sub-District** – This sub-district is defined by a center core area of about one-eighth-mile radius focused around the transit station. The intent of the Core Sub-District is to provide immediate access to high-density development associated with the transit station. The sub-district contains jobs, commercial services and housing that will generate high levels of pedestrian activity and transit use, supporting multiple trips. The highest development densities occur within the core area and include commercial, office and integrated residential uses. All land uses are pedestrian oriented and well connected to the transit station.
2. **Mixed Use Sub-District** – This sub-district encompasses about one-quarter-mile radius of the transit station,

surrounding the Core Sub-District. The intent of the Mixed Use Sub-District is to provide easy and convenient access to the transit station. Development should contain a combination of retail, office, services and various types of housing within easy walking distance of transit stations. The district has slightly lower densities than the Core Sub-District. Land uses are predominantly residential with supporting commercial and office uses. A pedestrian network provides a link to the transit station.

3. **Medium Density Sub-District** – The Medium Density Sub-District surrounds the mixed-use center and is defined by an approximate one-half mile radius surrounding the transit station. The intent of the Medium Density Sub-District is to provide modest, yet walkable access to transit stations for surrounding medium density residential uses. Retail and office uses should support the local housing population. The dominant land use is medium density residential. A pedestrian network connects residential developments with supporting land uses and the transit station.

4. **Low Density Sub-District** – This sub-district extends outward from the medium density sub-district (*This district is optional*). The intent of the Low-Density Sub-District is to provide general accessibility to transit stations for low-density development on the outlying areas of a TOD. A focus is placed on single-family residential uses with some neighborhood convenience centers serving the local neighborhood.

E. Land Use Regulations

All development shall be in compliance with applicable regulations.

1. Permitted Uses

The following uses are permitted, as indicated on the table, provided that they comply with the Development Plan *(see Section K)*. Permitted uses are subject to the applicable development standards of the overlay. Unless otherwise prohibited, the following uses are consistent with this intent.

Table 3.A: Permitted Uses

Permitted Use	Sub-District			
	Core	Mixed Use	Medium-Density	Low-Density
High density multi-family dwellings	Yes	No	No	No
Medium density multi-family dwellings, including townhouses and podium apartments	No	Yes	No	No
Low density multi-family dwellings, including garden apartments, quads and duplexes	No	No	Yes	No
Elderly housing meeting the density standards of the sub-district	Yes	Yes	Yes	Yes
Duplexes and single-family residential	No	No	Yes	Yes
Ground floor retail, personal services and offices are required in office and multi-family structures and parking structures fronting along pedestrian pathways and public streets, opposite transit stations, in structures two stories and higher, and along transit streets	Yes	Yes	No	No
Neighborhood retail, personal services and offices	No	No	Yes	Yes
Office buildings, administrative facilities and employment centers	Yes	Yes	No	No
Hotels and entertainment establishments (excluding adult-oriented entertainment)	Yes	Yes	No	No
Government and institutional offices	Yes	Yes	No	No
Educational institutions meeting density standards of the sub-district	Yes	Yes	Yes	Yes
Adult and child day care facilities, location at transit station encouraged	Yes	Yes	Yes	No
Hospitals	Yes	Yes	No	No
Parking structures	Yes	Yes	No	No
Surface parking lots	No	Yes	Yes	Yes
Plazas, courtyards and major recreational facilities	Yes	Yes	No	No
Neighborhood parks and recreational facilities	No	No	Yes	Yes

2. Restricted Uses

The following uses are allowed in the Zoning Overlay sub-districts only as indicated:

Table 3.B: Restricted Uses

Restricted Use	Sub-District			
	Core	Mixed Use	Medium-Density	Low-Density
Warehousing or distribution facilities	No	No	No	No
Freestanding retail, automobile sales, washing and repairs, bulk retail, drive through facilities, commercial surface parking lots, strip commercial developments, nurseries, and mini-storage facilities	No	No	Yes	Yes
Low-density housing units, including single-family and two-family dwelling units	No	No	No	Yes
Large public parks and golf courses	No	No	Yes	Yes
Retail uses larger than 10,000 square feet unless part of a multi-use development	No	No	Yes	Yes
Freestanding retail uses larger than 40,000 square feet	No	No	No	No

F. Density

The following density requirements shall apply to all uses allowed by right located in the Zoning Overlay sub-districts as indicated.

1. Builders are required to build to a specified density within each sub-district.
2. The following minimum and maximum residential density requirements and minimum floor area ratios shall apply:

Table 3.C: Density

Sub-District	Minimum Residential Density	Maximum Residential Density	Minimum Non-Residential Density[1]
Core Sub-District	30 units per acre	75 units per acre	120,000 square feet per acre
Mixed Use Sub-District	15 units per acre	30 units per acre	60,000 square feet per acre
Medium Density Sub-District	12 units per acre	24 units per acre	20,000 square feet per acre
Low Density Sub-District	5 units per acre	12 units per acre	10,000 square feet per acre

[1] Provided height requirements are met.

G. Parking

Parking within the TOD Zoning Overlay shall be located in multi-level structures or in shared parking lots as permitted in the sub-district, where feasible and with approval of the city. Parking must comply with the Development Standards set forth in Section H. The following requirements shall apply to all uses allowed by right located in the Zoning Overlay sub-districts as indicated.

1. General

a. A maximum of 1.5 parking spaces per multi-family unit is permitted.

b. A maximum of three parking spaces per 1,000 square feet of office space is permitted.

c. A maximum of three parking spaces per 1,000 square feet of retail space is permitted.

d. Where feasible, ingress and egress from parking shall be from side streets or alleys.

e. On street parking is permitted and encouraged.

2. Core Sub-District

a. Surface parking lots shall be prohibited in the Core Sub-District.

b. Further reduction in the number of required parking spaces is permitted with city approval based on the number of forecasted trips generated by the development, which will be accommodated by the transit system.

3. Mixed Use Sub-District and Medium-Density Sub-District

a. Surface parking lots are permitted in the Mixed Use Sub-District and Medium Density Sub-District. Surface parking lots shall not exceed 2.5 acres in size.

4. Low-Density Sub-District

a. Surface parking lots are permitted in the Low-Density Sub-District.

b. Residential parking shall be located at least ten feet behind the building line and shall not dominate the streetscape.

H. Development Standards

The following development standards shall apply to all uses allowed by right in the Zoning Overlay sub-districts as indicated. Pedestrian and bikeway paths as well as open space areas connecting to the transit station and activity centers shall be required in each of the sub-districts, in order to develop a strong pedestrian network.

1. **Building Facades**
   a. All buildings in TOD sub-districts must provide a main entrance on the facade of the building nearest to and facing a transit station or a street leading to a transit station.
   b. A building may have more than one entrance.
   c. Building facades must provide a visually interesting environment and should avoid uniform design styles.
   d. Architectural style and materials shall be compatible throughout the sub-district and/or may be defined by the Development Plan.
   e. Architectural style and materials shall be compatible with or compliment the built environment of the surrounding area. This may be defined by the Development Plan.

2. **Building Height**
   a. Building height within the sub-districts shall be defined by the Development Plan *(see Section K).*
   b. At a minimum, building height shall be limited to six stories in the Core Sub-District, four stories in the Mixed Use Sub-District, and three stories in the Medium Density Sub-District, unless modified by an approved Development Plan.

3. **Building Orientation**
   a. Buildings within the TOD shall be oriented toward the pedestrian by providing a direct link between the building and the pedestrian walking system, with emphasis on directing people to the transit station.
   b. A building's ground floor facing a transit station or public street shall contain a minimum of 50 percent unobscured windows, doors or display areas.

4. **Building Setbacks**
   a. Buildings shall be setback a maximum of five feet from a public right-of-way. A setback may be increased to a maximum of 20 feet from a public street if a courtyard, plaza or seating area is incorporated into the development adjacent to the public street.

5. **Blocks**
   a. Block size shall be walkable. Blocks shall not exceed 800 feet in length and must provide pedestrian linkages at least every 200 feet.

6. Surface Parking Lots

a. Surface parking lots shall not dominate a development site.

b. Surface parking lots with 50 spaces or more shall be divided into separate areas and divided by landscaped areas at least 10 feet wide or by a building or group of buildings.

c. Surface parking lots shall be screened along all sidewalks by a three-foot high masonry wall, fence or similar treatment that is compatible with adjacent structures.

d. Walkways that cross parking, loading or driveway areas must be clearly identifiable through the use of elevation changes, speed bumps, a different paving material or other similar method.

e. A total minimum of five percent of the area of surface parking lots shall be landscaped.

f. On street parking is permitted and encouraged.

g. Surface parking lots are located to the rear of the building. Surface parking lots shall include pedestrian walkways and connections to the sidewalk system. These shall be clearly marked and continuous in design.

7. Shared Parking

a. Shared parking is strongly encouraged. A shared parking plan should be submitted to the city for approval. The methodology shall be approved by the city prior to submittal of the plan.

8. Parking Structures

a. Parking structures shall include pedestrian walkways and connections to the sidewalk system. These shall be clearly marked and continuous in design.

b. Parking structures shall contain ground-level retail along street side edges of the parking structure.

c. Parking structures shall be architecturally integrated or designed with an architectural theme similar to the main building.

d. Blank facades, solid walls and non-active uses at grade are discouraged.

9. Bicycle Parking

a. Bicycle parking facilities shall be provided for all office and multi-family structures, and freestanding commercial uses. *(see Sub-Section H. 7)*

b. The required number of bicycle parking spaces shall be based on the following:

Table 3.D: Bicycle Parking

Land Use	Bicycle Parking Required
Multi-family residential	1.00 space per dwelling unit
Retail	0.50 spaces per 1,000 S.F.
Office	0.25 spaces per 1,000 S.F.
Industrial	0.14 spaces per 1,000 S.F.
Park and Ride Facilities	10.00 spaces per acre

c. Bicycle parking facilities must be located in a secure, lockable, and well-lighted area.

d. All bicycle racks, lockers, or other facilities shall be securely anchored to the ground or to a structure.

e. All required bicycle parking shall be located within 50 feet of central and/or well-used building entrances.

f. Long-term bicycle parking facilities that provide parking for trips lasting six or more hours may be located inside buildings for added security.

g. The amount of short-term bicycle parking required for trips lasting less than two hours shall be provided for at each building.

h. In buildings that have several uses, shared short-term bicycle parking facilities are encouraged and should be centrally located between uses.

10. Street Design

a. On-street parking is permitted and encouraged.

b. Street design standards shall be the following:

Table 3.E: Street Design Standards

Street	Right-of-Way	Travel Lanes	Travel Lane Width	Parking Lanes	Parking Lane Width
Alley	16-18 feet	1+	NA	0	NA
Local	40-45 feet	2	7-9 feet	2	8-9 feet
Collector	50-60 feet	2	11 feet	2	9 feet
Arterial [1]					

[1] Per Existing Code

11. Sidewalks

a. Sidewalks shall be at least five feet in paved unobstructed width.

b. Sidewalks shall be constructed along the frontage of all public streets and within and along the frontage of all new development or redevelopment.

c. Sidewalks may range from a minimum of five feet to a maximum of 20 feet depending on expected pedestrian traffic.

d. Pedestrian scale lighting fixtures no greater than 12 feet in height shall be provided along all sidewalks and walkways to provide ample lighting during nighttime hours for employees, residents and customers.

e. Stairs or ramps consistent with ADA requirements shall be provided where necessary to provide a direct route.

f. Walkways shall be as direct as possible and avoid unnecessary meandering.

12. Streetscapes

a. Street trees are required along all sidewalks per code.

b. Pedestrian amenities such as benches, public art, picnic areas, seating areas, planters, fountains, etc., shall be located in landscaped areas, open spaces and plazas along streets and in parks.

13. Open Space Requirements

a. In non-residential areas at least 10 percent of the total site area shall be dedicated to open space. Where feasible, this standard should be fulfilled via a plaza, courtyard, or other similar public space at the entrance to a building.

b. In residential areas at least 15 percent of the total site area shall be dedicated to open space.

c. Potential pedestrian connections between proposed development and existing or future development on adjacent properties other than connections via the street system shall be identified.

I. Additional Standards

The community may wish to include additional standards that meet locally defined goals relative to transit oriented development or which address other related concerns. These may include design standards to ensure new construction or redevelopment is focused on the pedestrian. Standards for building, street and parking lot designs, and open space may be set forth.

J. Development Plan

A Development Plan shall be prepared for each designated TOD Zoning Overlay District *(transit corridor or station area)*. The Development Plan may modify the boundaries of the sub-districts

and provide for the physical design of the TOD relative to public improvements, development standards, urban design criteria, and public incentives. The Development Plan shall consist of the following components:

a. Existing land use, property ownership, development character, and related characteristics within one mile of the proposed transit station location.

b. Real estate market analysis of the development and redevelopment potential of the TOD. The analysis shall consider potential demand for commercial (retail and services), office, hotel, entertainment, light industrial, and residential development (multi-family-owner and renter occupied, duplexes, single family, affordable housing and elderly housing) and any other applicable uses.

c. Conceptual placement of the sub-districts onto the study area and an analysis of potential impacts, development opportunities, infrastructure needs, etc. A traffic study shall also be prepared.

d. Final development plan indicating sub-district boundaries, development pattern by use, density, and similar characteristics; supporting infrastructure; pedestrian and bicycle system; urban design guidelines; and implementation timetable.

e. An incentive package shall be prepared that matches the unique aspects of the particular TOD location and which is responsive to market conditions for that area.

The process for preparing the Development Plan shall include major stakeholders, including but not limited to major property owners, COTA, neighborhood organizations, and other interested parties. These individuals shall serve as an advisory committee that will work with city staff and consultants to prepare the Development Plan within the required timeframe.

The Development Plan shall be submitted to the Planning Commission and City Council for adoption. Once adopted the TOD Zoning Overlay District shall be drafted to implement the Development Plan recommendations and shall be submitted for adoption.

3. Affordable Housing

Many communities have required that affordable housing units be provided in TODs so households are not priced out of the local housing market. Residential development within a TOD should provide housing opportunities for all levels of income including low and moderate income. The design of affordable units should be congruent with the surrounding market-rate homes and should be

dispersed throughout the TOD. Any concentration of low-income housing is not recommended.

Requiring developments to provide a certain amount of affordable housing in the total project is one method to ensure that a range of housing opportunities will exist. For example, if a project is mostly rental units, than a portion of the units should be at rents affordable to very low and low income residents. Likewise, if the development is primarily for-sale housing, a percentage of the homes should be affordable to very low or low-income households. Other incentives such as density bonuses may be offered to developers to encourage the construction of affordable housing in a TOD.

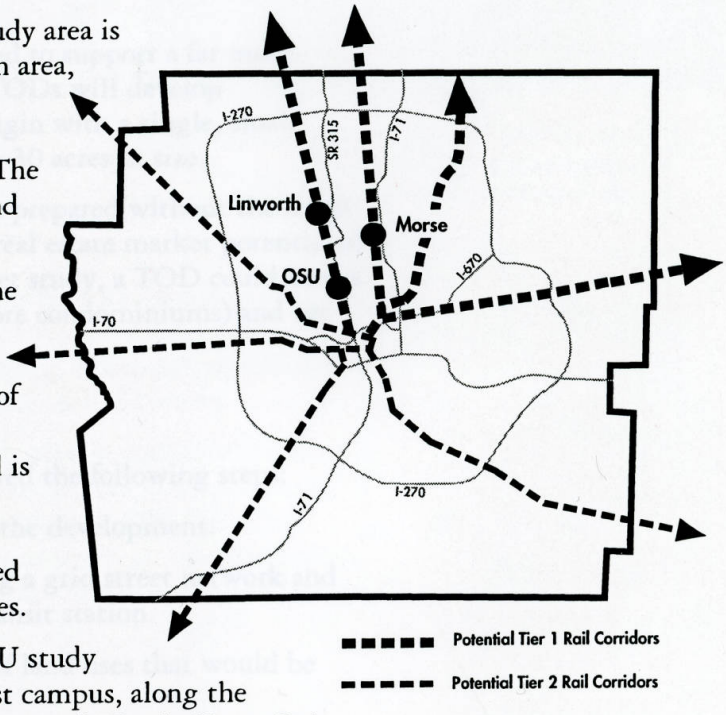
D. Local Case Studies

1. Overview

Three local case studies were prepared to apply the TOD concept in an illustrative manner as an application of the concept to local conditions. The case studies demonstrate the kinds of physical environments that should result from the model overlay zoning district. The case study locations were the following:

A. **Linworth/SR 161**: The Linworth study area is located along SR 161 in the Linworth area, directly west of Worthington. The study area is adjacent to COTA's proposed northwest commuter line. The study area is about 27 acres in size and is undeveloped.

B. **Morse Road/Indianola Avenue**: The Morse Road study area is located at the intersection of Morse Road and Indianola Avenue, directly west of I-71. The study area is located in Clintonville and Northland areas and is bisected by COTA's proposed north commuter line. The study area is 21 acres in size and is currently developed with a mix of business and service uses.



C. **OSU/Woody Hayes Drive**: The OSU study area is located on the university's west campus, along the east side of Kenny Road, north and south of Woody Hayes Drive. It abuts the proposed northwest COTA rail line and is also adjacent to SR 315. The study area is 29 acres in size and is undeveloped.

2. Principles

A set of design principles was applied to each case study, as they were prepared. A common methodology was also used. Both are summarized below.

The application of the TOD concept to the local case studies was driven by the following principles.

A. **Conceptual Nature:** The physical plans are of a conceptual nature and are meant to illustrate the TOD concept in a very general way. The project did not call for detailed field study, engineering or traffic analysis, market analysis, etc., or other more refined supporting assessments.

B. **Context:** Each plan considered the larger physical context within which a transit station is located. This was intended to demonstrate sensitivity and compatibility to the larger environment. The political realities of each location will affect the ultimate design and development of each TOD.

C. **Study Area Size:** Each case study only addressed a portion of the potential TOD area. In general about 25 percent or less of each TOD area was studied. This provided sufficient detail to demonstrate the concept.

   The overlay zoning district is intended to support a far more extensive TOD development. Also, TODs will develop incrementally over time and could begin with a single, small project. Each case study was less than 30 acres in size.

D. **Market Study:** The case studies were prepared without the input of a market study to understand the real estate market potential of each site. With the benefit of a market study, a TOD could have a different mix of uses by type (i.e., more condominiums) and use configurations.

3. Methodology

In each case the methodology used involved the following steps:

A. Establishing the general size/bulk of the development.

B. Defining the TOD arrangement using a grid street network and pedestrian/auto connections to the transit station.

C. Estimating the general distribution of land uses that would be typical of a TOD.

The actual application of the TOD concept will involve a Development Plan and real estate market analysis per the model overlay zoning district. These two documents will ensure that the TOD will be responsive to the local physical, economic and social context and the forecasted real estate market demand. The market analysis will define the distribution and make-up of uses based upon

potential market absorption for office, retail, apartments, and townhomes at each particular transit station location.

4. Linworth/S.R. 161

The Linworth study area is located along SR 161 in the Linworth area, directly west of Worthington. The study area is adjacent to COTA's proposed northwest commuter line. The study area is about 27 acres in size and is undeveloped.

A. Existing Conditions

Land uses along SR 161 in the study area are mostly commercial and light industrial/manufacturing, with single family residential to the east. The City of Worthington maintains a park along the east side of the rail corridor, just south of SR 161, and mostly vacant land is located west of the rail corridor. Don Scott Airfield is located south and southwest of the study area. Development in the immediate area is mostly retail, office and some light industrial along the rail corridor. Residential neighborhoods are located farther north and east. The original Linworth village plat establishes a grid street pattern in this area. The City of Columbus is proposing a major realignment and widening of SR 161 through Linworth.

The Linworth study area is defined by SR 161 (left to right) and the existing rail line that runs top to bottom in this aerial. The study area is the lower left quadrant.

B. Challenges and Opportunities

The challenges facing the study area include its suburban location, which is an area typified by lower density development. It is also situated in the remnants of a rural village, which has established a land use and parcel pattern partly based on this history.

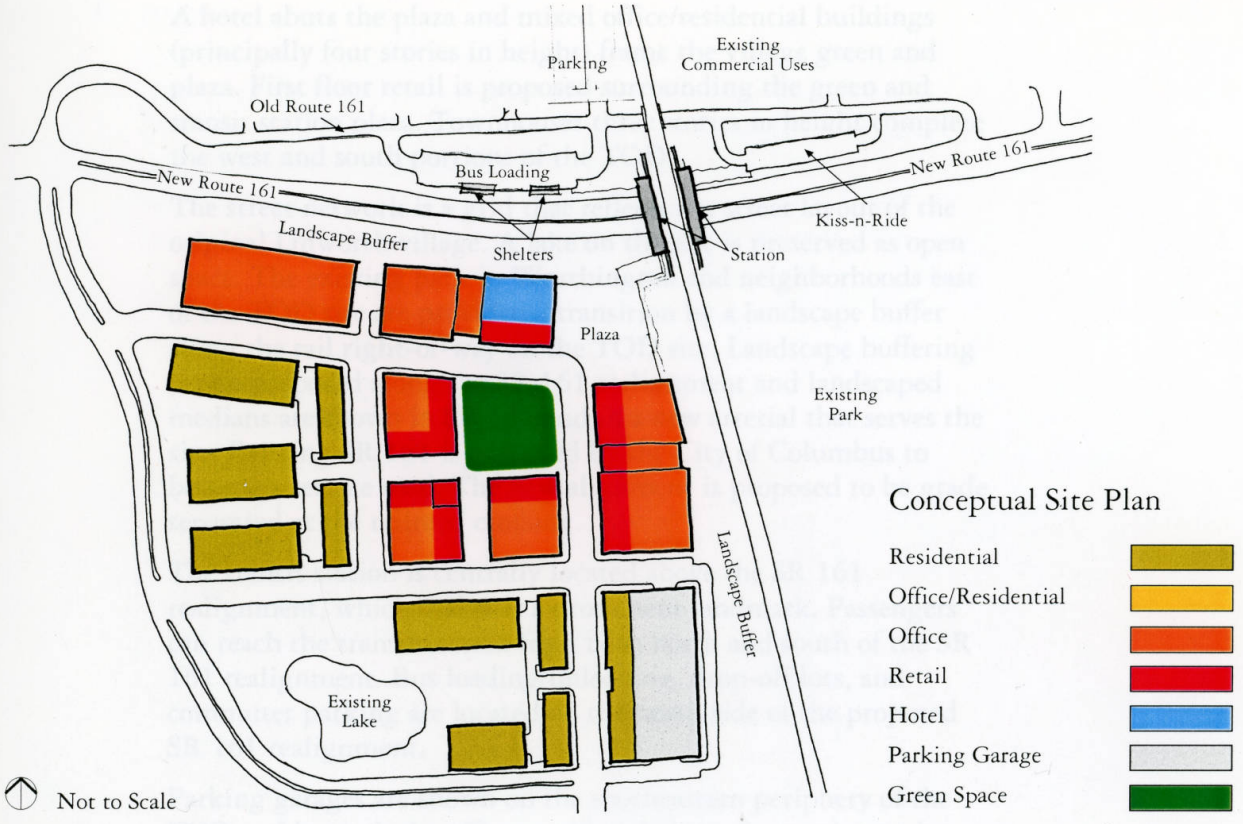
The opportunities offered by the study area include development of a greenfield site within the City's service area and optimizing the proposed realignment and reconstruction of SR 161. The location provides the opportunity to introduce an urban/suburban village comparable to Old Worthington and other nearby historic town centers.

C. Concept

This TOD concept creates a new urban village in the southwest quadrant of Linworth that is currently underdeveloped and mostly vacant. It provides for a mixed-use built environment defined by two public plazas: one at the transit station and the other serving as a village green.

The context of the TOD is a lower density, principally residential neighborhood to the east. As a result, the densities and building

heights are lower than the recommended TOD standard. The non-residential portion of the TOD has a gross density of 77,000 square feet per acre and the residential portion has a gross density of 15 dwelling units per acre.



Illustrative Site Plan

A hotel abuts the plaza and mixed office/residential buildings (principally four stories in height) frame the village green and plaza. First floor retail is proposed surrounding the green and transit station plaza. Townhouses three stories in height complete the west and south portions of the TOD.

The street network is a grid that reflects the street layout of the original Linworth village. A lake on the site is preserved as open space. The existing park in Worthington and neighborhoods east of the TOD site are provided a transition by a landscape buffer along the rail right-of-way on the TOD site. Landscape buffering is also proposed along the SR 161 realignment and landscaped medians are shown in SR 161 and in a new arterial that serves the site. Existing SR 161 is proposed by the City of Columbus to become a service road. The new alignment is proposed to be grade separated at the railroad crossing.

The transit station is centrally located above the SR 161 realignment, which makes it a prominent landmark. Passengers can reach the transit station from both north and south of the SR 161 realignment. Bus loading/unloading, drop-off lots, and commuter parking are located on the north side of the proposed SR 161 realignment.

Parking garages are shown on the southeastern periphery of the TOD and beneath the offices and hotel along the northern edge. Townhouses provide covered parking. On-street parking is provided throughout the TOD.

The perspective above depicts the Linworth TOD looking to the southwest from above the transit station, which is located in the foreground. SR 161 runs left to right in the lower part of the perspective.

D. Program

The total site is about 27 acres and it contains about six acres of plazas, a village green, and open space. The program provides for 814,000 square feet of office, retail and mixed-use development and about 204 residential units (69 apartments and 135 townhouses). Garages and on-street parking total about 1,700 spaces. The program is summarized in the accompanying table.

Linworth/S.R. 161

Total Site	Number	Percent
Developed Area	21 acres	77%
Open Space	6 acres	23%
Total	27 acres	100%
Office, Retail and Mixed Use		
Office	514,000 SF	63%
Retail	76,000 SF	9%
Hotel	80,000 SF	10%
Residential (Apartments)	144,000 SF	18%
Total	814,000 SF	100%
Residential		
Apartments	69 units	34%
Townhouses	135 units	66%
Total	204 units	100%
Parking[1]	1,703 spaces	
Density		
Office, Retail, Garages	77,000 SF/acre	
Residential	15 du/ac	

[1] *includes garages and on-street parking*

5. Morse Road/Indianola Avenue

The Morse Road/Indianola Avenue study area is located at the intersection of Morse Road and Indianola Avenue, directly west of I-71. The study area is bisected by COTA's proposed north commuter line. It is located in Clintonville and Northland areas. The study area is 21 acres in size and is currently developed with a mix of business and service uses.

A. Existing Conditions

The Morse Road/Indianola Avenue study area includes a considerable amount of road coverage, including portions of Morse Road, Indianola Avenue, Sinclair Road, and I-71 with access ramps, plus two rail corridors. North of Morse Road, between Indianola Avenue and I-71 are several hotels, car dealerships, and other commercial developments. South of Morse Road on the east side of Indianola Avenue are a number of small businesses, including services, repair and offices. Most of these uses are accompanied by surface parking lots. Single family

housing is located to the southwest, and undeveloped land is located to the northwest at the Ohio School for the Deaf.

B. Challenges and Opportunities

The challenges faced by this site include its complete redevelopment, which would be necessary to implement the TOD concept at this location. Equally important is the fact that the site is constrained by significant road networks, which also create a narrow, long development area. The single-family neighborhood to the west is another challenge.

The opportunities presented by the site include its potential role as an anchor to the redevelopment of the Morse Road corridor, which is getting significant attention by the City. Likewise, the application of a TOD at this location creates the opportunity to maximize investment in the area east of Indianola Avenue, which is mostly underdeveloped.

The Morse Road study area is defined by Morse Road (left to right) in the center, I-71, Indianola Avenue and the north commuter line (top to the bottom). The 1/8th mile and 1/4th-mile radii are shown as well.

C. Concept

The TOD concept suggested for this area has a strong redevelopment focus. It creates a series of office, office-residential, and residential uses located along a spine on the south side of Morse Road, anchored by a village green, and additional office and hotel development north of Morse Road.

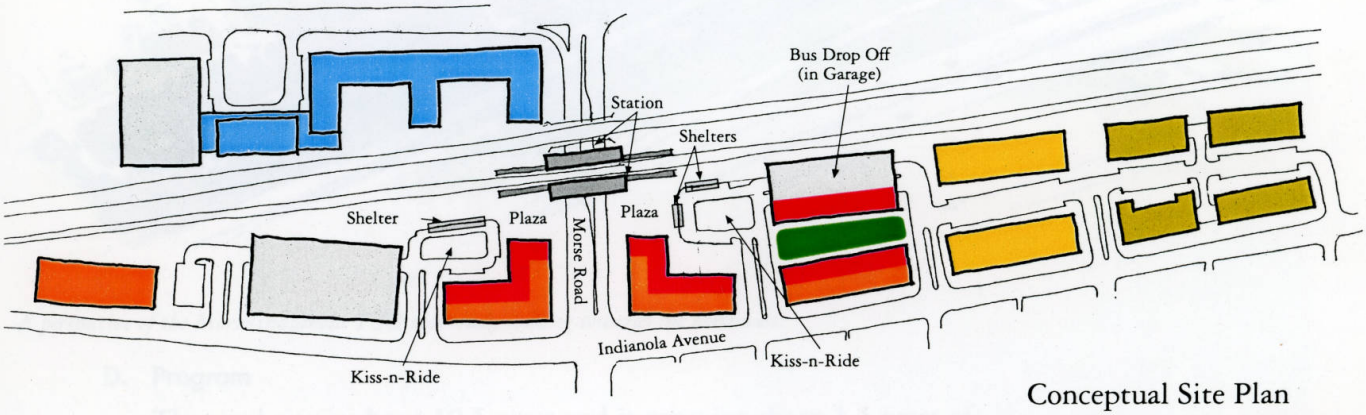
The context of the TOD is a lower density, residential neighborhood to the west and the Ohio Deaf School property to the northwest, which is open space. As a result, the densities and building heights are lower than the recommended TOD standard. The non-residential portion of the TOD has a gross density of 64,000 square feet per acre and the residential portion has a gross density of 12 dwelling units per acre. Heights for office buildings are mostly four stories, the hotel is four stories to five stories, and townhouses are three stories.

A major hotel is suggested along Sinclair Road, which could serve the downtown convention center via the commuter rail line. Public plazas are shown on the north and south sides of the transit station, both of which are fronted with retail space. Retail space also fronts the village green. The street network parallels Indianola and provides a grid network.

The transit station is centrally located above Morse Road, which makes it a prominent landmark. Passengers can reach the transit

station from north and south, east and west. Bus loading/unloading is provided in the parking garage on the south side of the transit station, and drop off areas are provided at each plaza.

Parking garages are shown in each quadrant, all of which are within walking distance of the transit station. Townhouses provide covered parking. On-street parking is provided throughout the TOD.



Conceptual Site Plan

Residential
Office/Residential
Office
Retail
Hotel
Parking Garage
Green Space

Not to Scale

Illustrative Site Plan

A perspective of the Morse/Indianola TOD case study looking towards the northwest.

D. Program

The total site is about 19.5 acres and it contains about 1.5 acres of plazas and a village green. The program provides for 731,000 square feet of office, retail and mixed-use development and about 67 residential units (40 apartments and 27 townhouses). Garages and on-street parking total about 2,100 spaces. The program is summarized in the table below.

Morse Road/Indianola Avenue

Total Site	Number	Percent
Developed Area	19.5 acres	93%
Open Space	1.5 acres	7%
Total	21 acres	100%
Office, Retail and Mixed Use		
Office	355,000 SF	49%
Retail	58,000 SF	8%
Hotel	234,000 SF	32%
Residential (Apartments)	84,000 SF	11%
Total	731,000 SF	100%
Residential		
Apartments	40 units	60%
Townhouses	27 units	40%
Total	67 units	100%
Parking[1]	2,133 spaces	
Density		
Office, Retail, Garages	64,000 SF/acre	
Residential	12 du/ac	

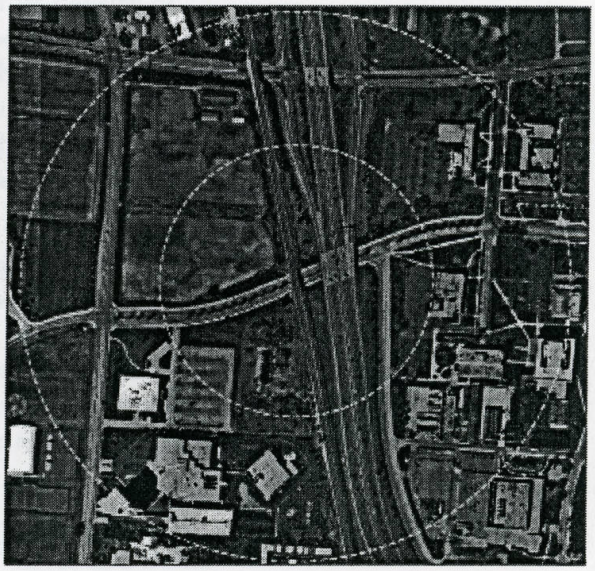
[1] *Includes garages and on-street parking*

6. Woody Hayes Drive/OSU

The OSU/Woody Hayes Drive study area is located on the university's west campus, along the east side of Kenny Road north and south of Woody Hayes Drive. It abuts the proposed northwest COTA rail line and is also adjacent to SR 315. The study area is 29 acres in size and is undeveloped.

A. Existing Conditions

Existing land uses between Lane Avenue and Ackerman Road, east of Kenny Road, are mostly comprised of academic support facilities such as Stores and Receiving, Printing Services and the University Library Book Depository. Additional light industrial, commercial and residential properties are also found here. Land between Lane Avenue and Woody Hayes Drive is not developed. The Veteran Affairs Clinic is located south of Woody Hayes Drive and additional University facilities are found around Kenny and Kinnear Roads.



The OSU study area is defined by Lane Avenue at the top of the aerial, SR 315 that runs through the center, and Kenny Road that is on the left side. Woody Hayes Drive runs left to right through the center of the aerial. The 1/8th and 1/4th-mile radii are indicated by the circles.

The Ohio State University's Long Range Concept Plan (1995) recognizes that the urban fabric of the main campus should extend to the West Campus area. Design principles in the Concept Plan are consistent with TOD guidelines. South of Lane Avenue, the Concept Plan recommends urban buildings and public open spaces define the urban character. A minimum building size of three to four stories or 50 to 60 feet are supported. This area is to be reserved for a Research Park and other academic, research and support facilities.

B. Challenges and Opportunities

The challenges of the study area include its location within a university, which is not a traditional TOD environment that would incorporate private sector development. As an academic context, the focus of development would be office, research and teaching facilities. It is unknown to what extent the university might embrace a mix of public and private uses in the TOD.

The opportunities for the study area include extending the urban character of main campus to the west of SR 315, which is currently typified by a suburban campus design ethic. Implementing the university's Concept Plan through the TOD is another opportunity, as is creating an exciting, image enhancing anchor at this highly visible location. The site has high visibility

from SR 315 and Lane Avenue, as well as visitors to campus and the Schottenstein Arena.

C. Concept

An academic, research and residential village is suggested in this TOD case study. It is an extension of the traditional urban fabric and quality of main campus. The concept is consistent with the University's master plan for West Campus, which calls for urban buildings of three to four stories in height, interesting facade design, and public spaces.

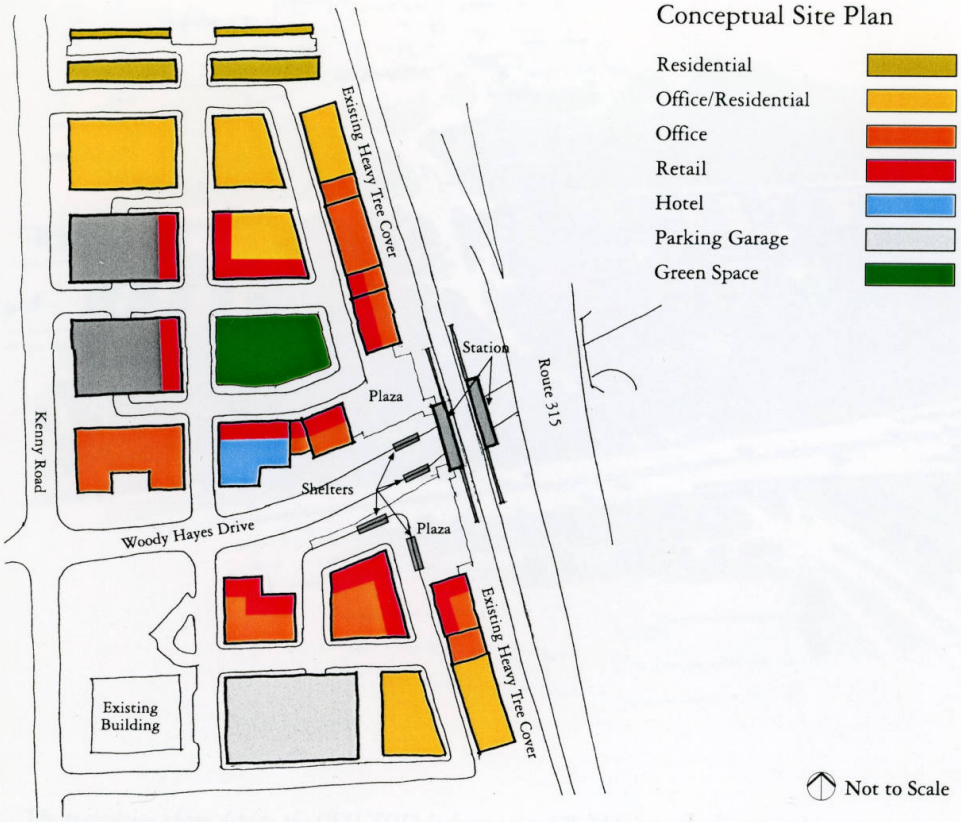
The non-residential portion of the TOD has a gross density of 58,000 square feet per acre and the residential portion has a gross density of 20 dwelling units per acre. Building heights are mostly four stories for offices and research facilities around the plazas and village green, with a single five-story tower, and three stories to the north for office and townhouse buildings. Parking garages are four stories.

The TOD provides for a mixed-use built environment defined by plazas at the transit station and a village green on the northern half. A hotel and retail uses surround the green. Mixed office/research and residential buildings are in key locations and three-story townhouses are provided. *The live/work units currently being marketed at Orenco Station in Portland could be very appropriate in this academic village as a way to attract researchers.*

The street network is a grid, which helps to define the urban character of this space. Existing heavy tree cover serves as a buffer along the rail right-of-way.

The transit station is centrally located above Woody Hayes Drive, which makes it a prominent landmark. Passengers can reach the transit station from both north and south sides of the TOD and from the east along Woody Hayes Drive. Bus/passenger drop-off shelters are indicated on Woody Hayes Drive and at the southern plaza, to aid transit connections to campus via the university bus system.

Parking garages are suggested along Kenny Road and on the southern periphery of the TOD. Townhouses provide covered parking. On-street parking is provided throughout the TOD.



Conceptual Site Plan

- Residential
- Office/Residential
- Office
- Retail
- Hotel
- Parking Garage
- Green Space

Illustrative Site Plan

The perspective above depicts the OSU TOD looking west. SR 315 is in the foreground.

D. Program

The total site is about 29 acres and it contains about two acres for plazas and the village green. The program provides for just over 1 million square feet of office, research, retail and mixed-use development. It includes about 152 residential units (132 apartments and 20 townhouses). Garages and on-street parking total about 2,400 spaces. The program is summarized in the accompanying table.

OSU / Woody Hayes Drive

Total Site	Number	Percent
Developed Area	27 acres	93%
Open Space	2 acres	7%
Total	29 acres	100%
Office, Retail and Mixed Use		
Office[2]	683,000 SF	62%
Retail	79,000 SF	7%
Hotel	59,000 SF	5%
Residential (Apartments)[3]	277,000 SF	25%
Total	1,098,000 SF	100%
Residential[3]		
Apartments	132 units	87%
Townhouses	20 units	13%
Total	152 units	100%
Parking[1]	2,430 spaces	
Density		
Office, Retail, Garages	58,000 SF/acre	
Residential	20 du/ac	

[1] *Includes garages and on-street parking*
[2] *Office includes academic and research facilities*
[3] *Residential can be for students, staff or faculty*

E. Implementation

1. Overview

This section focuses on several key conditions and implementation tools to assist in promoting transit-oriented development. An analysis of existing market conditions and in place regulations is necessary to determine if transit-oriented development can flourish in an area.

The implementation of transit-oriented development will involve a partnership among COTA, the City of Columbus and other local jurisdictions, and the development community, with the support of the public. Crucial will be the incentives necessary to encourage developers to participate in TODs. The process recommended here is aggressive and is intended to place the community in a position to

make transit-oriented development work. Success will depend upon a proactive public sector – beyond simply adopting the TOD overlay zoning district. Key factors are the following:

- Public approval of the sales tax measures to support *Vision 2020* that are on the Fall, 1999 ballot.
- Adoption of the TOD Zoning Overlay District by the City of Columbus and other local jurisdictions.
- The establishment of an aggressive development role by COTA.
- Cooperation by the City of Columbus in planning, regulations, economic development, and capital improvements.
- Acceptance of the TOD concept by the development, real estate, and mortgage communities.
- Acceptance of living and working in a mixed-use, pedestrian-friendly environment by the public.

Under overlay zoning, a development proposal must comply with the development standards of both the underlying zoning district and the overlay district. In the case of conflicting development standards, the TOD overlay district would govern. City regulatory staff would have to "walk" property owners through this new process.

Unfortunately, implementation will occur on an incremental basis as market demand grows for the type of development proposed in a TOD - unless COTA with support by the City expedites the process and encourages TOD development at a faster pace. This will be necessary because the local real estate and financial markets will not embrace this concept. That will require COTA to act as a developer to initiate projects. The key steps in the process are the following:

- Adopt TOD Zoning Overlay District.
- Finalize *Vision 2020.*
- Prepare development plans for corridors or transit stations, with specific implementation strategies.
- Initiate TOD development in the first rail corridor.
- Initiate development process: assemble and package land, assemble incentives package, market land and/or select developers, assist in financing, and coordinate development process.

It is important to note that COTA has broad authority under ORC Chapter 306 to "purchase, acquire, construct, enlarge, improve . . ., in and out of the county, a county transit system" [ORC §306.04 (C) (2)] and to "Exercise the power of eminent domain to appropriate any real estate or interests therein . . . within or without the county, necessary or proper in the exercise of its powers . . .." [ORC §306.04 (C) (15)]. This broad authority should allow COTA significant leeway in pursuing a variety of policies, including property.

acquisition - or condemnation - and development, supportive of TOD.

As individual TOD areas transition from low density, underdeveloped parcels to a mix of higher density, mixed uses, existing uses that are inconsistent with the TOD concept should be regulated and closely monitored to ensure that long term opportunities for redevelopment remain intact. The City's existing nonconforming use regulations should be closely enforced. Proposed new investment in these areas that will be inconsistent must be redirected to become consistent with the TOD concept or to consider alternative sites. The economic development office should assist incompatible, but commercially viable businesses to relocate.

Each community in which a transit station is proposed to be located should review its comprehensive plan to determine if it supports the TOD concept. Local support and amenable public policies will be very helpful to ensuring long-term success and public acceptance. As noted in the **Background**, the Columbus Comprehensive Plan currently supports the TOD concept.

2. Roles and Responsibilities

A. COTA

COTA should serve as the lead public agency in all transit-oriented development. As the lead agency, COTA should coordinate the development of TOD sites, including land acquisition, soliciting developer proposals, and coordinating infrastructure improvements with the City of Columbus. The following specific actions are recommended:

- **Positioning the Agency:** COTA should create an internal institutional framework to facilitate transit-oriented development of transit stations (e.g., a separate department/office or perhaps just an individual designated to manage TOD efforts within existing structures).
- **Development Plans:** COTA should serve as the lead agency to direct the preparation of Development Plans for corridors/transit station locations. The City of Columbus and MORPC should serve in a support capacity. The plans should be prepared with professional planning assistance, including the services of a real market analysis firm.

  The issue regarding corridors versus transit stations is important. It may be desirable to look at an entire transit corridor to understand its regional development potential, versus individual transit locations. That is partly a function of the availability of funds to support such planning. But the corridor approach may be more advantageous because it would consider the larger regional real estate market – which also may be a cost savings.

- **Land Assembly:** COTA should serve as the lead development agency at each TOD site. COTA can acquire parcels and assemble them into viable development sites. Under the Ohio Revised Code, COTA has the ability to acquire land and to provide funding to assist in developing a site. This should be in response to each market-based Development Plan. A partnership with the City of Columbus and other local jurisdictions will also be important to ensure success. This would include the City's regulations, economic development, engineering and utilities divisions.
- **Packaging and Marketing Development Opportunities:** As the lead development agency, COTA should coordinate the packaging of development deals. This will require coordination with Columbus and other economic development organizations. This should also include initiating marketing programs to encourage real estate development.
- **Soliciting Developer Proposals:** As land assembly is underway, COTA should use a formal selection process to select the best-qualified developer for each development site. The development program should be established by the Development Plan. The selected developer would implement the program. COTA could retain whole or partial ownership of the site, depending on financing requirements.
- **Project Financing:** COTA will play an important role in arranging or providing development financing on a project specific basis. This can include internal funds raised by the agency through ORC permitted mechanisms, working with the financial community to arrange financing, or working with the City of Columbus and other public sector financing sources (Countywide Development Corporation). COTA may also choose to hold a secondary position in a project. Demonstrating early market acceptance of mixed-use projects will certainly require this kind of financing creativity on the part of COTA.

B. Columbus

The City of Columbus should serve as a major partner, working with COTA (this would apply to any local jurisdiction in which a transit station is located) as TOD takes place.

- **Staff Liaisons:** Key staff should be designated in planning, zoning, economic development, engineering, and utilities divisions as project specific liaisons to work with COTA as TOD is implemented.
- **TOD Overlay Zoning District:** The City will play a key role in administering the overlay district and working with

property owners and developers in understanding and meeting the overlay requirements.

Equally important will be the need to adjust the overlay boundaries once a Development Plan has been prepared. This will be an important mapping task that will ensure that each TOD is appropriately sited within the context of its unique characteristics. Again, a TOD may only be appropriate on a portion of a transit station site – as demonstrated in the case studies presented in this report.

- **Packaging Incentives:** The City will play an important role assisting in the packaging of economic incentives. This will include tax abatement and other similar financial inducements, but also capital improvements and other non-financial tools. Following the adoption of this report by City Council, City and COTA staff should develop and agree upon a refined program of incentives that would be available to TOD.

C. MORPC

MORPC should serve in a support capacity.

- **Support COTA:** MORPC should continue to serve in its capacity as the Metropolitan Planning Organization and support COTA's *Vision 2020* plan.
- **Future Funding:** MORPC should assist in identifying, seeking and obtaining Federal and State transportation planning funds to assist COTA with implementation of TODs (e.g. USDOT TCSP grant program).

3. Implementation Strategies

The staging of the following strategies should be driven by the timing of development of individual transit corridors. In all cases immediate actions should commence as soon as this report is adopted. Immediate actions should be completed within six to 12 months.

A. Regulations

Immediate Actions

- **Columbus Adopts TOD:** Columbus City Council should adopt the TOD Zoning Overlay District text by ordinance per the City's rezoning process. Prior to adoption, the model zoning district should be reviewed by the Department of Trade and Development (planning, urban design and regulations) and City Attorney's Office.

Ongoing Strategies

- **Area Jurisdictions Adopt TOD:** COTA and MORPC should work with adjoining jurisdictions to adopt the TOD

Zoning Overlay District. Adoption should follow educational strategies noted below.

- **TOD Boundary Modifications:** If warranted by a Development Plan, COTA should propose to the City an appropriate modification to the TOD overlay district boundaries. City Council would amend the zoning map per the City's rezoning process.
- **TOD Design Guidelines:** Design guidelines should be prepared that interpret the TOD Zoning Overlay District through detailed urban design guidelines. These guidelines could be prepared in conjunction with a Development Plan for each TOD.
- **Implementation:** Zoning and building approvals should be used, as appropriate, to implement TOD projects in conjunction with COTA's actions as the lead public agency. The City should ensure that infrastructure and development character issues are addressed.
- **Zoning Action Compliance:** Rezoning, conditional use and variance approvals at the City should require compliance with the TOD zoning overlay district.
- **Staff Liaisons:** COTA and the City should appoint a staff liaisons to coordinate the development and approval of individual TOD projects.
- **Development Densities and TDR:** The City of Columbus should consider reducing development densities in non-transit station locations as a way of encouraging the market to consider TOD station areas for higher density development. Other zoning disincentives may be appropriate, such as adopting Transfer of Development Rights (TDR) as a mechanism to encourage transit-oriented development.

B. Planning

Immediate Actions

- **Development Plans:** COTA should lead the preparation of market-based Development Plans for corridors or transit station areas. These plans, as described further in the report, should include a real estate market analysis. Within a corridor, plans should identify transit station locations most likely to support development/redevelopment and related development/redevelopment potential.

  Each Development Plan should clarify appropriate residential and non-residential densities, and the appropriate mix of uses. If located in an area of existing development, the plan should ensure that new transit-oriented development is compatible with existing land use patterns and character,

without causing significant traffic, infrastructure and public service impacts.

These plans should also coordinate circulation, parking, open space, infrastructure, and funding/financing plans, and traffic and environmental studies.

- **Demonstration Projects:** COTA and the City should identify potential TOD demonstration projects. Working with property owners and developers, early projects can demonstrate success and market acceptance of the TOD concept. Such projects may be recommended in the Development Plan.

Ongoing Strategies

- **Comprehensive Plan:** The City of Columbus should update the comprehensive plan to fully embrace the TOD concept along rail corridors. The plan should identify appropriate sites and supporting connections for TODs including transit facilities, bicycle routes, pedestrian paths, open space, buffers, and transition areas to ensure compatibility with existing neighborhoods. Planning should involve COTA staff to ensure consistency with *Vision 2020* and supporting bus routes.
- **Area Jurisdiction Comprehensive Plans:** COTA should encourage local, suburban and county comprehensive plans to be amended to support transit-oriented development.

  As local comprehensive plans are updated to support transit-oriented development, circulation, infrastructure and capital improvement plans should be amended accordingly by local jurisdictions.
- **Training:** Local planning and zoning staff should be trained to evaluate the transit supportiveness of proposed projects as developers apply for zoning approval.

C. Education

Immediate Actions

- **Promote TOD:** COTA and MORPC should present the TOD report to City Council, Planning Commission and Development Commission as part of the adoption process.

  COTA and MORPC should present the report to Area Commissions, civic associations, development corporations, and community organizations located along transit corridors.

  COTA and MORPC should present the report to the Columbus Board of Realtors, Home Builders Association, developers, builders, and lending community.

COTA and MORPC should present the report to the development community, building community, and financial institutions. The presentation should highlight specific examples of TOD development types that would be appropriate to the Columbus metropolitan area.

Ongoing Strategies

- **Expand Promotion:** COTA and MORPC should present the report to legislative authorities, planning commissions and staffs of adjoining jurisdictions in which transit is proposed. The presentation should highlight specific examples of TOD types that would be appropriate to the Columbus metropolitan area.

D. Incentives and Marketing

Immediate Strategies

- **Develop Incentive Package:** COTA and the City should jointly develop a formal incentive package targeted to TOD appropriate users. These incentives should include higher densities by right, writing down land costs, property tax abatement, and other tools as noted in this report.
- **Adopt Incentive Package:** COTA should encourage local adoption of incentives to encourage transit-oriented development at transit stations. Again, TDR may be another appropriate tool here.
- **Demonstration Sites:** COTA should identify a few major development/redevelopment sites and actively market them to ensure early successful projects.

Ongoing Strategies

- **Market TOD Incentives:** COTA and the City of Columbus should jointly market TOD incentives.
- **Market Sites:** COTA should develop a long-term marketing strategy to encourage transit-oriented development on sites controlled by COTA.

4. Tools

A set of proven tools is available to assist in the development of TOD projects. These tools are characteristic of any redevelopment or development project.

It is extremely important to note that COTA or another public agency should play a lead role in assembling land at transit stations to facilitate the TOD development process. This has been an important catalyst in most success stories around the United States.

Transit-oriented development standards and regulations may themselves provide added incentives to developers. For example, the

permitted density of development in a TOD is much higher than a typical subdivision and mixed-use buildings offer additional opportunities. A degree of risk taking is necessary if transit-oriented development is to succeed.

A. Market-Based Development Plan

The detailed development plan should be prepared for each individual TOD area. The plan should identify appropriate land use patterns, densities, supporting uses, infrastructure needs, etc. – all within a market-based perspective. Clearly market support and investment is necessary in order for transit-oriented development to occur.

Preparing a development plan will require the participation of COTA, the local jurisdiction (i.e., City of Columbus), stakeholders such as property owners, residents of the area, and potential developers, and other interested parties.

The preparation of these plans should involve all stakeholders. Support from the private sector and public groups is crucial to successful implementation. This could occur under the direction of a steering committee with support from city staff and consultants as necessary.

The plans should be prepared expeditiously and with the support of a market study to determine exact market demand for key land uses. Phasing of development components, reflecting public and private sector priorities, must also be identified. This would serve as a blueprint to guide public and private actions and investments.

These plans would be implemented through an implementation chapter, design guidelines, appropriate zoning changes to establish a TOD overlay zoning district and incorporation of infrastructure needs in the city's capital improvement budget.

B. Land Assembly

The public may play an important role in assembling land. Such land may be necessary to support both the transit station and its attendant parking, as well as private TOD projects. Enough land must be assembled in sufficient size to attract private sector development. This will vary from station location to station location, and should be responsive to the Development Plan discussed above. Also, a real estate market analysis can determine the amount of land that should be assembled – based on development demand. As in other local public projects (City Center Mall, Campus Partner's Gateway Project) the public can play a very important role in facilitating redevelopment via land assembly. WMATA's land assembly experience around metropolitan Washington, D.C. is a noted model. The Ohio Revised Code provides transit authorities the power to buy and hold real estate, and eminent domain.

C. Infrastructure Investment

Substantial infrastructure investments are often necessary to encourage private sector participation, especially in older urban areas. Public participation in this area is often crucial to TOD projects. This can occur through direct public participation or via tax increment financing (TIF). TIF offers an alternative means of financing infrastructure improvements by redirecting a portion of property taxes (for a limited time period) to fund necessary infrastructure. This is currently being used for the Nationwide Arena project, among others around Central Ohio.

D. Shared Parking

Transit based households usually have fewer automobiles than their counterpart suburban, low-density households. Therefore parking requirements in TOD are relaxed to account for a smaller number of automobiles. Lowering the amount of required parking, redeveloping underutilized surface parking lots, or setting a cap on the number of parking spaces substantially lowers construction costs, reduces the amount of land consumed by parking lots, and helps to create a more pedestrian friendly environment.

The parking facilities supporting transit stations can be used for sharing with adjacent, private developments – especially entertainment, restaurant and cultural facilities. Through a shared parking agreement, developer investments are subsidized by these public parking facilities, but transit agencies can also obtain lease revenues. Shared parking also conserves land and promotes more compact, pedestrian-friendly development.

E. Expedited Permits

Fast tracking permits and public reviews of TOD is fundamental as an incentive. Development standards and guidelines should be directly linked to the Development Plan, creating a clear sense of fair rules for the approval process. Permit review can be expedited through an ombudsman in city government. This will clearly require the cooperation and support of the local jurisdiction issuing building permits, such as the City of Columbus.

F. Write Down of Upfront Land Costs

Another crucial tool that may be necessary in certain circumstances is the write down of land costs by the public. This is a very common form of public risk sharing. In return the public can receive future revenues from various project components.

G. Direct Financial Participation

Direct financial participation by the public can include the issuance of tax-exempt bonds, tax increment financing, low-interest loans, and loan guarantees. These again are risk sharing

devices that may be necessary to jump-start a project. Under the Ohio Revised Code, transit authorities are enabled to issue general obligation bonds and revenue bonds for the development of transit systems.

H. State and Federal Funding Mechanisms

There is also a variety of funding opportunities at the state and federal level to assist in the construction/development of transit facilities. COTA's *Vision 2020* Plan identifies several of these mechanisms:

1. Joint Development

Projects that are physically or functionally related to a transit project, and enhance the effectiveness of the transit project may be eligible for joint development funds such as Capital Program Section 5309, Urbanized Area Formula Program Section 5307, Surface Transportation (STP) Section 133 and Congestion Mitigation and Air Quality Program Section 149.

2. Contributions

Rights of way contributions from the private, public, quasi-public and institutional sectors will aid in reducing the cost of creating a functional linkage between existing development and the transit system.

3. Air and Subsurface Development Rights

Leasing and selling air or subsurface development rights along with joint development could lead to increased revenues. This sale or lease process does not require a significant land acquisition and does utilize the full potential of the land as a resource. However, the development of air rights may involve legal issues, administrative issues, private and public costs and technical problems.

4. Benefit Assessment

A benefit assessment acts as a tax levied by a transit agency on private users that directly benefit from a transit facility. A special benefits district identifies the boundaries in which the assessment would be applied. Usually the tax effects developers, property owners and local governments and attempts to recover some of the benefits received by the public such as increased property values, rental rates, etc.

An example of this type of assessment is found in Miami, Florida, where a private sector initiative helped to create an assessment district that generated $20 million toward the capital costs of the Metro Mover project. The assessment amount is based on net usable square feet.

5. Transfer Tax/Fee

The development of transit can dramatically impact property values in an area. To continually encourage development around transit facilities, a transfer/tax fee agreement may be applied. As property values increase and a property is sold, the taxes and fees associated with the sale only apply to the incremental increase in the value.

I. Other Financing Tools

Other financial mechanisms available to generate funds for transit projects include service charges, leverage of property taxes and increasing the one-quarter percent sales tax. Transit is considered a benefit much like public sewer service. A service charge would act in the same way as a sewer hook up fee, by charging a fee to properties that receive direct transit service. The Washington D.C. Metro charges "station access fees" to generate operating funds.

The levying of property taxes in an area could assist the transit authority in extending service, or improving service in that area. A sales tax increase, property tax assessment or transportation improvement district could also aid in creating funds to construct transit.

4. Background

A. Overview

Any effort of this magnitude must be based upon a thorough research effort. It was important to understand the dynamics of recent rail consolidation, the Rails-to-Trails Act, successful TOD projects from around the country, and example TOD zoning and development standards. This chapter details these findings.

B. Rail Corridor Preservation Considerations

1. Overview

Federal legislation has been enacted to preserve railway corridors as a national resource, both for future transportation use and for current use as recreational trails. Under the most important federal legislation, the "Rails-to-Trails Act", the abandonment of rail service on a railway line requires the approval of the Surface Transportation Board ("STB"), the successor to the Interstate Commerce Commission ("ICC"). Until the STB grants such approval, the railway line is considered part of the national transportation system.

Initially, Congress included corridor preservation provisions within the Railroad Revitalization and Regulatory Reform Act of 1976 - Pub. L. No. 94-210, § 17, 90 Stat. 31, 144-46 (1976), popularly known as the "4-R Act." Congress included within the 4-R Act several provisions aimed at preserving rail corridors, including:

- The requirement that the Secretary of Transportation prepare a report on the alternative uses of abandoned railroad rights-of-way;
- Authorization for the Secretary of the Interior to encourage conversion to recreational uses; and
- Authorization for the ICC to delay disposition of abandoned corridors unless the property has first been offered on reasonable terms for public purposes, including recreational uses.

Subsequently, the National Trails Systems Act Amendments of 1983 - Pub. L. No. 98-11, § 208, 97 Stat. 42, 48 (1983), codified as amended at 16 U.S.C. § 1247(d) (Supp. II 1996), popularly known as the "Rails-to-Trails Act" - asserted federal control over the disposition of abandoned railroad rights-of-way and promoted alternative uses for railway corridors. This statute continued where the 4-R Act left off, encouraging local entities "to establish trails on abandoned railroad corridors in furtherance of the national policy to preserve established railroad rights-of-way for future reactivation of rail service, to protect rail transportation corridors, and to encourage energy efficient transportation use."

2. Merger Impacts

In the past 25 years, the number of major railroads in the United States had declined significantly through acquisitions and the subsequent merger of operations. In 1975, there were 22 major rail systems, known as Class 1 railroads, in the US. Class 1 railroads are those generating the highest revenue levels. To qualify as a Class 1 carrier, a railroad must earn revenues of about $255 million a year. By 1996, these had declined to nine. Their motivation for merging can be found in the economic benefits which railroads experience. Specifically, railroads have sought to reduce their costs, on the general theory that operating synergy would permit one bigger railroad to operate more cheaply than two smaller railroads. An improved cost structure would enable the merging railroads to compete more effectively with other railroads and with other surface modes, i.e., trucks and barges. Carriers have also sought to increase their revenues through acquisitions. The combination of reduced costs, enhanced revenues, and the improved returns that result have been a siren's call for acquiring lines.

Indeed, the surviving railroads have been spectacularly successful. They are profitable businesses. Itself a product of a merger of several bankrupt eastern railroads, Consolidated Rail Corporation (Conrail), earned a net income of $374 million on revenues of $3.7 billion in 1996, or about a 9.2 percent return on investment. This had been the carrier's best return in several years. Two other railroads, Norfolk Southern Railway (NS) and the CSX Transportation, subsequently acquired Conrail in 1997. Consequently, Class 1 US railroads declined in number to eight.

One way that railroads are able to achieve the cost advantages in a merger is by reducing redundant facilities where the traffic levels no longer justify multiple lines. As part of the Conrail acquisition, NS proposed the abandonment of the Toledo - Maumee River Bridge. NS's plan was to relocate operations to the nearby Conrail bridge. In so doing, NS could serve the same NS and Conrail customers, with the cost of maintaining one bridge rather than two. NS also proposed abandoning the Toledo Back Belt line between Toledo and Maumee. Conrail and NS operated parallel lines in this area. Because NS felt that Conrail's line was the more efficient of the two, NS proposed abandoning its line, and using Conrail's instead. In 1997 in Northern California, Union Pacific Railroad (UP) abandoned parts of its main line through Oakland, preferring to use a parallel line belonging to Southern Pacific Transportation Company (SP), which it acquired the year before.

On the other hand, mergers have resulted in increased traffic on certain routes. NS and CSX both predicted major increases in train volumes on Conrail's two major east - west routes, both of which run through Ohio. In California, UP has increased train volumes on various former SP routes, including the Coast Route between San Jose and Los Angeles, where volumes had stagnated over the years.

Nevertheless, it is clear that mergers can and do result in the abandonment of lines. This can have both positive and negative implications for the communities served by railroads. On the positive-side, an abandonment can present opportunities for conversion of the right-of-way for alternative transportation uses, i.e., as biking and walking trails. On the negative-side, an abandonment can mean a reduction of rail transportation options for shippers. In fact, some shippers fight abandonment plans, on the grounds that they will be "harmed" by having to pay for higher cost transportation alternatives like truck. An abandonment also may mean less tax revenue for cities and higher expenses for maintenance of roads which suffer from the transference of freight volumes from rail to truck.

Whether for the good or for the bad, an abandonment is one thing that merging railroads specifically cite in their merger applications, which they present to the US Surface Transportation Board (STB) for approval. The STB is the federal agency charged with the regulation of various aspects of railroad operations and management, including mergers. In the applications, railroads identify the lines they intend to abandon, their rationale, and their plans to protect service to affected shippers. Because of this process, communities at least can be alerted to well in advance of railroads' intentions to abandon lines. As a result, they have the considerable time to evaluate their options carefully. It can take more than a year for a merger to be consummated from the time the railroads file their application with the STB. This is not the case in non-merger related abandonments, where railroad notification timelines are much shorter, forcing communities to review their options and possibly act on them much more quickly. One option which communities may choose to follow is the preservation of former railroad rights-of-way as corridors for alternative transportation uses.

3. Rail Line Abandonment and Preservation

US railroads are abandoning lines faster than they are building them. As a result, the nation's rail system is shrinking. In 1920, when Congress first began to regulate the abandonment of freight railroad lines, the US rail routes peaked at 270,000 miles. By 1980, the system had 170,000 route miles. Railroads are progressing their abandonment plans to this day. A potential outcome of continuing abandonments could be that the system would become increasingly fragmented. As a result, the efficiency of the rail systems could be impaired. Should this prove true, less efficient transportation could push costs of goods higher, with negative consequences on the national economy.

Like concerns prompted federal policy makers to explore ways to facilitate the preservation of abandoned rail rights-of-way for alternative public transportation uses. The possibility of transferring these surplus rights-of-way to third parties for continued transportation use began to emerge as an efficient method of

preserving them as corridors (from 1998 testimony of David Burwell, President of Rails-to-Trails Conservancy, pertaining to Congress's reauthorization of the US Surface Transportation Board). The product of this effort was the federal *railbanking* program established by the 1983 National Trails Systems Act, also known as "the Trails Act."

4. Rails to Trails Act

Without imposing additional burdens on rail carriers, Section 8(d) of the Rails to Trails Act provides a mechanism for preserving railroad rights-of-way for future rail service and for alternative transportation use. The law allows railroads to transfer inactive railroad corridors (main lines and branch lines) to qualified *trail managers* (which can include non-profit groups or public agencies) for interim use as trails. This interim use of these corridors would last until they are needed for future rail service. The trail managers assume all carrying cost of the rights-of-way. The carrying costs include liability, maintenance and taxes. This process is commonly referred to as railbanking.

The Safety Transportation Board (STB) is charged with implementing the Trails Act. STB procedures specify that a trail manager, interested in a particular section of a line proposed by a railroad for abandonment, can petition the STB for a railbanking order. This must be done within 25 days after the railroad submits an *Application to Abandon* the line in the *Federal Register,* or within 10 days of publication of a *Notice of Exemption* in the case of an abandonment *exempt* from traditional statutory abandonment regulations. If the railroad is willing to negotiate with a qualified trail manager (one who is capable of assuming the liabilities, etc., of the right-of-way) for an interim trail use/railbanking agreement, the STB issues a Certificate of Interim Trail Use (CITU) or, in the case of an exempt abandonment, a Notice of Interim Trail Use (NITU). With a CITU or NITU, the railroad can discontinue operations and pull-up its facilities (track and ties) – to a point. That is, the railroad's actions must be consistent with the interim use of the right-of-way as a trail.

The statute prohibits the STB from permitting abandonment inconsistent with interim trail use if a public or private organization is willing to assume management responsibility and legal liability for a corridor. Thus, Congress shifted the cost of maintaining railroad corridors for "future reactivation of rail service" from railroad operators to trail users. Implicitly, the trail user is further obligated to "maintain the linear integrity of the corridor" so that reactivation of rail service is possible.

Significantly, the statute provides that "such interim use shall not be treated, for the purposes of any law or rule of law, as an abandonment of the use of such rights-of-way for railroad purposes." Whereas earlier statutes regulating railroad abandonments focused exclusively

on preempting state law governing the abandonment of rail service, the clear language of the Rails-to-Trails Act indicates Congress's intent to preempt state property law governing the abandonment of right-of-way easements. The legislative history establishes that the purpose of the Rails-to-Trails Act is to prevent the operation of state law from destroying railroad corridors originally established by easement.

It must be pointed out that the procedure outlined turns on a voluntary act. That is, the railroad must be *willing* to negotiate with an interim trail manager for a railbanking agreement. Both parties have 180 days to complete such an agreement. If the railroad and the trail manager do not reach agreement in the specified time (plus any extensions that may be granted), the railroad is free to pursue STB approval to fully abandon the right-of-way. If, however, they do reach agreement, the railroad transfers its rights to the corridor to the trail manager. In this way, the railbanked corridor, still intact and available for future rail use, remains under federal regulatory authority.

Going beyond providing trails for biking and walking, interim trail use has assisted in preserving railroad corridors for active rail use. As an example, the predecessor of the STB, the Interstate Commerce Commission (ICC), approved in 1993 the reactivation of a corridor in Ohio that had been railbanking since 1990 (testimony of Mr. David Burwell before Congress regarding the reauthorization of the STB).

The United States Supreme Court upheld the constitutionality of the Rails-to-Trails Act as a valid exercise of congressional power under the Commerce Clause in *Preseault v. Interstate Commerce Commission*, 494 U.S. 1 (1990). The Court also ruled, however, that when railroad rights-of-way are converted to public use under the Act, there could be a taking of the reversionary interests of adjacent landowners that would require the payment of compensation and that persons claiming a taking under the Act could utilize the process authorized by the Tucker Act, which provides jurisdiction in the United States Claims Court for any claim against the federal government to recover damages founded on the Constitution, a statute, a regulation, or an express or implied-in-fact contract.

Following this ruling, the plaintiffs in *Preseault* sought compensation under the Tucker Act. Although they lost before the federal Court of Claims and this decision was upheld on appeal, *see Preseault v. United States*, 27 Fed.Cl. 69 (1992), *aff'd*, 66 F.3d 1167 (Fed. Cir. 1995), the Circuit Court of Appeals for the Federal Circuit subsequently vacated the opinion of the three judge panel and agreed to hear the case *en banc* (*i.e.,* before all the appellate judges in the Federal Circuit). Following the rehearing *en banc*, the court ruled that the plaintiffs were entitled to compensation for the loss of their property – *in light of the manner in which those property interests were defined under state law* (emphasis added) – and remanded the matter for a determination of

the amount of compensation to which the plaintiffs were entitled. *Preseault v. United States*, 100 F.3d 1525 (Fed. Cir. 1996).

Most recently, a nationwide class-action lawsuit was filed in October 1998 on behalf of all property owners along railroad rights-of-way converted to trails. The theory behind this class-action lawsuit is that while *Preseault* established that the federal government must pay property owners when it allows abandoned railroad land owned by those individuals to be taken for recreational trails under the Rails-to-Trails Act, the complicated and expensive federal claims process has deterred people from filing claims. The class-action lawsuit, if successful, would relieve the need for each property owner to file a separate lawsuit at the Court of Claims in Washington, D.C., or in federal courts around the country. The lawsuit is strongly supported by national farming interests and thus, not unsurprisingly, has been filed in federal court in Kansas. *Swisher v. United States*, CA No. 98-1352 KHV (Dist.Ct. Kansas).

As a result of the developments noted above, great care must be taken to determine what property interests may be affected, and to what degree, whenever a conversion of a railroad corridor to trail use under the Act is contemplated. This is, of course, in addition to the various procedures that are required to comply with the Act itself. Further, it is advisable to examine and evaluate the changes made last year in the reauthorization of the Intermodal Surface Transportation Enhancement Act (ISTEA) to determine how they might affect any proposed conversion efforts, particularly in regards to availability of funding.

5. STB: Notice of Intent to Abandon

There are other reasons why a railroad would want to abandon a line rather than attempting to reduce facilities that become redundant after a merger. A railroad may wish to exit a market through abandonment because there is insufficient business on a line to justify its continued operation. Such a case is relatively common. Rail lines in many major cities lost density when traditional manufacturing, which depended on rail shipments of bulk commodities, either closed down or moved to areas where goods could be produced at lesser cost. As a result, many lines in these cities were abandoned.

Should a railroad wish to abandon a line, it must follow procedures specified by the STB. A general outline of the abandonment and railbanking process appears below.

- The railroad first files a *Notice of Intent to Abandon*. This document is mailed to the STB, the state Department of Transportation, and to shippers along the line. As this is an open process, shippers and others who may feel they will be harmed by the abandonment may chose to fight it by filing separately with the STB.

- Fifteen to 30 days after filing the Notice of Intent, the railroad files an Application to Abandon. As noted in Section 3 above, this document is published in the Federal Register.
- At this point, the STB considers the arguments of the railroad and of those who wish to fight the abandonment. If another railroad is willing and able to continue the rail service, the STB may allow it to take over the line. Lacking such a railroad, the STB must decided on whether or not to approve the application. As noted in Section 3, within 25 days after the railroad's Application to Abandon appears in the Federal Register, an aspiring trail manager, who has the wherewithal to assume liability for the corridor, can request a railbanking order from the STB. Such an order, however, is not binding on the railroad. The railroad may or may not choose to negotiate with the trail manager for transference of the right-of-way. If the railroad does negotiate, the parties have 180 days to reach an agreement.
- On the other hand, if the railroad and the trail manager do not reach agreement for transfer of the property, and the STB subsequently approves the railroad's application, the railroad can fully abandon the line without consideration of any interim use. If the railroad owns the right-of-way on a fee simple basis, the railroad may sell the real estate outright. If, however, the railroad operates on the line by virtue of an easement, use of the right-of-way may revert to the original property owners.

6. State Mechanisms

In addition to the federal legislation, there are several state statutes that will possibly apply to any conversion effort. The most important of these are:

- § 1519.01 *et seq.* of the Ohio Revised Code. These sections give the director of the Department of Natural Resources the responsibility for planning and administering the state's trails system and permits the director to acquire property for use as recreational trails. Although § 1519.02. limits this power in that no more than twenty-five acres of land per mile of trail may be acquired, and permissible trail uses exclude motorized vehicles, the director has the power to transfer the land to other units of government and reach agreements with private organizations to facilitate trail maintenance.
- §§ 4905.20 & 4905.21 of the Ohio Revised Code. These sections, commonly known as the "Miller Act," provide that railroads desiring to "abandon, close, or have abandoned, withdrawn, or closed for traffic or service all or any part of a main track... shall make application the public utilities commission in writing." If, after hearing the application, the PUC finds that the abandonment is "reasonable, having due regard for the welfare of the public and the cost of operating the service or

facility, it may allow such abandonment, withdrawal or closing . . .."

Further, in light of recent federal litigation involving compensation demands by property owners who claim that corridor preservation efforts have "taken" their property, Ohio's statutory and common law concerning property titles is also relevant. Accordingly, all of these would have to be closely analyzed to determine how their provisions would effect any proposed corridor preservation efforts that are under consideration.

7. Rail Corridors in Central Ohio

What follows is an assessment of rail corridors emanating from Columbus. The data is summarized on Table 1 and presented graphically on an accompanying map. Like a hub of a spoked wheel, Columbus is at the center of 12 corridors. Until July 1, 1999 of this year, four of the corridors belonged to the former Conrail. They have since been divided evenly between Conrail's acquirers, CSX and NS. These two railroads also have their own traditional routes to and from Columbus. Additionally, the city is served by two short line railroads, each with its own singular route. There are at present no passenger services on any of these lines.

According to the NS and CSX operating plans for their joint Conrail acquisition, none of their major rail corridors in Central Ohio are slated for abandonment (STB Finance Docket No. 33388, Railroad Control Application, CSX Operating Plan, CSX/NS 19, and NS Operating Plan, CSX/NS 20). Indeed, many corridors are likely to experience increasing traffic volumes. The major corridors are shown on Table 1 below, along with base year (1995) volumes and projected *steady state* volumes. Steady state volumes are those that the carriers expect once the capital improvements specified in the operating plans are complete. It is assumed that the carriers would achieve steady state conditions in 2002, three years after July 1,1999, when NS and CSX assumed operational control over Conrail. There is no information of any abandonment plans for the short lines, whose volumes are also shown.

A. Norfolk Southern Lines

Four NS corridors serving Columbus are discussed below. Four of these lines are NS's traditional routes. The remaining two belonged to Conrail. NS's operating plan for the Conrail acquisition specified no major capital improvement projects on any of these lines.

- **Bucyrus to Columbus:** This 130-mile segment is part of a traditional NS route, one of two north - south routes between the upper Midwest and the carrier's Mid Atlantic service area. In 1995, NS ran 26 daily trains on the route. These trains and their freight generated a total of 58 million gross

ton-miles per mile (MGTM/M), the unit of measurement used by railroads to define densities on their routes. Under steady state conditions, NS expects to handle 32 trains per day or 23 percent more than in 1995. Intensified marketing efforts to attract new volumes will drive the increase.

- **Kenova to Columbus:** This is a 69-mile segment of the same corridor, only on the south. Like Bucyrus to Columbus to the north, it will have an increase in trains in future years. However, the increase in train counts is less than half that expected on the north and total ton-miles will increase only slightly. This is because traffic between Columbus and more southern points will be split between this route and the former Conrail route to Cincinnati via Springfield (discussed below).
- **Springfield to Columbus:** This 45-mile segment is part of the former Conrail line to Cincinnati. For 1995, Conrail ran 11 daily trains on the line. NS expects the volume to increase 63 percent to 18 daily trains by 2002. Driving this increase will be NS marketing efforts to exploit the advantages of its new system.
- **Charleston, WV to Columbus:** Trains and ton-miles on this 185-mile former Conrail line are comparatively light and are expected to get even lighter. Daily trains in the base year totaled four per day. NS anticipates reducing trains to just three per day under future steady state conditions.

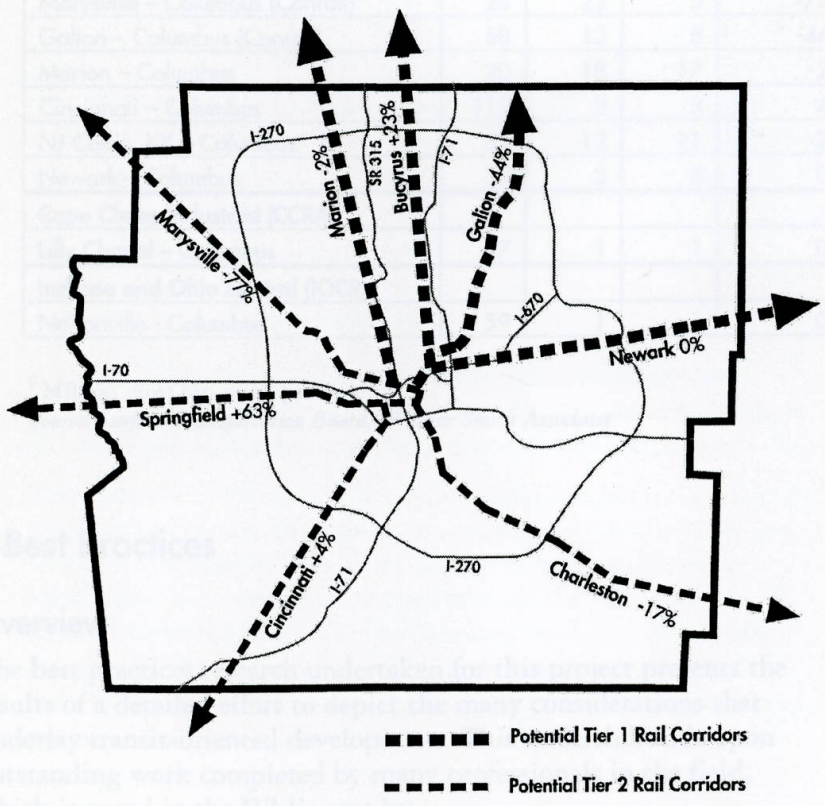
B. Chessie Seaboard and Others Lines (CSX)

Six CSX corridors serving Columbus appear below. According to its operating plan, CSX will perform no major upgrades to these lines.

- **Marysville to Columbus:** This is a 28-mile segment of the former Contrail line to Toledo. It will see a major decline in trains per day, from 22 in 1995 to five under post-merger steady state conditions. The decline is due to the splitting of Conrail volume between NS and CSX. As a result, only a fraction of the former volume could be expected to remain on this route.
- **Galion to Columbus:** For the same reasons, this 58-mile segment, part of the former Conrail line to Cleveland, will also experience a decline in traffic volumes. Daily trains are to decrease from a 1995 volume of 13 per day to eight in 2002.
- **Marion to Columbus:** This 20-mile segment is part of a traditional CSX – one of two major CSX north - south lines linking Toledo with its Mid Atlantic service area. The other line runs through Cincinnati, which will experience a decrease in volume as CSX shifts north - south volumes to a

more western route. CSX expects no major changes in volume on the Marion line. Base year train counts total 18 per day, while 2002 counts are 17 per day.

- **Cincinnati to Columbus:** CSX ran only three daily trains on this 112-mile line in 1995. The railroad does not expect volume to change significantly in 2002.
- **NJ Cabin, KY to Columbus:** CSX expects train counts will decline slightly on this 53-mile segment linking Columbus with the coal mines in West Virginia. Daily trains are shown at 12 for the 1995 base year, declining to 11 in 2002. It is noted that while CSX expects train counts to decline, it expects ton-miles to increase five percent. This dynamic can occur as trains get longer, carrying more tons per train.
- **Newark to Columbus:** This 35-mile line will have no decrease in either daily trains or ton-miles. Traffic volumes are light, however. CSX ran just two daily trains on the line in 1995. It expects to run two trains daily in 2002. CSX interchanges traffic with a short line east of Newark. It also gathers traffic off a branch line running north from Newark to Mt. Vernon.



This map identifies Regional Rail Corridors according to COTA's Vision 2020 Plan, as well as forecasted changes in rail activity due to the recent CSX and NS merger. Source: Summary of the Vision 2020 Plan

C. Short Line Rail Corridors

Table 1 shows traffic on two short line railroads. These are the Cape Chase Industrial (CCRA) and the Indiana and Ohio Central (IOCR). The former serves Columbus from the west, with a 17-mile line running to Lilly Chapel. The latter serves Columbus from the southeast, with a 59-mile line running to Nelsonville. Each line has a traffic density of less than one million gross tons per mile (MGTM/M) per year, a level consistent with about one train a day. There do not appear to be any factors which would indicate that these volumes would change significantly over time. Accordingly, they are shown as unchanged between 1995 and 2002.

Table 4.A: Rail Corridors Emanating From Columbus

Rail Corridors		Trains Per Day			MGTM/M [1]		
	Miles	1995	2002	% Change	1995	2002	% Change
Norfolk Southern (NS)							
Bucyrus - Columbus	130	26	32	23%	58	76	31%
Kenova – Columbus	69	21	23	10%	53	53	1%
Springfield – Columbus (Conrail)	45	11	18	63%	26	35	34%
Charleston, WV, - Columbus (Conrail)	185	4	3	-17%	10	9	-8%
Chessie Seaboard and others (CSX)							
Marysville – Columbus (Conrail)	28	22	5	-77%	27	5	-81%
Galion – Columbus (Conrail)	58	13	8	-44%	29	12	-59%
Marion – Columbus	20	18	17	-2%	40	44	10%
Cincinnati – Columbus	112	3	3	4%	4	5	25%
NJ Cabin, KY – Columbus	53	12	11	-3%	40	42	5%
Newark – Columbus	35	2	2	0%	2	2	0%
Cape Chase Industrial (CCRA)							
Lilly Chapel – Columbus	17	1	1	0%	1	1	0%
Indiana and Ohio Central (IOCR)							
Nelsonville - Columbus	59	1	1	0%	1	1	0%

[1] Million gross ton-miles per mile
Source: Surface Transportation Board, Wilbur Smith Associates

C. TOD Best Practices

1. Overview

The best practices research undertaken for this project presents the results of a detailed effort to depict the many considerations that underlay transit-oriented development. This research builds upon outstanding work completed by many professionals in the field, which is noted in the **Bibliography**.

2. Planning for Transit-Oriented Development

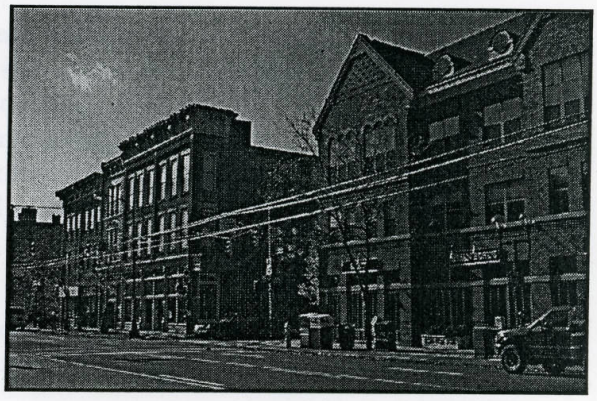
A. Overview

Planning must lay the initial groundwork for undertaking transit-oriented development, particularly as related to a public mass transit (rail) system. This section addresses the transit supportive policies found in the Columbus Comprehensive Plan as adopted in 1993. These policies establish a foundation for integrating TOD into the Columbus planning and zoning framework. It then summarizes the planning background undertaken in several example regions (Columbus, San Francisco, San Diego and Myrtle Beach).

B. Columbus Comprehensive Plan

The Columbus Comprehensive Plan (1993) calls for a balanced and coordinated transportation system as a major goal. The plan states "It will become necessary to expand the current transportation options to provide an integrated, safe, and efficient system for the movement of people and goods. Cost effective infrastructure alternatives must be explored." The plan's goals include:

- Provide Columbus with a balanced, coordinated transportation system, which enables individuals and goods to move safely, efficiently and affordably.
- Prepare for participation in regional and national transportation linkages.



The Victorian Gate development is an excellent local example of TOD design principles.

Relative to growth, the plan speaks to directing future development to areas already served by infrastructure and city services, where the city can enjoy cost effective and well-managed growth. It also has the following goal:

- Direct growth to those areas physically suited for the intended land uses, provided that adequate infrastructure is available or is programmed to accommodate such uses.

The plan acknowledges that public transportation works best in situations of higher densities. The plan states, "while there are limits to the density increases that can be accomplished in established urban areas, new development can be focused in a manner which enhances the performance of transit operations." Fringe villages are recommended in the plan as one means of accomplishing this. The plan "does provide a strong endorsement for improved public transit operations." Specifically the plan recommends:

- The City of Columbus and COTA should review existing public policies to determine if such policies lead to a truly

balanced transportation system that does not favor the private automobile over all other modes.

- Through COTA's long-range planning efforts, the underlying operational assumptions of the public transit system should be reviewed and the system in the year 2010 and beyond should be defined.
- COTA's planning efforts should identify major transit corridors for busway and/or light-rail development.
- The city should continue to contribute to COTA plans and coordinate their recommendations with land use, transportation, and other recommendations of the plan in recognition of the long-range importance of establishing major transit corridors and associated station locations for mass transit.
- The city and COTA should work with the private sector to provide amenities and programs to encourage transit use wherever public transit operates. Among the recommendations applicable to commuter rail are: transit easements in major commercial developments; sidewalks to transit stops; bicycle parking facilities at transit stops; accessibility features for the disabled; pedestrian crossings of streets to get to transit stops; appropriate street furniture, street trees and landscaping of transit stops and centers; park-and-ride facilities; and trip reduction programs for major developments.
- The city should encourage joint public/private development opportunities, which contribute to the success of public transit operations.
- The city and COTA should restructure parking policies, roadway improvement policies, land use policies, and transit operational policies to support the concentration of development densities and the expansion of transit services over the next 20 years which will enable the cost-effective operation of public transit in major transit corridors.
- The city, COTA, Franklin County, and MORPC should coordinate local transit development with future regional and statewide public transportation systems.
- Corridors that hold potential for future public transit use (such as abandoned rail rights-of-way) and adjacent sites with potential for joint public-private development opportunities should be protected from encroachment.

The plan supports intercity passenger rail transportation connecting the state's three largest cities (Columbus, Cleveland and Cincinnati). The plan's goals encourage the city's preparation for participation in regional and national transportation linkages

and fostering balance and coordination in the transportation system. The plan specifically recommends:

- Discourage development that threatens to preclude the use of passenger rail corridors for "3C" rail linkages or other valid public purposes.
- Reserve sufficient land adjacent to potential corridors for future joint public-private development as railway stations and multi-modal transportation terminals.
- Assist in the coordination of regional highway infrastructure and public transportation serves to complement passenger rail and other beneficial intercity transportation options.
- Monitor and support state and federal initiatives that advance the prospects of successful intercity passenger rail operations, including responsible funding proposals.

C. San Francisco, California

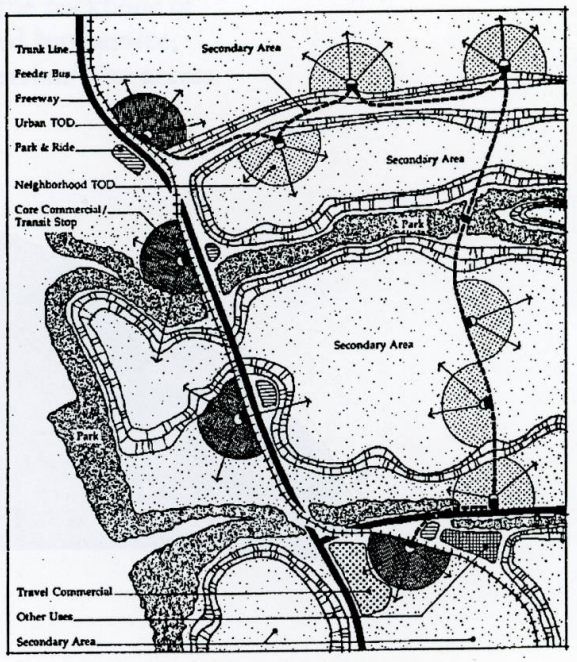
The San Francisco metropolitan region is served by three separate transit systems (BART heavy rail, light rail in Santa Clara County, and CalTrain commuter rail). The system was envisioned in the 1950s. The development of this rail system was intended from early on to be a magnet for creating new development centers at transit stations. But in the beginning this did not occur and it was determined that a stronger government role was necessary as a catalyst (Bernick, 1997).

Not until the 1980s did BART, local governments, and private developers join together to encourage the development of transit villages around several East Bay stations. Pleasant Hill is the most advanced suburban village, but others have developed around the Hayward and El Cerrito del Norte stations, Almaden Lake on the Santa Clara light rail line, and Mountain View on the CalTrain line.

D. San Diego, California

Since the late 1980s the City of San Diego and the Metropolitan Transit Development Board have aggressively promoted transit-oriented development. This has included conferences, community workshops, design guidelines, and station area plans. The system began with the 1981 opening of the San Diego Trolley, which has been followed by several other lines (Bernick, 1997).

A new Mission Valley West Line has sparked the region's most ambitious transit village project. The planning of this line was

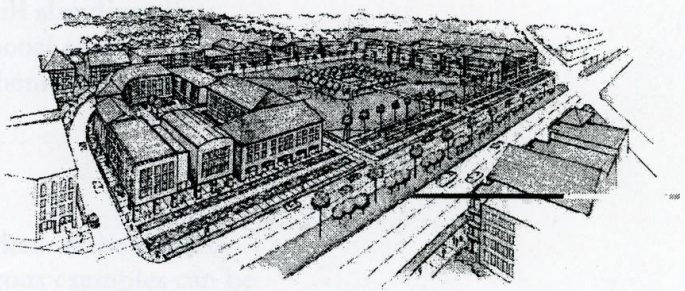


The San Diego transit system design guidelines provide for a series of TOD throughout the metropolitan area. Source: Calthorpe, 1990.

intended from the beginning to maximize development potential. Since first proposed in 1982, the Mission Valley line has sparked the development in the corridor of over 7,000 dwelling units, 2,375 hotel rooms, 1.6 million square feet of retail space, and 5.9 million square feet of office space.

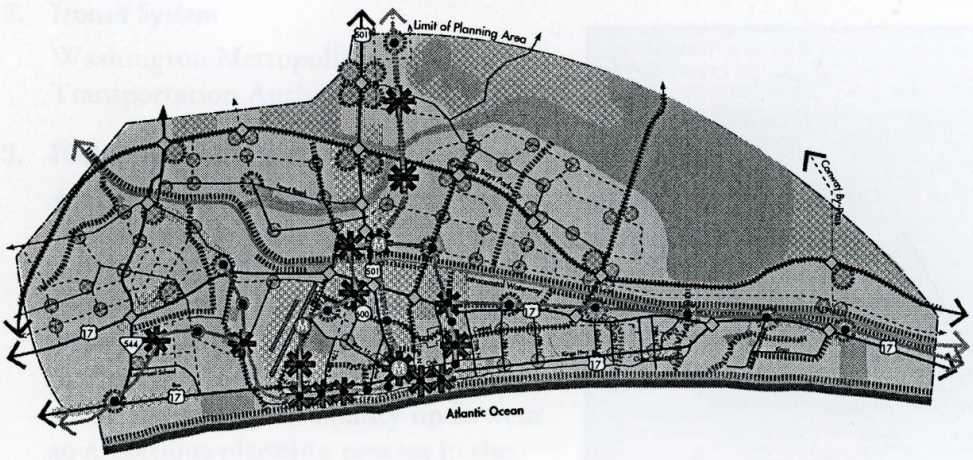
E. Myrtle Beach, South Carolina

The City Council of Myrtle Beach adopted a new comprehensive plan earlier this year. Myrtle Beach is one of the fastest growing metropolitan regions in the country. The region has a very strong tourism-based economy with the desire of becoming a world class destination. But traffic is strangling the region and beginning to have an adverse impact on tourism. The comprehensive plan is defined by a strong transportation system that includes light rail and an integrated, supportive bus system.



A series of mixed-use centers are to be developed at key points along Myrtle Beach's proposed light rail system, as in this conceptual rendering. Source: ACP, 1999.

The city's urban form is managed to enhance development opportunities in appropriate locations, preserve open space, build good neighborhoods and support an enhanced multi-modal transportation system. More detailed planning, new regulations and new incentives will encourage this new approach. A multi-modal transportation system is developed which will integrate rail, bus, auto, pedestrian and air facilities. The city's urban form is modified to support this system. A mix of heavy and light rail serves as the backbone of the transportation system, supported by enhanced bus service, public garages and park-and-ride lots, and pedestrian/bike access.



Myrtle Beach's new comprehensive plan is based upon a strong relationship between land use and transportation; with TOD supported by a light rail system and enhanced bus service. Source: ACP, 1999.

Traffic calming measures and improved wayfinding will improve the functionality of the transportation system.

A series of mixed-use centers – such as depicted in the accompanying rendering – are encouraged to create an enhanced urban environment, balancing a mix of uses and integrated with the transportation system. These centers serve regional, community and neighborhood areas. New development regulations, new incentives and infrastructure investments will be necessary to support these centers.

The city's economy will continue to grow and expand. Tourism will remain its engine, but further diversification with tourism will continue, including expanding the convention center and developing a theme park. The economy will also diversify outside the tourism sector, bringing additional employment opportunities to city residents and strengthening the local economic base.

4. Case Studies

Has transit-oriented development actually worked in the United States? The answer is a strong "yes" and numerous examples can be found. This section summarizes best practices research conducted by ACP covering the United States and a range of outstanding projects. Where available data is presented regarding the investment necessary to facilitate the project, as well as the economic success. The population is given of the community in which the TOD is located, the transit system and a description.

A. Ballston, Arlington, Virginia (suburban/new edge city)

1. Population

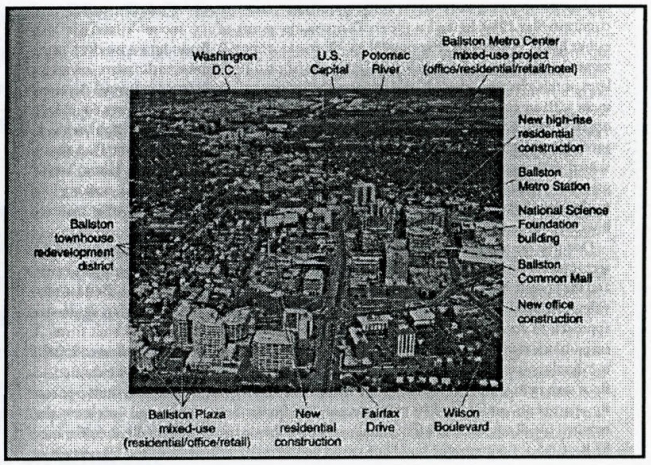
170,936

2. Transit System

Washington Metropolitan Area Transportation Authority (WMATA)

3. TOD Description

Arlington County, Virginia, has been extremely aggressive at directing new development to the vicinity of Metro transit stations. Under Virginia law, counties hold local land use powers. As part of the Metro process to plan rail corridors, Arlington County underwent an ambitious planning process in the early 1970s to evaluate proposed rail routes and their land use impacts. Over three decades the county introduced a



Source: Bernick, 1999.

series of strategies to entice private investment around transit stations, including targeted infrastructure improvements, incentive zoning, and development proffers. Ballston station is recognized as the county's most successful effort.

In the 1970s, Ballston had transitioned from a vibrant local village to an aging, commercial district of surface parking lots, one- and two-story commercial buildings, aging apartment buildings, and disinvestment. The Ballston Metro station, located 10 miles from downtown Washington, D.C., functioned mainly as a bus turnaround and transfer point for several northern Virginia bus lines. But through the county's efforts and participation by the private sector, Ballston was transformed by the mid-1990s. It is now recognized as Arlington County's premier urban center with a mix of high rise office development, retail and housing. An aging mall was razed and replaced by a more modern shopping mall, Ballston Common. Directly above the transit station was constructed a 28-story mixed use complex, Ballston Metro Center, comprised of hotel, office, retail, and condominiums. Since 1984, about 2,500 residential units, 3.7 million square feet of commercial space, and three luxury hotels have been built in the 770-acre redevelopment area.

The key factors that were the basis for this transformation were: a detailed redevelopment plan that orchestrated development, packaged with incentive zoning that promoted higher densities within one-quarter mile of the transit station; local government financial participation (the county co-financed a 3,200-car garage for the mall and transit station); and joint public-private development spearheaded by WMATA. A healthy regional economy was fundamental as well.

Development standards permitted a 3.5 FAR for offices, 135 du/ac for apartments, and 210 du/ac for hotels. The FAR for commercial buildings could be increased from 3.5 to six by devoting 50 percent or more floor space to residential units. Projects that included 90 percent residential space were allowed an additional 0.5 FAR.

WMATA has more aggressively pursued joint development than any transit authority in the country, including air-rights leasing, station-retail connections and shared use of heating-ventilation systems. At Ballston Metro Center, WMATA owned the original 72,000 square foot site abutting the station. Through the RFP process to locate a developer, it became apparent that WMATA needed additional land to make the site feasible. The agency acquired an adjacent parcel. It also became an equity partner in the condominium portion of the project, collecting a percentage of the gross

proceeds (in the early 1990s this amounted to $200,000 in annual revenues).

Source: Transit Villages in the 21st Century, Michael Bernick and Robert Cervero, McGraw-Hill, 1996.

B. Delmar, St. Louis, Missouri (urban redevelopment)

1. Population

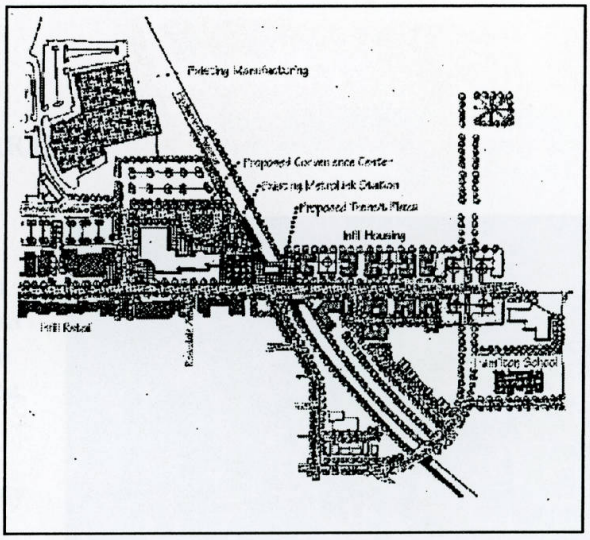
396,685

2. Transit System

MetroLink

3. TOD Description

Delmar is an urban neighborhood in the heart of St. Louis, which experienced severe population loss and disinvestment during the 1960s and 1970s. The area began to rebound in the 1980s. This included revitalization of the Delmar Loop in nearby University City with new housing, enhanced pedestrian access and a wide variety of restaurants and retail. The Bi-State Development Agency received funding to construct a park-and-ride facility and add other improvements to the MetroLink transit station in Delmar.



The development plan for Delmar station area showing new infill development, pedestrian connections, and supporting infrastructure. Source: Urban Land Institute, 1995.

A ULI advisory panel met at the city's invitation to consider TOD alternatives for Delmar and two other transit locations. The Delmar Station area offered the potential of smaller-scale yet significant investment. An excellent residential urban fabric is found in two portions of the area. The plan called for enhancing these neighborhoods and adding urban amenities to revitalize the area.

The core is a distinctive transit anchored commercial development located at the transit station to accommodate transit-serving retail, including a café, bakery, newsstand, and other convenience retail and services. The existing bus transfer was to be reconfigured as an improved turnaround and park-and-ride lot.

An 80,000 square foot convenience center was recommended west of the station, maintaining the streetscape and with parking located to the rear. Expanded residential development was recommended to the east of the transit station (townhouses and moderate density housing).

The Bi-State Development Agency was to redevelop the transit station itself. The city of St. Louis was to assemble land for redevelopment, establish new development standards, and undertake major streetscape improvements. An enterprise zone was also recommended to be expanded as an incentive and public funds set aside to fund capital improvements.

Source: Metrolink St. Louis Region, Urban Land Institute, 1995.

C. El Cerrito, California (suburban downtown)

1. Population

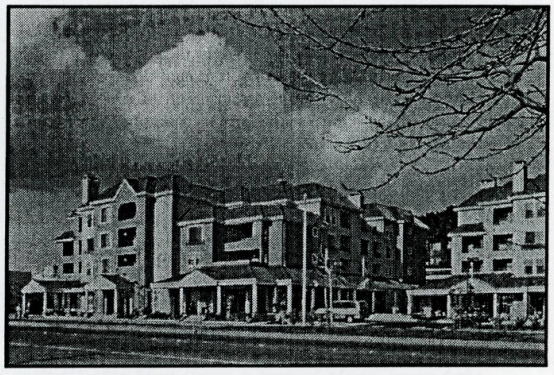
22,869

2. Transit System

San Francisco Bay Area Rapid Transit (BART)

3. TOD Description

The El Cerrito Del Norte station area is located 20 miles north of San Francisco. In 1988 rundown buildings and disinvestment surrounded the station. The redevelopment agency prepared a plan to revitalize the area, beginning with new multifamily housing. The agency used tax increment financing (TIF) financing to underwrite land assembly costs and $10 million to $14 million in infrastructure improvements.



The Del Norte Place is a 135-unit apartment complex with 19,000 square feet of retail. Source: Bernick, 1997.

By mid 1992 the first housing project, Del Norte Place, was completed. This is a 135-unit apartment complex, 200 yards from the BART station, with three levels of rental housing above 19,000 square feet of ground-floor retail. The redevelopment agency became an equity partner, leasing the land to the developer for $1 per year and 15 percent to 20 percent of cash flow. Residential units leased quickly, although retail space leased at a lesser pace. By mid-1993, 97 percent of the units were occupied. Tenants attracted to the complex tended to be empty nesters, singles, or married couples without children – particularly people commuting to work in San Francisco or students attending UC Berkeley.

In 1993 a second housing project was designed for surface parking adjacent to the station. Grand Central Apartments is a 210-unit complex, designed in three-story buildings above ground-floor retail. Construction began in 1995 – following two years seeking project financing – due in part to the inclusion of a 4,000-seat AMC movie complex on an adjacent parcel owned by the redevelopment agency. The theater was

attracted to the unused transit parking available at night and on weekends, and the proximity of transit.

Source: Transit Villages in the 21st Century, Michael Bernick and Robert Cervero, McGraw-Hill, 1996.

D. Fruitvale, Oakland, California (urban redevelopment)

1. Population

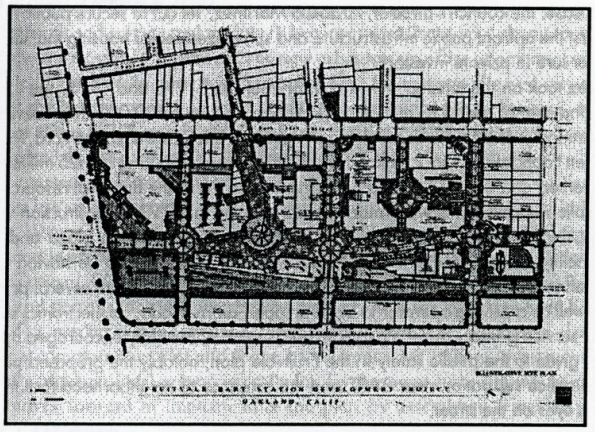
372,242

2. Transit System

San Francisco Bay Area Rapid Transit (BART)

3. TOD Description

The Fruitvale transit village is considered the most advanced of its kind in the Bay area. The Fruitvale district is located in the City of Oakland and at one time was a vibrant urban commercial center. But suburban malls and big-box retail sapped the retail vitality of Fruitvale, eventually compromising the integrity of the residential neighborhood. In the 1970s and 1980s a series of urban renewal and antipoverty programs focused on the neighborhood, but little changed.



The Fruitvale area plan shows a central plaza around the transit station. Source: Bernick, 1997.

In 1991, the Spanish-Speaking Unity Council led by a former Housing and Urban Development official who lived in the neighborhood began a process to build upon the nearby Fruitvale BART transit station as a catalyst for change. A design symposium was held with support donated by five Bay Area architecture firms. The symposium brought recognition to the decline, but more importantly focused attention on the redevelopment opportunities of the BART surface parking, abandoned buildings, and other results of disinvestment.

In 1995 a plan was developed, following a 1993 design charette, which focused on introducing housing to the second and third floors of existing commercial buildings, creating an 18- to 24-hour day presence. The goal was to introduce enough new residents near the station that a planned public plaza would be active and not a magnet for inappropriate activities more commonly found in the neighborhood. The plaza, which is located directly in front of the BART station, has been a successful location for community events, farmers markets, and other public happenings.

A desire for market rate housing was also a priority for the neighborhood. But given the market, it was clear the public would have to participate as an investor. Between 1993 and 1995, the Council raised over $13 million from the Federal Transit Administration and several national foundations (i.e., $6.2 million for subsidized senior housing, $2.25 million for a senior center, and $780,000 for a public plaza).

These projects have been developed and the Council negotiated with several businesses to bring to the neighborhood an open-air mercado, electronics store, and a full-service grocery. The emphasis on public safety played a role in these negotiations, including the presence of a new police substation at the BART transit station.

Source: Transit Villages in the 21st Century, Michael Bernick and Robert Cervero, McGraw-Hill, 1996.

E. Gresham, Oregon (suburban redevelopment)

1. Population

75,000

2. Transit System

Tri-County Metropolitan Transportation District of Oregon (Tri-Met - Portland)

3. TOD Development

The City of Gresham sought to redevelop a 130-acre superblock in its downtown. Gresham is a suburb of Portland and is served by Tri-Met through a downtown transit station. The superblock consisted of a 50,000 square foot city hall, an early model Kmart, 50-year old veneer mill, park-and-ride lot by the station, single-family housing, and farmland.

A real estate market analysis was undertaken. It found that housing and retail, including big box users, to be the most feasible in the near term, with offices, hotels, and more housing gaining strength over time. The plan called for a mix of residential, retail, and other commercial uses throughout the superblock, with the most transit supportive uses located near the light rail stations. A new station was proposed which would bring most of the superblock within a five-minute walk of light rail.

Build out of the plan calls for 332,000 square feet of retail, 309,000 square feet of office, and 885 residential units, a large portion being owner-occupied. Zero-lot line development is preferred and building height is to be a minimum of two stories. Residential densities are to range from a minimum of 30 du/ac in the core area to 24 du/ac in adjacent locations and 17 to 30 du/ac as a buffer further away

from the core area. Commercial densities are to range from a FAR of 1.1 in the core area to 0.4 in adjacent areas. Parking ratios are capped to encourage transit use and a limit is placed on free standing retail structures of 10,000 square feet. Commercial uses can be permitted in up to 50 percent of some residential structures.

From a design standpoint, the plan intends to create a rich pedestrian environment with supporting cafes, coffee shops, convenience retail, cinemas, parks and plazas. The plan calls for construction of a traditional grid street network around the new transit station, with 60-foot rights-of-way and 12-foot sidewalks. A plaza will be constructed around the station and storefronts will wrap around a portion of the plaza, with office and residential buildings completing the square.

For the overall plan, a transportation analysis projected that residential automobile trips would be reduced by 10 percent, office trips by 30 percent, and retail trips by 35 percent.

Source: PAS Memo, American Planning Association, November 1995.

F. Hayward, California (suburban downtown)

1. Population

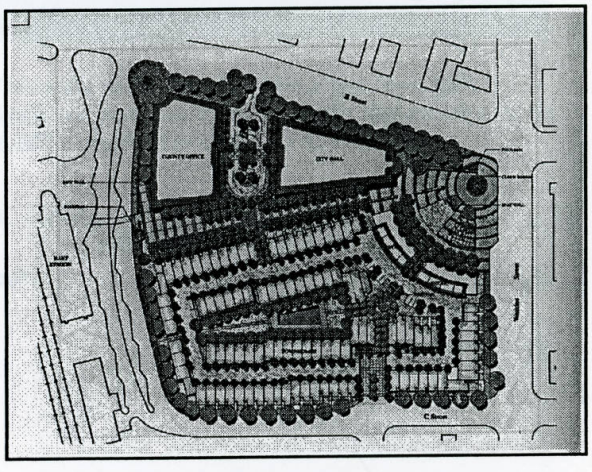
111,498

2. Transit System

San Francisco Bay Area Rapid Transit (BART)

3. TOD Description

The city of Hayward is located 20 miles from downtown San Francisco. It developed along the Southern Pacific Railroad in the late 1800s. Hayward's downtown declined through the 1980s despite the presence of a BART transit station. In the early 1990s a redevelopment plan was prepared applying new urbanist concepts to the downtown, with the intent of linking the downtown with the BART station by siting new multifamily housing, retail, and a civic plaza.



This plan for Hayward adjacent to the transit station includes housing, commercial and office space, and a new city hall and county office building. Source: Bernick, 1997.

The plan specifically called for 675 to 1,345 new housing units, 66,000 square feet of additional commercial and retail space, and mid-rise offices. Much of this development was to occur on existing surface parking adjacent to the transit station. Atherton Place was the first

housing complex to be developed, consisting of 86 ownership units within one block of the transit station. The land was assembled by a redevelopment agency and sold to the private developer. Two- and three-bedroom units were priced between $140,000 and $163,000 (1995 dollars). A second development project is underway next to the station, consisting of 100 for-sale residential units and a new City Hall and County office building.

Source: Transit Villages in the 21st Century, Michael Bernick and Robert Cervero, McGraw-Hill, 1996.

F. Lindbergh TOD, Atlanta, Georgia (suburban redevelopment)

1. Population

394,017

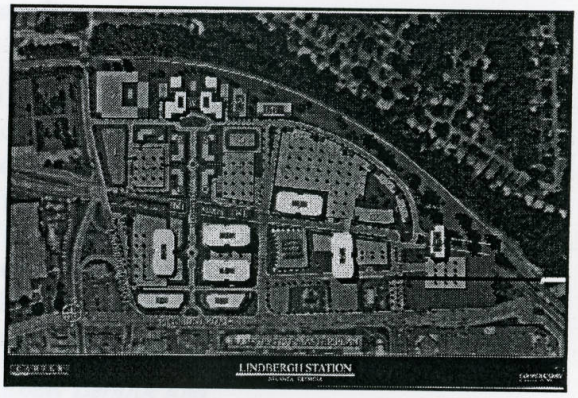
2. Transit System

Metropolitan Atlanta Rapid Transit Authority (MARTA)

3. TOD Description

The Lindbergh TOD site will be a multi-use development consisting of commercial office towers, retail stores, restaurants, and residential buildings. All of the planned developments will be constructed on property already owned by MARTA surrounding the Lindbergh MARTA station and headquarters building. The station is located northwest of Buckhead, the city's northern office and business center.

BellSouth has announced that it will occupy over 1 million square feet of commercial office space in this new development.



The Lindbergh Master Plan shows a significant office development focused on a pedestrian spine that connects with the MARTA station. Source: MARTA, 1999.

Source: MARTA Web Site and ULI presentation, 1999.

G. Mercado at Barrio Logan, San Diego, California (urban redevelopment)

1. Population

2,498,016

2. Transit System

Metropolitan Transportation Development Board (MTDB)

3. TOD Description

The Barrio Logan transit station is located in a low income, Mexican-American neighborhood directly south of downtown

San Diego. The neighborhood was physically divided due to planning policies and interstate highway construction during the 1960s and 1970s. The San Diego Trolley opened a station in the neighborhood in the early 1980s, but TOD did not occur until the San Diego Redevelopment Agency and MTDB proposed a multi-phase redevelopment project.

The first phase, a 144-unit affordable housing apartment complex was built in 1992, targeted at families earning between $14,000 and $25,000 annually. The $12 million project involved a creative financing package, involving the San Diego Housing Trust Fund, San Diego Housing Commission, Centre City Development Corporation, and San Diego Redevelopment Authority. Forty percent of the project costs were absorbed through state and federal tax credits.

The second phase was the 100,000 square foot Mercado Commercial Center, anchored by a supermarket with speciality retail and sidewalk vendors. This was begun in 1995. The redevelopment agency assembled the land for the retail center and wrote down the cost. CDBG dollars were also financing part of the cost, as well as state loans for small businesses.

Both the apartments and retail center are 330 yards from the trolley station. A large public plaza and additional commercial development, including a day care center, are planned to link these projects to the station (five day care centers are located adjacent to San Diego Trolley stops throughout the system, a result of MTDB active promotion). A Mexican-American cultural museum and community college extension classrooms are also planned.

Source: Transit Villages in the 21st Century, Michael Bernick and Robert Cervero, McGraw-Hill, 1996.

H. Mizner Park, Boca Raton, Florida (urban)

1. Population

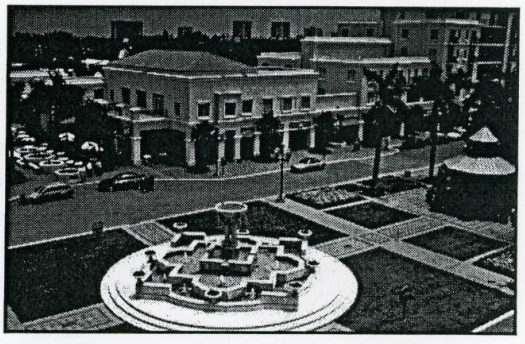
61,492

2. Transit System

Mizner Park is not a true TOD, but it is a very good example of a mixed-use center – similar in characteristics to a TOD.

3. TOD Description

Mizner Park is about 10 years old. It is the former site of a retail center/shopping mall and was transformed into an urban redevelopment project. Abundant public open space helps to attract people.



Mizner Park in Boca Raton is regarded nationally as an outstanding example of a mixed-use project.

Generators of pedestrian activity include offices during the day and housing and entertainment at night. A variety of living and ownership options were programmed into the development. Mizner Park has a strong arts and culture orientation.

I. Orenco Station, Portland, Oregon (suburban new town)

1. Population

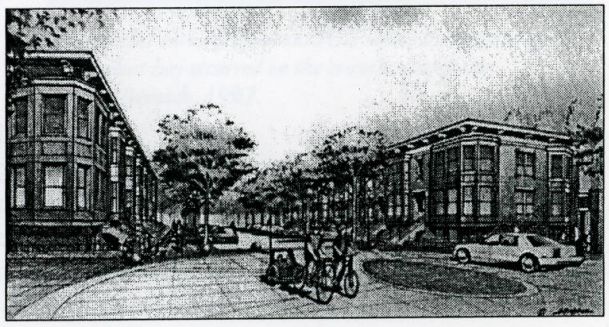
Unknown

2. Transit System

Tri-County Metropolitan Transportation District of Oregon (Tri-Met - Portland)

3. TOD Description

Orenco Station is located 25 miles west of downtown Portland. It is in the heart of the "silicon forest," Portland's high technology center. It is to build out at 1,800 units with 15 percent open space set aside. A range of housing options is offered, including granny flats and live/work units. Live/work units are an emerging market. Work space is on the first floor and the living unit is the two to three floors above. Each unit is structured as a townhouse with fee simple ownership.



Live/work units as depicted above are an integral means of introducing mixed uses in the Orenco Station downtown. Source: Orenco Station web site, 1999.

Source: Orenco web site and ULI presentation, 1999.

J. Pleasant Hill, California (suburban downtown)

1. Population

31,585

2. Transit System

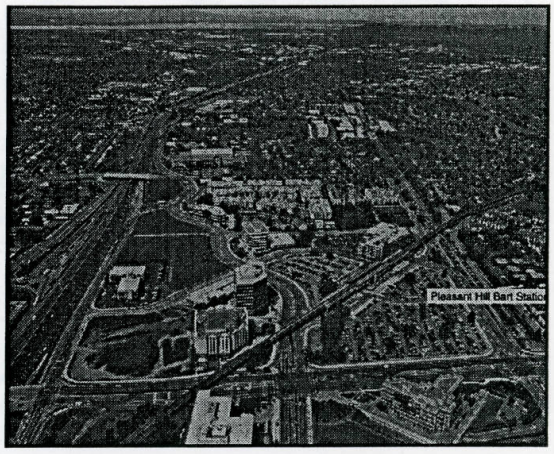
San Francisco Bay Area Rapid Transit (BART)

3. TOD Description

Pleasant Hill is located 30 miles east of San Francisco. It was originally a BART station constructed with surface parking, but, the surface parking is being redeveloped with mixed-uses and structured parking. TIF, land assembly and condemnation were used as public incentives. A study found that residents were able to qualify for higher mortgages because of less auto costs (using transit). Studies also found that rents tend to be higher for apartments near BART

stations, reflecting the ease of commute and mobility offered by the rail system.

Planning to create a transit village around the station began in 1981, when a steering committee was formed in response to development that had not occurred but which was anticipated around the station since its opening around 1971. A "specific plan" was prepared under state guidelines. The plan called for high-intensity office uses within 700 feet walking distance of the station, multi-family housing within one-third-mile of the station, tapering to single-family housing further out, and retail and public open spaces distributed throughout a one-mile radius to create an active street life.



This aerial view of Pleasant Hill shows the amount of TOD that has occurred on the transit station site. Source: Bernick, 1997.

By 1994, the quarter-mile radius around the station included over 1,600 residential units, 1.5 million square feet of office space and a 249-room hotel. The Contra Costa County Redevelopment Authority was a key player and aggressively assembled small parcels into larger development sites. TIF financing was also used to finance infrastructure improvements. Tax-exempt bonds were issued to subsidize housing units and leverage private-sector financing.

The four major residential projects that were developed included Bay Landing, a three-story development above parking (43 du/ac), Park Regency which features two- and three-story apartments (72 du/ac), and Treat Commons with two- and three-story apartments with carports (43 du/ac). The developers of these projects were motivated by the strong housing market, but also the proximity of mass transit which meant the projects leased quicker than areas lacking direct access to transit.

Source: Transit Villages in the 21st Century, Michael Bernick and Robert Cervero, McGraw-Hill, 1996.

K. Silver Spring, Maryland (suburban downtown)

1. Population

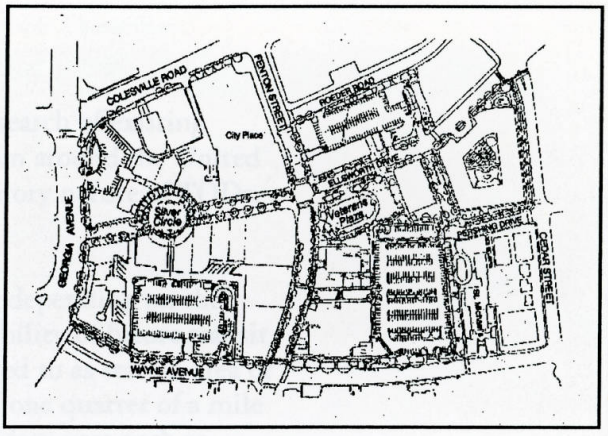
76,200

2. Transit System

Washington Metropolitan Area Transportation Authority (WMATA)

3. TOD Description

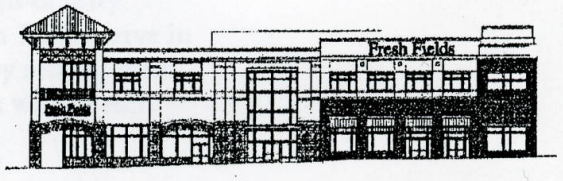
Downtown Silver Spring is a master plan to revitalize this Washington, D.C. suburb's older central business district. It represents a public-private investment of $320 million and will be developed in phases over a three-year period beginning in 1999. The focus is to create a pedestrian-oriented, mixed-use downtown within walking distance of the Metro transit station, which is two blocks from the center of downtown Silver Spring.



The detailed master plan for downtown Silver Spring. The Metro station is to the left of this plan. Source: Downtown Silver Spring, 1999.

A Civic Building (40,000 square feet) and Veterans Plaza in a Town Square will be constructed as a community focal point. The Civic Building will contain a 6,000 square foot great hall and meeting rooms for recreation and cultural activities.

The first phase is a 70,000 square foot neighborhood-oriented retail center with a 35,000 square foot fresh foods grocery and 300 spaces of surface parking. The second phase is an urban entertainment center anchored by an 18-screen theater with 5,000 seats. A mid-block plaza called Silver Circle will be built. Also included are a 25,000 square foot national book retailer and other retail space. The historic Silver Theatre will be rehabbed and will be the new home for the American Film Institute. The final phases include a 250,000 square foot office building, 200-room hotel and 160 units of apartments.



An example of pedestrian-friendly new construction as proposed for downtown Silver Spring. Source: Downtown Silver Spring, 1999.

The project includes two new public parking garages: a 1,800-space and a 1,400-space. The smaller garage will have street level retail space along two streets. New on-street parking is also to be provided.

Additional downtown redevelopment that supports the transit station includes a 650,000 square foot office building for Discovery Communications, new inter-modal transportation hub at the transit station, construction of a branch campus of Montgomery College, 57 new luxury townhomes, redevelopment of a historic neighborhood, public spaces and private apartment buildings. These investments total 1.2 million square feet and $650 million.

Source: What You've Been Waiting For . . . A New Downtown, Silver Spring Regional Center, 1999.

5. TOD Regulations

A. Overview

This presentation is based upon detailed research of existing zoning codes, guidelines, and area plans from around the United States. It presents an overview of the regulatory nature of TODs.

B. General Characteristics of TODs

The type and nature of each TOD will vary depending on the existing land uses in the area and the availability of future transit service. Generally a TOD (sometimes referred to as station area or station plan) is located within an average of one quarter of a mile walking distance of a transit stop and secondary uses such as lower density housing, schools, parks and employment surround the TOD for up to one mile. A radius of one quarter of one mile encompasses approximately 125.6 acres. Several model TOD ordinances and regulations were analyzed to determine variations in district guidelines and to note differences in the definition of a TOD.

1. Sub-District Classifications

The purpose of this section is to further clarify the ways in which various development guidelines set forth sub-districts within a TOD. In most cases the sub-districts are closely related to density, type of land use, function or purpose, or a combination of all three. Depending on where the TOD is to occur, existing development may play a part in determining the function of the area. For example if a transit station already exists, development guidelines may focus on the station as a town center or for an area of high-density development. Sub-district classifications in TODs serve in the same manner as zoning districts serve by setting forth development and design guidelines for uses within each district.

A. Orange County, California

The Orange County TOD guidelines specify an inner core radius of one eighth of a mile, (approximately 31.0 acres) within the quarter mile radius surrounding the transit station. The TOD guidelines identify a total of five different Station Areas that are classified based on existing site-specific conditions at each station, as noted below.

Table 4.B: Orange County, California TOD Guidelines

Type of Station Area	Primary Function
Neighborhood Station	Convenience
Activity Center	Node near concentration of activity
Town Center	Major civic/cultural distinction
Transportation Center	Linkage
Special Event	Special designation

B. City of San Diego

The City of San Diego refers to a TOD as a mixed-use neighborhood up to 160 acres in size which is developed around a transit stop and core commercial area. The entire TOD site must be within an average of 2,000 feet walking distance of a transit stop and secondary areas may surround the site up to one mile.

- The guidelines further designate a difference between Urban TODs and Neighborhood TODs.
- Urban TODs are located on the trunk transit line at light rail stops or express bus stops and have a higher percentage of job generating uses, higher commercial intensities, and higher residential densities.
- Neighborhood TODs emphasize residential and local shopping and are located on high frequency bus routes or along feeder bus lines within 10 minutes travel time from light rail or bus transfer stations.
- Furthermore, areas in which TODs could occur are categorized into the following three settings based on the location, type of existing development and potential development: Re-developable sites, Urbanizing sites, and New Growth areas.
- Re-developable sites include areas that could be revitalized with new uses.
- Urbanizing sites are currently vacant but are surrounded by existing uses.
- New Growth areas include larger, undeveloped properties on the periphery of the city. A New Growth area should include an area with an average 2,000-foot radius from the transit stop or a ten-minute walking distance. A ten-minute walking distance is often equal to one quarter of one mile (1,300 linear feet). The total area will be dependent upon site conditions but may consist of 40 to 160 acres of land that is undeveloped or has minimal existing development.

C. Washington County, Oregon

The intent of the transit oriented land use districts in the Washington County Zoning Ordinance is to direct and encourage development that is transit supportive in areas within one half mile of light rail stations and within one quarter mile of existing primary bus routes and town centers. The following districts are based on type of land use and density:

- Transit Oriented Residential District (9-12 units/acre)
- Transit Oriented Residential District (12-18 units/acre)
- Transit Oriented Residential District (18-24 units/acre)
- Transit Oriented Residential District (24-40 units/acre)
- Transit Oriented Residential District (40-80 units/acre)
- Transit Oriented Residential District (80-120 units/acre)
- Transit Oriented Retail Commercial District
- Transit Oriented Employment District
- Transit Oriented Business District

D. Gresham, Oregon

The Central Rockwood Plan originated in the Gresham 2020 Action Plan and called for the area to accommodate intensive commercial, residential and mixed-use development, with Central Rockwood being the Town Center. The Gresham Community Development Code was amended in 1999 with a section that implements the Central Rockwood Plan and creates districts for the City's transit corridors. The land use districts and transit corridors are designed to take advantage of substantial public investments which have been made in transit service, and to create attractive places to live, work, shop and recreate with less reliance on the automobile. The Gresham Corridor districts are described as follows:

- **Rockwood Town Center**: The Town Center is located in the heart of Central Rockwood and is intended to support and reinforce the town center image.
- **Station Center**: This district, located adjacent to or within easy walking distance of light rail stations, is intended to accommodate uses directly supportive of light rail transit such as retail and service businesses, offices, mixed use projects, higher density housing and attached single family housing.
- **Corridor Multi-Family**: This district applies to areas along segments of transit streets and provides primarily

moderate density residential development, including attached buildings.

- **Corridor Mixed Use:** Clusters of development along transit streets including moderate density, multi-family residential uses, small scale commercial uses and mixed use developments are found in this corridor district. The commercial businesses serve the day to day needs of residents.
- **Community Commercial:** This district applies to larger areas of commercial development clustered around intersections of arterials and includes a wide range of community scale commercial uses such as retail, services and offices. Housing is permitted as a secondary use.

In addition, the Gresham Community Development Code lists the following four sub-districts contained within the Civic Neighborhood land use category that relate to transit development:

- **Transit Development District-Medium Density-Civic:** This affects the land in the civic neighborhood that has good access to both existing and proposed light rail stations and abutting arterial streets. Primary uses include mixed use and multi-family residential, commercial, retail and services occupying the ground floor and all or a portion of the second floor.
- **Transit Development District-High Density-Civic:** The land around existing and proposed light rail stations is included in this designation. Primary uses include office buildings, retail and service uses. Mixed use and multi-family uses are permitted.
- **High-Density Residential:** This designation is applied to high density residential property that is within walking distance to light rail stations (but generally somewhat farther removed from the stations than transit development - high density districts). Neighborhood commercial use, small-scale offices and neighborhood parks are permitted secondary uses. Small standing office-commercial uses are permitted.
- **Moderate Density Residential:** Areas designated under this classification are within walking distance of light rail stations. Row houses, garden apartments, condominiums, and podium apartments are typical types of housing. Mixed use and neighborhood-scale commercial uses are permitted to locate within the ground floor of residential buildings.

E. Tri-Metropolitan Transportation District, Portland, Oregon

The purpose of the *Tri-Met Planning and Design for Transit Handbook* is to provide guidelines for implementing transit supportive development and land use. The handbook is more specific than the original guidelines *Planning and Design for Transit*, published in 1993. The following centers and corridors are defined in the handbook:

- **Regional Centers:** Regional centers are major centers of compact, mixed use developments serving the largest sub-regional market areas
- **Town Centers:** A town center provides local shopping and employment within the local market area.
- **Station Communities**: Station communities are nodes of mixed-use development centered on light rail stations.
- **Main Streets:** Main streets form neighborhood centers by providing retail and commercial services along streets or intersections.
- **Corridors:** A corridor is not as dense as a center but provides housing and some commercial development at higher densities.

F. Bay Area Rapid Transit (BART) Station Area Specific Plan, San Mateo County, California

The BART Station Area Specific Plan recommends a process and development plan for gradual transition from the area's existing uses to urban uses that support the intended transportation/transit role, as well as complement adjacent neighborhood and business districts. The plan serves as a mechanism for establishing site-specific development controls and measures to ensure the long-range goals of the County (General Plan) are met. The study area consists of a BART maintenance yard and terminus/facility of the San Francisco/Daly City line. Plans include upgrading the facility to a full service BART station. The key characteristics of the land use designations within the BART station area are as follows:

- **High Density Residential:** This designation provides a mix of affordable and market rate housing as well as a variety of unit types to meet the needs of both large and small households. Ground floor retail is required.
- **Medium Density Residential:** This designation supports moderate densities per net acre in two to three story duplexes, townhouses, and small apartment

buildings. The area also serves as a transition to adjacent single-family housing.

- **Low Density Residential:** This designation is applied to areas substantially developed with single-family homes and has minimal opportunities for infill or redevelopment. Housing must emulate surrounding homes and be primarily one to two story small lot single-family houses with tuck under garages or rear yard garages.
- **Mixed Use Commercial/Office:** The intent of this designation is to provide opportunities for local retail uses to benefit from pedestrian access and auto orientation.
- **Office Convenience:** This designation is applied to the BART park and ride lot. Permitted uses include office space, convenience commercial uses, daycare, and parking facilities.
- **Neighborhood Commercial (Residential above):** This designation creates pedestrian oriented shopping by requiring retail space along all street frontages.
- **Neighborhood Commercial:** This classification enhances existing single story commercial uses and provides restrictions for renovations to existing sites.

G. Beaverton, Oregon

The Beaverton Zoning Ordinance includes Station Community Districts that generally fall within one-half mile of light rail station platforms and Station Area Districts that are within one mile of light rail station platforms. These districts can be described as follows:

- **Station Community Multiple Use District:** Primary uses in this district include office, retail and service uses. Also permitted are multiple use developments and multi-family residential depending on proximity to light rail stations.
- **Station Community High Density Residential:** These areas are high-density residential neighborhoods with density dependent on proximity to light rail stations. Secondary uses include commercial and parks intended to serve the neighborhood and not rely on vehicle traffic. Office uses and retail uses are permitted within multiple use developments.
- **Station Area Multiple Use:** Primary uses include office, retail and service uses. Also permitted are multiple use developments and multi-family residential.

- **Station Area Medium Density Residential:** This area includes medium density residential neighborhoods. Secondary uses include commercial uses and neighborhood parks. Small freestanding office uses are permitted.

C. Land Uses Within TODs

Land uses within a TOD are intended to be compact and centrally located around a transit station or transfer point. The types of land uses will vary depending on existing conditions, but may include a combination of commercial, office and employment, multi-family residential, mixed use residential/commercial or public uses. Proximity of housing, employment, and retail uses to transit stations will encourage transit use for commuting and other trips. Public uses such as parks, plazas, gathering places and community centers are an important component of a successful TOD.

Higher intensity uses and higher density development is recommended immediately surrounding the transit station. Permitting a variety of uses within walking distance will encourage pedestrian activity in and around the transit station. As distance increases away from the transit station, a transition in land use should also occur that reflects lower density development.

Creating parking provisions within a TOD that continue to emphasize the use of transit is challenging. Structured or multi-level parking is preferred over surface parking lots. Multi-level parking, although sometimes financially difficult, allows more compact and pedestrian friendly development and a more efficient use of the land. As pointed out in *Orange County Transit Supportive Development Guidelines*, typical suburban development projects devote up to 75 percent of the site to surface parking. Large parking lots consume a large amount of land that could otherwise be put to more productive uses.

Several variations exist between permitted and prohibited transit supportive land uses within TODs. Examples of non-transit supportive land uses include automobile sales and rentals, service stations without convenience, many industrial uses, and drive-up only services. Some guidelines further categorize land uses, as either transit supportive, may be transit supportive with appropriate development standards, or not transit supportive. In most cases the types of permitted land uses, or transit supportive uses, are linked with required density levels at both the commercial, residential and office level.

1. Residential

The highest density and most concentrated development will occur immediately surrounding the transit station.

Residential areas should contain a variety of affordable housing types to achieve necessary densities to support transit ridership. To reinforce the importance of the pedestrian, ground floor retail along pedestrian systems and streets is required as long as minimum residential densities are met. For the purpose of analysis, district standards and uses for the retail/commercial component in a residential area will follow the Commercial/Office/Multi-Use category.

A. Recommended Permitted Uses

The variation in permitted residential housing types is linked to the density of the underlying TOD sub-district. Some development guidelines set forth a required minimum density per net acre, while others specify an average minimum gross density per acre. For example the *BART Station Area Plan* sets forth a density of 12-25 units per net acre for medium density residential sub-district areas. However, the *Transit-Oriented Development Guidelines* for Sacramento County, California, indicate that a neighborhood TOD must have a minimum density of seven units per residential gross acre. The list below contains permitted (recommended) residential uses found in several development guidelines that were analyzed.

- Multi-family
- High Density: Podium apartments, small apartment buildings, courtyard apartments, and flats with a minimum density, for example, between 25 and 55 units per net acre (BART).
- Medium Density: Small apartment buildings (3 story maximum), courtyard apartments, townhouses, duplexes, attached ancillary units, and flats with a minimum density, for example, of 12 to 25 units per net acre (BART).
- Low Density: Flats, duplexes, small lot single family and second units with densities ranging from 9 to 12 units per acre (Washington County).
- Single Family lots less than 5,000 square feet
- Single Family attached dwellings on single lot (two-family)
- Elderly housing
- Neighborhood commercial uses, small-scale offices, and neighborhood parks.

B. Prohibited or Discouraged Uses

- Large lot single-family dwelling (greater than 5,000 square feet)
- Freestanding retail use (must be part of a mixed-use building)

2. Commercial / Mixed Use / Office

Retail uses found in a TOD are supported by pedestrian activity generated from transit riders, residents and nearby neighborhoods. Existing commercial establishments should be evaluated in terms of whether they are transit supportive. A mixed-use area should contain a variety of uses including residential, commercial, office and public. The intent is to provide opportunities and benefits to local merchants from pedestrian activity and automobile orientation. Design guidelines that regulate building orientation and types of facades are important elements in creating a pedestrian oriented district.

A. Recommended Permitted Uses

- Bed and breakfast inn
- Cinema and gallery
- Clinic
- Banks and savings and loans, drug store, dry cleaner, grocery market, retail services (bakery, coffee shop, gift store, bookstore, florist, and pet store)
- Hotel, restaurant, specialty food store, eating and drinking establishments
- Offices, business and professional, post office, personal services, travel services, video rental

B. Prohibited Uses

Uses in commercial areas that typically rely on auto travel such as gas stations, auto dealers, repair shops, car washes, mini-storage, travel commercial complexes and motels should not be permitted in TODs or Secondary Areas. Interior shopping malls and large shopping centers that are surrounded by surface parking should not be allowed. The City of Gresham prohibits curb cuts for the exclusive use of drive through queuing or exit lanes on all streets containing a transit way.

- Animal boarding
- Automobile sales and rentals, automobile washing, vehicle equipment repair or sales
- Bulk retail uses

- Cemetery
- Commercial parking garage or surface parking facilities require conditional permit
- Drive through or drive-up window
- Funeral service
- Mini storage facility
- Nurseries, commercial
- Retail uses larger than 40,000 sq. ft. (must be part of mixed use building)
- Strip commercial" developments
- Truck stop
- Warehousing

3. Public and Semi-Public

Public land uses, such as parks, public and private open space, and other public facilities, should be reachable without driving. Other uses can range from pocket parks and plazas to governmental offices and hospitals. With proper design guidelines, these public land uses can be made transit friendly and oriented to the pedestrian.

A. Recommended Permitted Uses

- Cultural institution
- Day care
- Government office
- Hospitals, medical office
- Schools and college
- Small parks and recreation facility

B. Prohibited Uses

- Convalescent facility
- Golf course
- Large recreation facility (multiple fields)

D. Density

In order to determine the density requirements for a TOD, it is recommended that the maximum density of a market be determined and then set as the minimum density. Builders should be required to build to a required density, such as 90 percent, to maximize land use potential. Residential uses within close proximity of the station area should reflect higher densities. Other measures such as reduced lot size and a reduction in the

required number of parking spaces can assist developers in achieving required densities.

The *APA Planning Advisory Report Number 468* identifies incentive approaches such as density bonuses, impact fee waivers or reductions, and fast-track permitting to achieve required density. For example in Clark County, Washington, a reduction in traffic impact fees may be granted in recognition of the potential reduction in vehicle trip demand that may result from the implementation of transit supportive management measures. Similarly, in Olympia, Washington, a 20 percent density bonus is granted for zero lot line and townhouse projects of five or more acres in higher density residential areas.

Differences in density requirements are plentiful and vary depending on the proximity to the rail station and the type of buildings that are planned. Traditional density standards such as dwelling units per acre are referred to for residential dwellings whereas the floor area ratio (FAR) is utilized when referencing office or commercial type developments.

1. Residential Density Standards

The following tables display typical density variations in relation to type of TOD and proximity to transit stations:

Table 4.C: Residential Density Variations Relative to Type of TOD

Type of TOD	Minimum Density Recommended	Maximum Density Recommended
TOD that will support bus transit	8 to 12 dwelling units per acre	N/A
TOD that will support light rail	15 dwelling units per acre	N/A
Urban TOD	7 to 15 units per gross acre	50 units per gross acre
Neighborhood TOD	10 dwelling units per acre; 7 units per gross acre	30 units per gross acre

Source: Orange County Transit Supportive Land Use Development Guidelines and Tri-Met.

Table 4.D: Residential Density Variations Relative to Proximity to Transit Station

Proximity to Transit Station	Minimum Density Recommended	Maximum Density Recommended
0 to 1/8 mile from Transit Stop	10.9 to 30 dwelling units/acre	38.0 dwelling units per acre
1/8 mile to 1/4 mile from Transit Stop	9.0 to 24 dwelling units/acre	27.0 dwelling units per acre
1/4 to 1/2 mile from Transit Stop	Selective densities at or below those for 1/4 mile radius; 12 dwelling units/acre	Selective densities
Within 400' of Light Rail Station	30 units/acre	

Source: Orange County Transit Supportive Land Use Development Guidelines and Tri-Met.

High-density residential development could range from a minimum of 24 units per acre to a maximum of 120 units per acre. Several regulations that were studied did not indicate a maximum residential density in the high-density category. Medium or moderate density residential development could also vary between 12 and 80 units per acre. Multiple use districts that contain both residential, commercial and/or office land uses enforce a residential density averaging from 12 units per acre to 30 units per acre.

2. Floor Area Ratio

A floor area ratio (FAR) can be defined as the amount of enclosed gross floor area in relation to the amount of the site area, expressed in square feet. An example cited within the Washington County, Oregon, *Zoning Ordinance* clearly illustrates this point: a FAR of 0.5 means one square foot of floor area for every two square feet of site area (e.g., 20,000 square feet of floor area for a site area of 40,000 square feet).

A minimum FAR will help ensure that the most intensive forms of building development will occur in those areas that are appropriate for multi-story commercial buildings and higher density residential densities. The more intense levels of development brought about by minimum FAR's near light rail stations will encourage use of light rail transit.

The Beaverton, Oregon, *Zoning Ordinance* lists a minimum FAR of 0.6 for multiple use or non-residential developments in station communities and 0.35 FAR in station areas. Using a one-acre site (43,560 square feet) as an example, a FAR of 0.6 would allow development of 26,136 square feet whereas a FAR of 0.35 would allow development of 15,246 square feet. In contrast, for residential developments, the maximum FAR is 1.2 for station communities.

In a typical development not designed to be transit supportive the FAR for a four-acre office complex may be 0.5. This would allow 50 percent of the site, or 87,120 square feet to be developed. However in a transit supportive office complex the FAR could increase to 1.0 and a total of 174,240 square feet could be developed. Other minimum FARs for medium density areas or multiple use areas range from 0.4 to 0.6. The City of San Diego sets a minimum 0.35 FAR and a maximum 0.60 FAR for office uses without structured parking located in core commercial areas. The following table illustrates variations that exist in FARs in relation to type of development.

Table 4.E: FAR Variations Relative to Various Development Types

Type of Development	Site (sq ft)	FAR	Developable Land	Characteristics
4 acre office complex	174,240	0.5	87,120 sq. ft.	Not transit supportive, less compact, encourages buildings to be spread apart, not pedestrian friendly
4 acre office complex	174,240	1.0	174,240 sq. ft.	Transit supportive, encourages multi-level structures, provides open space opportunities
1 acre multifamily	43,560	0.6	23,136 sq. ft.	Moderately transit supportive.
1 acre multifamily	43,560	1.0	43,560 sq. ft.	Transit supportive, encourages multi-level uses, dense development and retains open space for pedestrian uses.
1 acre multifamily	43,560	1.2	52,272 sq. ft.	Highly transit supportive, encourages multi-level uses, high-density development and retains open space for pedestrian uses.

E. Connectivity/Pedestrian Orientation/Bicycle Needs

1. Connectivity

If a TOD is to attract foot traffic to local shops, the configuration of streets, entrances, and parking must provide a comfortable route for the pedestrian to travel. Interruptions in pedestrian paths, walking and/or biking routes discourages pedestrian and bicycle travel. A traditional subdivision design with its cul-de-sac streets, long blocks, and curving streets does not encourage pedestrian activity. A TOD should follow traditional block design and consider pedestrian "breakthroughs" to shorten block lengths and penetrate existing neighborhoods at effective locations relative to transit stations.

A network of pedestrian linkages, connecting neighborhoods with activity stations and transit stops or stations should, where possible, follow the most direct route to minimize distances. A continuous paved surface is necessary to provide a noticeable pedestrian system that connects existing streets and neighborhoods with proposed development. Treatments such as textured or colored pavement, curb extensions or raised walkways could provide a visual connectivity that reinforces the role of the pedestrian in the development. A protected walkway may be required through any parking lot of 50 or more spaces to connect a parking lot with a front entrance of a building. Crosswalks should be provided at all signalized arterial intersections, however under-crossings or pedestrian bridges for pedestrian or bicyclists are discouraged. In addition, crossing delays should be minimized.

2. Pedestrian Orientation

The comfort of the pedestrian in a TOD is dependent on a sense of security and familiarity. A transit street serves a significant function of carrying a high volume of transit riders. The ease of pedestrian movement and safety are primary considerations, therefore sidewalks should be required in all TODs. Depending on the amount of pedestrian traffic expected, densities, and the existing land uses, sidewalks could range from a minimum width of five feet to a maximum width of 20 feet to accommodate outdoor seating areas or plazas.

An attractive and interesting streetscape will also encourage pedestrian activity. Amenities such as trees, street furniture, plantings, distinctive paving, drinking fountains and sculptures should be considered or required in TODs. In Washington County, Oregon, amenities such as these are required every 100 feet along designated pedestrian districts. Street trees may be required on pedestrian streets at designated spacing. In designated pedestrian zones, features such as canopies, awnings, and arcades will protect pedestrians from sun, rain and wind and will also serve to enliven the streetscape. However, support for these types of structures should not impede pedestrian movement.

Measures to further protect pedestrians include limiting the number of curb cuts, providing landscaped medians at all intersections, constructing landscaped buffers between streets and sidewalks, prohibiting double left-turning lanes, providing pedestrian scaled ornamental lighting, and allowing parallel parking on streets.

3. Bicycle Needs

Bicycle paths are an important component of TOD designs. More importantly, to encourage people to use bicycles for transportation, adequate bicycle parking facilities must be provided. Bike lanes that link transit stations with employment centers, commercial areas and residential developments will encourage people to choose to ride to a destination.

Essentially two types of bicycle parking facilities should be required: short term and long term. Short term parking occurs around convenience commercial areas and refers to trips that will last between one to two hours, whereas long term parking at employment centers or residential areas could last as long as eight to 10 hours. Multi-family developments, new retail, office, institutions, and transit stations should require bicycle-parking facilities. The location of bicycle parking may be clustered in one or several locations but should be located in areas of greatest use and

convenience to bicyclists. The American Planning Association (APA) recommends that all required bicycle parking be located within 50 feet of well-used entrances and not farther than the nearest vehicle parking space.

The number of bicycle parking spaces required can be based on several factors such as square footage, number of vehicle parking spaces or number of residential units. The APA recommends one space per residential unit, 10 spaces per acre for transit centers and four spaces for every entrance to a building (commercial). Likewise, if any motor vehicle parking is covered, a certain amount of bicycle parking should also be covered. Or it may be required that a certain percentage of bicycle locking mechanisms be individually enclosed. Potholes or other safety hazards specific to cyclists should be eliminated or minimized. To ensure safety, proper bicycle racks that provide a means for cyclists to lock their bikes should be provided.

F. Urban Design Elements

A general trend uncovered in each TOD guideline or ordinance is that buildings should require ground floor retail while upper stories remain reserved for office or residential uses. In Sacramento, California, retail development in the core area may add additional floors of residential or office space for every ground floor of retail that is planned as a bonus.

Buildings within a TOD should avoid uniform design styles, rooflines or facades that result in uninteresting and unattractive pedestrian environments. Architectural features such as cornices, bases, fluted masonry, bays, recesses, arcades etc., will provide visual interest along pedestrian routes.

1. Buildings

Buildings should be oriented to the pedestrian system with at least one entrance located on the pedestrian street. All non-residential buildings should be placed as close as possible to the pedestrian network or street. A maximum setback of five feet from the sidewalk is recommended unless the area is expected to carry high pedestrian traffic, or outdoor seating areas are planned in which case the setback could be extended to 15 feet. In residential developments, buildings should be brought to the edge of the street. Porches, patios and balconies that overlook streets are encouraged and may extend into setback areas. Building height standards vary from one TOD to another, but in Sacramento, buildings located in the core commercial area shall not exceed 4.5 stories in Urban TODs and 3.5 stories in Neighborhood TODs.

Building facades should avoid blank walls and provide a series of openings on facades that are street level or face a transit street. For example, in Washington County, Oregon, building facades containing more than 40 linear feet of ground floor wall must contain a change in materials. Offsetting features such as awnings and textures will aid in breaking down the scale of a wall. Building entrances should incorporate features to protect pedestrians from sun, wind and rain and should orient to the streets, not interior parking lots. Primary entrances for townhouses, duplexes or flats should face the street and be provided for every one to two units. Second floor residences should have street level entries that are reached by an interior stairwell.

Several development guidelines require that at least 50 percent of a building's ground floor facing a transit street or pedestrian way, including parking garages, contain unobscured windows, doors, or display areas. In addition, ground floor windows that are darkly tinted or mirrored are prohibited. Display windows should be of a specified minimum height above the sidewalk.

The focus remains on the pedestrian therefore garages should be set back from the front facade of a residential building by a minimum of five feet. In single-family residential areas the minimum setback for a garage can increase to 10 feet.

Developers should be encouraged to provide sheltered areas as part of a new development and be required to provide pedestrian amenities such as open space, seating, plazas, or sculpture if necessary. Environmental design principles such as territoriality and natural surveillance should be incorporated into site designs.

2. Streets

Historically suburban roadways have been designed to categorize streets into a hierarchy of freeways, arterials, collectors, and local streets. Methods to reduce congestion, usually by adding roadways, have not alleviated the problem. The circulation system within the TOD should be clear, formalized and interconnected - converging to the transit stop and core center. Distances traveled can be minimized, and congestion alleviated, by connecting pedestrian walkways and by following the traditional grid pattern for roadway design.

Within a TOD, residential block perimeters should average 1,200 feet with a range of 800 feet to 1,600 feet to promote pedestrian friendliness. Larger retail centers may require blocks up to an average of 1,600 feet, with a range of 1,400 feet to 1,800 feet. Local streets should be designed to serve low volumes of traffic by having travel and parking lanes

sufficiently narrow to slow traffic and allowing trees to form a pleasing canopy over the streets. Commercial streets should have two lanes of travel and on-street parking to create an intimate shopping environment that maintains drive-by visibility to stores and creates a pedestrian friendly environment by separating pedestrians from moving vehicles. A smaller curb radius can be required to force drivers to slow their speed.

At a walking pace, a pedestrian is much more aware of landscaping detail than a driver traveling 25 to 40 miles per hour. Special attention should be given to streetscape design and amenities with the pedestrian in mind. Where possible, alleys should be utilized to provide service access to commercial and residential buildings within TODs.

3. Open Space

Open space guidelines and requirements vary greatly from one TOD to another. Common open space areas should be connected to the pedestrian and bicycle system and be within walking distance of nearby residences, commercial areas and offices. Both passive and active recreation activities should be made available. The following table contains a variety of open space requirements found in various TOD guidelines.

Table 4.F: Various Open Space Requirements

Type of Land Use	Open Space Requirement
Single family detached and attached residential:	100 sq. ft. common open space per dwelling
Apartments exceeding 500 sq. ft. in floor area:	75 sq. ft. common open space per dwelling
Apartments ≤ 500 sq. ft. in floor area:	50 sq. ft. common open space per dwelling
Podium apartments, small apartment buildings, courtyard style apartments, and flats:	20′ x 20′ open courtyard
Residential developments:	15% of site devoted to common open space
Non-residential developments:	10% of site devoted to common open space
Mixed Use or Non residential	At least 2% of development site area

Source: Washington County, Oregon, Beaverton, Oregon, BART.

Other open space guidelines include providing at least two of the following: benches for seating, public art, water features, play structures, gazebos, picnic tables with barbecue and at least one play structure for children. Hard surface play areas could be incorporated into parking lot design. There should also be flexibility in seating patterns that includes ledges, loose chairs, grass, retaining walls, planters as well as stationary furniture. To ensure that adequate open space is provided in a TOD, small plazas and parks should be made a project requirement for development.

G. Parking

Parking lots should not be a dominant feature in TODs. "An active pedestrian environment is stimulated by buildings at the sidewalk with numerous entries and visual stimuli; surface parking lots are "dead" spaces for pedestrians and drain the life out of a street" (Sacramento). Traversing large parking lots and access roads that are designed for heavy traffic will discourage pedestrians. In an effort to encourage pedestrian activity, while not eliminating the use of the automobile, TOD guidelines recommend establishing a maximum parking ratio for land uses and limiting the parking to the amount which meets the average peak need for that specific development. Shared or centralized parking lots are encouraged.

Many communities recommend or require placing parking to the side or rear of a building. Generally parking may be provided in interior courtyards, in garages placed at rear property lines or in tuck under spaces integrated into building facades. A street lined with an unbroken series of garage doors is prohibited in certain TOD guidelines. One role often played by the public sector is to facilitate TODs is to fund and construct centralized, structured parking.

A reduction of the required number of parking spaces should be made available for mixed-use, residential and non-residential land uses. However, reduction in parking must coincide with the availability of transit and/or implementation of residential permit parking to control overflow into nearby residential areas. For example, within Urban TODs in San Diego a two to seven percent reduction in parking spaces is permitted in residential and mixed-use areas while a 10-15 percent reduction in parking spaces is permitted in non-residential areas. Multi-level parking structures, although more expensive, are desirable and provide a more efficient use of land. Implementation of a vehicle-parking district within the transit station area could help fund the construction of a parking structure.

An incentive program for developers to reduce parking in Redmond, Washington is entitled "Fee-in-Lieu-of-Parking" where businesses contribute cash in-lieu of providing parking on site. The fee is often a set dollar amount multiplied by the number of parking spaces that would have been required. The funds are then used to construct a shared-use parking structure. San Diego guidelines recommend that surface lots located within one quarter of a mile of a transit station be targeted for redevelopment into parking structures or transit supportive uses. The following table displays variations in parking requirements found in TOD guidelines from San Diego, BART, and Tri-Metropolitan.

Table 4.G: Various Parking Requirements

Type of Land Use	Recommended Parking	Maximum Parking
Multi family residential	1 space per bedroom	1.5 spaces per unit
Podium, courtyard, small apartment buildings	1.25 spaces per unit	
Detached ancillary units	1.0 spaces per unit	
Mixed use districts	1 space /225 square feet	
Office	3.3 spaces/1000 square feet	4-5 spaces/1000 square feet
Retail	5.0 spaces/1000 square feet	5-6 spaces/1000 square feet
Light industrial	2.5 spaces/1000 square feet	3-4 spaces/1000 square feet

Surface parking lots should provide perimeter landscaping such as a five-foot wide planting strip, berm, hedge or decorative wall adjacent to pedestrian systems. Height limitations on berms and walls that surround parking lots ensure adequate visibility for pedestrians. It is recommended that parking lots be located a minimum of five feet from adjacent building facades or streets. Some cities are limiting the size of surface parking lots to three acres (San Diego) or 2.5 acres (Sacramento) unless the lot is separated into smaller sized blocks. Large lots can be successfully separated into smaller parcels by placing a street or a building between the parking areas.

H. Transit Station Facility Standards

The location of a transit station facility will vary depending on the type of transit available, however, many communities recommend it be placed in the central portion of a TOD, near the core area. The transit station should be well connected to surrounding residential and commercial development. At minimum, a transit facility should incorporate a paved waiting area with benches and/or shelters to assure a safe pedestrian friendly environment. Guidelines indicate that shelters are warranted if a minimum of 40 passengers board per day, or a bench if less than 40 passengers board per day (Gresham, West Sacramento). If a transit station already exists in an area targeted for transit-oriented development, the developer should be required to upgrade the existing stop through improved waiting facilities such as benches, lighting, etc. (Gresham). Each transit station should have clearly marked pedestrian walkways. Other recommended amenities include, clear signage, bicycle parking, public telephones, trash receptacles outside shelters, landing areas and ramps.

The *Southport Framework Plan* for the City of West Sacramento, California, lists three aspects of a transit system: bus routes; park-and-ride lots; and light rail. Multi-modal transit stations may include one or several of these aspects. Within transit stations providing bus service, bus turnouts that are designated for passenger loading and unloading should be provided. Bus stop

spacing will vary depending on development, but should be placed far enough apart to avoid stopping more frequently than necessary.

Park-and-ride lots serve as a collection and distribution point in areas where development densities are low, however they are not ideal for all transit stops. San Diego guidelines recommend the location of park-and-ride lots is best suited to areas adjacent to TODs. Furthermore, Urban TODs should have structured parking lots near the transit stop, but surface lots devoted specifically to park-and-ride should not be provided. The number of vehicle parking spaces must be carefully determined and bicycle parking is recommended. Kiss-and-ride lots (passenger drop off areas with minimal parking) should be considered in the design of a transit station. The location and components of a kiss-and-ride lot are important; they should encourage drivers to combine trips.

The Gresham, Oregon, *Community Development Code* indicates that ideally, light rail facilities should be located at facilities with 24-hour activity. Land uses immediately surrounding the light rail station will impact the number of potential riders. Careful design guidelines, with particular attention placed on pedestrian orientation and friendliness will ensure a successful plan. Proper densities must be enforced to provide the necessary customer base to support the light rail system. The APA recommends that employment-generating uses need to provide at least 30 jobs per acre to support light rail and residential densities must be at least 15 units per acre.

The City of Eugene, Oregon, states that the location of transit stops shall be based upon size and trip generation potential of new development adjacent to an existing or planned transit corridor. The transit operator must review any development plans at the time of permit application and determine if transit related facilities should be constructed or improved.

I. Affordable Housing

Affordable housing is a common issue in TODs. Communities have sought to encourage or require the provision of affordable housing to ensure that TODs do not price such households out of the local housing market – thereby reducing the potential transit ridership generated by a TOD. Residential development within a TOD should be designed to provide housing opportunities for people with different income levels.

The *BART Station Area Specific Plan* suggests requiring developments with five or more housing units to provide at least 20 percent of the total project units at rent or sale prices affordable to very low or low income households. Specifically, if a development is mostly rental units, than a portion of the units should be at rents affordable to very low income (10 percent) and

low income (10 percent). Likewise, it the development is primarily for-sale housing, at least five percent of the units should be affordable to very low income households, and 15 percent available to low income households.

Affordable housing units should be designed to be architecturally compatible with the surrounding market-rate units and should be dispersed throughout the residential development. A concentration of low income or very low income units in one area is generally not recommended. To ensure that affordable units remain affordable, deed restrictions could be enforced.

Incentives such as density bonuses may be utilized to assist developers and encourage the construction of affordable housing within the TOD area.

5. Appendix

A. Glossary

- **Development** – The physical alteration of a tract of land, including buildings, structures, grading and other related changes.
- **Drive-through Facilities** – Facilities allowing transactions for goods or services without leaving a motor vehicle.
- **Floor Area Ratio** – The amount of enclosed gross floor area in relation to the amount of site area, expressed in square feet. For example, a floor area ratio of 0.5 means one square foot of floor area for every two square feet of site area.
- **Gross Density** – The measure of the number of dwelling units permitted per acre of land area, minus dedicated right-of-way.
- **Kiss and Ride:** An designated area within a TOD that serves as a passenger drop off and pick up point.
- **Multiple Use Development** – A type of development containing a variety and intermixing of uses that complement the surrounding communities. The land uses are designed to work together to result in an attractive place to live, work, shop and recreate.
- **Overlay Zoning District** – A zoning district that encompasses one or more underlying zones and that imposes additional or alternative requirements to that required by the underlying zone.
- **Park and Ride Lot** – A parking structure or surface parking lot intended for use by persons riding transit or carpooling.
- **Podium Apartments** – A multi-family apartment structure where parking is located below the living quarters.
- **Shared Parking** – The sharing of a given parking supply by land uses that generate different peak parking time demands, such as entertainment and office uses.
- **Site Coverage** – The part of a development site occupied by buildings.
- **Transit-Oriented Development (TOD)** – A development approach locating higher density, mixed uses at strategic points along the regional transit system. The design and location of a TOD and the mix of uses emphasize a pedestrian oriented environment and reinforce the use of public transportation.
- **Transit Station** – A public transit station served primarily by a light or commuter rail train. The station may contain bus line service, park and ride facilities and retail and service establishments.

B. Bibliography

American Planning Association, Oregon Chapter: Recommendations for Pedestrian, Bicycle, and Transit Friendly Development Ordinances, Oregon Department of Land Conservation and Development, Oregon Department of Transportation, Transportation Rule Working Group, Working Draft, February 1993.

American Planning Association, Creating Transit-Supportive Land-Use Regulations, PAS Report Number 468, American Planning Association, Chicago, December 1996.

Arlington County Department of Community Affairs, Planning Division, Ballston Sector Plan, Arlington, Virginia, 1980.

Arlington County Department of Community Affairs, Planning Division, Virginia Square Sector Plan, Arlington, Virginia, 1983.

Arlington County Department of Community Affairs, Planning Division, Clarendon Sector Plan, Arlington, Virginia, 1984.

Arlington County Department of Community Affairs, Planning Division, Rosslyn Transit Station Area Study, Arlington, Virginia, 1977.

Arlington County Department of Community Affairs, Planning Division, Court House Sector Plan, Arlington, Virginia, 1981.

Bernick, Michael, Robert Cervero, Transit Villages in the 21st Century, McGraw-Hill Companies, New York, New York, 1997.

Boarnet, Marlon G. and Nicholas S. Compin, "Transit- Oriented Development in San Diego County" Journal of the American Planning Association, Vol. 65, No.1, American Planning Association, Chicago, Winter 1999.

Calthorpe Associates and Bay Area Economics, Jackson-Taylor Residential Strategy, San Jose Department of City Planing, October 1992.

Calthorpe Associates, in association with Minter & Associates, Transit-Oriented Development Design Guidelines, Sacramento County, California, Sacramento County Planning and Development Department, September 1990.

Calthorpe Associates, BART Station Area Specific Plan, Unincorporated Colma/Daly City, San Mateo County, California, County of San Mateo, City of Daly City and San Mateo County Transit District, March 1993.

Calthorpe Associates, City of San Diego Land Guidance System Transit-Oriented Development Design Guidelines, City of San Diego, August 1992.

Calthorpe, Peter, The Next American Metropolis: Ecology, Community, and the American Dream, Princeton Architectural Press: New York, New York, 1993.

Cervero, Robert. "Rail Transit and Joint Development: Land Market Impacts in Washington, D.C. and Atlanta," Journal of the American Planning Association, Vol. 60, No.1, American Planning Association, Chicago, Winter 1994.

City of Beaverton, Oregon, Beaverton Municipal Code, 1997.

City of Eugene, Oregon, Eugene Code, 1993.

City of Gresham, Oregon, Gresham Community Development Code, 1999.

City of San Jose, Tamien Station Area Specific Plan, San Jose Department of City Planning and Building, 21 March 1995.

City of San Jose, The Jackson-Taylor Neighborhood Revitalization Plan, San Jose Department of City Planning, Jackson-Taylor Neighborhood Advisory Committee, December 1987.

City of West Sacramento, California, Southport Framework Plan, 10 May 1995.

City of West Sacramento, California, Southport Design Guidelines, Planning Department, 26 April 1996.

Downtown Silver Spring, Silver Spring Regional Center, "What You've Been Waiting For...A New Downtown," Silver Spring, Maryland, April 1999.

Fisher, Kimberly M. Transit-Oriented Design, ULI Research Working Paper 635, ULI, Washington D.C., June 1994.

Metropolitan Atlanta Rapid Transit Authority, Department of Development.

The Planning Center, Transit Supportive Development Guidelines: A Handbook for Centerline Communities, Orange County Transportation Authority, May 1999

The Transportation Research Board, "The Role of Transit in Creating Livable Metropolitan Communities," TCRP Report 22, National Academy Press, 1997

Tillet, Paddy, Retrofitting the Suburbs: "The Gresham Civic Neighborhood," ULI Information Service, Info Packet No. 381: Mixed-Use Development, PAS Memo November 1995.

Tri-County Metropolitan Transportation District of Oregon, Planning and Design for Transit Handbook, Portland, Oregon, January 1996.

Tri-County Metropolitan Transportation District of Oregon, Planning and Design for Transit, Portland, Oregon, March 1993.

Urban Land Institute, MetroLink St. Louis Region: Strategies for Optimizing the Community and Economic Development Benefits of MetroLink at the Wellston, Delmar, and East Riverfront Station Areas, Advisory Services Panel Report, Washington, D.C., September 1995.

Washington County, Oregon, "Washington County Community Development Code, 1997.

C. Subject Index