Chapter 1: Introduction

Previous reports of the LUTRAQ Project have described methods, existing conditions, alternatives, and the likely performance of those alternatives. This report discusses implementation.

The LUTRAQ Project has received national attention because of its attempts to go farther than most regional plans in integrating land use and transportation. Much of the interest in the project has been in the development and evaluation of the integrated transportation/land use plan that was developed in previous tasks. However, the origin and purpose of LUTRAQ has been more grounded in the practical realities of local land use and transportation decisions than in an academic interest in advancing the state of the art for planning and modeling. The LUTRAQ project has always aimed for implementation: how can a different vision for land use and transportation get incorporated into regional and local policy so that it can become a reality?

This report addresses that question. The answers are presented in several parts and at different levels:

Executive Summary. The two pages that precede this chapter provide a *brief* overview of the issues the report addresses and key findings.

Summary Report. This chapter, and the four that follow it, summarize the several technical analyses completed for this report. Together, these chapters cover the important issues and findings from the analyses. The chapters are aimed at planners, policy makers, and citizens with an interest in LUTRAQ and in the tools that might be used to make integrated transportation and land use alternatives like LUTRAQ a reality.

Appendices. Each appendix contains one of the several studies that were conducted as part of the LUTRAQ implementation effort. Where the Summary Report provides an overview that allows readers to decide whether any of the implementation tools might be of use in their jurisdictions, the appendices provide the details on how the tools could be designed and used.

The implementation tools presented in this report build from specific design guidelines to be applied at the site level, to issues regarding regional land use plans.

Chapter 2: Design Guidelines. What should a *transit-oriented development* (TOD) look like? This chapter summarizes **Appendices A and B**, prepared by Calthorpe Associates. Appendix A provides policies and illustrations for all aspects of transit-oriented design, including transit stops, circulation for all modes, commercial and office areas, residential districts, public spaces, parking, and redevelopment. Appendix B addresses in detail the factors that make a neighborhood friendly to pedestrians, using neighborhoods classified in *The Pedestrian Environment* (a previous LUTRAQ report) as examples.

Chapter 3: Zoning Regulations. What changes should be made to traditional zoning ordinances that would facilitate and encourage the kinds of designs described in Chapter 2? This chapter summarizes **Appendix C**, a model ordinance prepared by Blayney Dyett. While TODs may be beneficial in any location, their potential can only be fully realized in places that offer frequent transit service. Zoning provides a tool for identifying areas where the public interest is best served by TODs, and a means for encouraging or requiring detailed planning for pedestrian districts.

Chapter 4: Economic Incentives. Will developers build the types of developments that the design guidelines and zoning allow, encourage, or require? The answer depends, in part, on many economic factors. One of the factors that local governments have some control over is the fees that they charge for public facilities and services. In Oregon, most local governments charge system development charges (SDCs) to cover at least part of the costs for transportation improvements required to accommodate new development. These charges are usually based on an estimation of the automobile trips that the new development will generate. This chapter summarizes **Appendix D**, prepared by Public Financial Management, which estimates the reduction in automobile trips that TODs might cause, and the implication for reductions in SDCs.

Chapter 5: Plan Changes. How different is the LUTRAQ alternative from existing plans, or plans that local governments in the LUTRAQ study area are likely to adopt when they comply with new state and regional requirements? The more changes that the LUTRAQ alternative requires in existing plans and policy, the harder it will be to implement. This chapter, prepared by 1000 Friends of Oregon, describes the extent to which the LUTRAQ alternative requires plan changes. The chapter is supported by several maps, contained in **Appendix E**, that illustrate the differences between the LUTRAQ alternative, existing plans, and a 50 year land use/transportation plan developed by Metro (the Portland area regional government).

Chapter 2: Design Guidelines

Overview

The discussion of implementation starts by answering what is usually the first question most planners, policy makers, and citizens have about *transit-oriented development* (TOD): What should it look like? While issues like zoning and incentives are ultimately essential to getting TODs built, political and public acceptance of policies to encourage TODs will depend heavily on how attractive and functional those designs appear.

When the LUTRAQ Project began several years ago, transit-oriented development was an emerging idea. The LUTRAQ Project supported some pioneering work on transit-oriented design, much of which was incorporated into a report published by Tri-Met, the transit district for the Portland region, entitled *Planning and Design for Transit* (1993). Appendix A reproduces chapters from that report prepared by Calthorpe Associates. It provides policies and illustrations for all aspects of transit-oriented design, including transit stops, circulation for all modes, commercial and office areas, residential districts, public spaces, parking, and redevelopment.

Appendix B presents recently completed work by Calthorpe Associates that addresses in detail the factors that make a neighborhood friendly to pedestrians. It is a supplement to a previous LUTRAQ report, *The Pedestrian Environment*, and uses neighborhoods classified in that report as examples.

This chapter summarizes Appendices A and B. A summary in text of design guidelines is particularly difficult because the illustrations make the guidelines much clearer. Moreover, reporting the details of the guidelines (e.g., specific setbacks, parking requirements, and street widths for various types of development) would make the summary almost as long as the original. *Readers interested in the details of the guidelines are encouraged to turn to Appendices A and B.*

Principles of transit-supportive development

Transit-supportive development is development that encourages future mobility and livability by supporting more transit use, walking, and bicycling. It attempts to achieve that goal through a combination of land use planning, urban design, and development strategies. The fundamental elements of transit-supportive development are:

1. moderate and high density housing and employment within walking distance of transit;

2. residential and employment uses mixed with shopping opportunities and public facilities;
3. multiple and direct street connections to transit stops and shopping;

4. pedestrian design that does not exclude the auto;

5. a regional network of designated transit corridors with high quality transit service (10 to 20 minute ultimate frequencies, transit stop amenities, etc.);

6. a variety of development types or districts within designated transit corridors corresponding to a defined level of transit service, including:

   - *Mixed Use Centers*, which are established central business districts, redeveloping business districts, and emerging mixed use centers with a scale and variety of uses that make them generally identifiable as regional centers;
   - *Urban Neighborhoods*, which are located around light rail stations and contain higher density residential uses with an active commercial core and some offices;
   - *Urban Corridors*, which are high-density, linear, mixed-use communities occurring along corridors with frequent bus service;
   - *Suburban Neighborhoods*, which are moderate density residential areas with 10 to 20 minute trunk or feeder bus service; and
   - *Suburban Employment Centers*, which are institutional or light industrial campuses served by bus service, linked to a major transit center and/or the LRT system. Typically these uses are difficult to serve by transit due to their low density and poor pedestrian linkages. They are included as a possible pedestrian district with an intent to retrofit them to be more pedestrian/transit oriented.

Planning and design guidelines

The guidelines described here and presented in detail in Appendix A are aimed at local governments. The objective is to encourage these governments to incorporate the guidelines into development regulations such as zoning codes, street standards, and design review procedures.

While application may vary from project to project, many of the planning and design guidelines apply to all types of development districts:

Transit stops. The guidelines discuss:

location of stops: adjacent to commercial core, not separated from building by large parking lots;

pedestrian connections: easy and safe, at grade with signals rather than over- or under-crossings;

transit stop facilities: comfortable for year-round weather conditions; and

park and ride lots: in auto-oriented areas, located and designed to increase pedestrian access; in light rail station areas, located in structures.

Pedestrian, bike and auto circulation. The guidelines also discuss:

street configuration: coherent and inter-connected, with multiple routes;

street hierarchy: pedestrian districts at the edge of arterials, connector streets to commercial core areas, traffic calming, local streets and alleys;

street and intersection dimensions: narrower streets and intersections;

pedestrian connections: bordered by residential fronts, public space and commercial uses;

sidewalks: 5-10 feet wide;

street trees: at least every 30 feet; and

street vistas, bikeways, and *bike parking*.

Core commercial and office areas. The guidelines address:

building configuration: mixed use, minimum 10,000 s.f. of retail within 1/8 mile of transit stop;

building setbacks: 10 feet, maximum;

entries and facades: street orientation, varied and articulated facades; and

vertical mix: floor-area ratio bonuses for more density.

Pedestrian district residential areas. The guidelines discuss:

building and siting setbacks: reduce setbacks;

entries and facades: front porches, bays, and balconies; *garages:* set back from street, visually interesting; and

mix of housing types, and *ancillary units*.

Parks and public uses. The guidelines encourage parks and public spaces (dedication of 5% of site area, focus of community with adjacent public uses like post office and day care).

Parking requirements and configuration. The guidelines discuss:

reduced and shared parking: in denser areas;

on-street parking: encouraged;

configuration and service access: parking should not dominate or interrupt pedestrian movement; and

redevelopment of surface parking.

Development in urbanized areas. The guidelines also discuss integration into surrounding neighborhoods.

In addition to the more universal principles described above, the guidelines also include measures that are designed to vary according to the type of development district. In this latter category, the guidelines address for each district type:

Transit service requirements: type and frequency of service;

Site definition: district size (generally, 1/4 mile from a bus stop; 1/2 mile from an LRT station);

Mix of uses: all districts should be mixed, but larger ones with a regional orientation should have a greater variety of proposed uses;

Densities and intensities: a range of average residential densities per net acre, depending on amount of transit service; and

Street and pedestrian systems: implementation of general requirements for interconnections in different types of districts.

The principles contained in these guidelines are exemplified in Appendix B. The appendix, subtitled *The Pedestrian Neighborhood*, is a sequel to an earlier LUTRAQ report, *The Pedestrian Environment*. This latter report classified 400 neighborhoods in the Portland metropolitan area according to a rough measure of their pedestrian friendliness. Using household survey data, the report identified a correlation between pedestrian design and travel behavior. Appendix B follows this analysis by providing a more in-depth study of the design features of two neighborhoods, representing different degrees of pedestrian friendliness, that were classified in *The Pedestrian Environment*. The conclusions, based on the analysis of the two neighborhoods, are that seven factors contribute to encouraging people to walk in a neighborhood:

- Inter-connected street system
- Local destinations within walking distance
- Pedestrian-friendly design
- Topography suitable for walking
- Density and pedestrian scale
- Street-facing buildings and rear parking
- Transit stops that are accessible by foot

In the two case studies, the neighborhood with more of these characteristics was in a class of neighborhoods that, taken as a whole, had 11.5% of its trips on transit and 7.8% on foot. The other neighborhood, which lacked many of these attributes, was in a class that had only 3.5% of its trips on transit and 1.9% on foot.

Chapter 3: Zoning Regulations

Overview

What changes could be made to traditional zoning ordinances that would facilitate and encourage the kinds of designs described in Chapter 2? While TODs may be beneficial in any location, their potential can be fully realized only in places that offer frequent transit service. Zoning provides a tool for identifying areas where the public interest is best served by TODs (i.e., at places along a primary transit network), and a means for encouraging or requiring detailed planning for pedestrian districts.

The LUTRAQ Project supported some original work on a model zoning ordinance for encouraging transit-oriented development. As with the design guidelines outlined in Chapter 2, the model ordinance work was incorporated into Tri-Met's *Planning and Design for Transit*. A portion of that report, prepared by Blayney Dyett, is reproduced in Appendix C and is summarized in this chapter.

Principles for implementing transit-supportive zoning

The implementation of transit-supportive zoning occurs in two parts. First, a region and its jurisdictions must identify and designate a *Primary Transit Network*, including LRT lines, 10-minute bus corridors, and selected feeder bus lines. Within the areas surrounding this network, overlay zoning districts should be developed to require supplemental standards for transit-supportive development. These overlay zones should modify the land use regulations and standards of the base zoning districts to encourage transit-supportive and pedestrian-friendly development.

Second, *Pedestrian Districts* should be designated at key locations along the transit network. In these districts, more detailed plans would be prepared to supplement existing comprehensive land use plans. These detailed plans would resolve issues relating to density, mix of use, pedestrian and vehicular circulation, infill, and parcelization. The plans might be implemented by yet another overlay zone or by various incentives.

Zoning for a primary transit network

The area around the primary transit network defines a transit corridor. Use limitations and certain development standards should be established through an overlay district in this corridor and should modify the base zoning district regulation. Such an overlay zone begins with a set of purpose statements reflecting the rationale behind the regulations. Within the overlay district, regional land use, transportation, and transit agencies would be notified of development proposals. Any limitations would be balanced by a commitment for enhanced transit service, priority for capital improvements, and lower impact or development fees.

The overlay zone should tie back to land use issues. It might, for example, limit cer-

tain types of general uses. More likely, it would either identify uses not compatible with transit (e.g., auto sales and servicing) or performance standards related to trip generation. Table 3-1 classifies typical land uses according to their degree of transit supportiveness.

Table 3-1: Classification of Land Uses for Transit Corridors

Use Classification	Transit Supportive	Not Transit Supportive	Transit Supportive w/ Good Design
Residential Uses			
Single Family: lots 10,000 sq. ft. or more			X
Single Family: lots less than 10,000 sq. ft.	X		
Multiple-Family Residential	X		
Public and Semi-Public			
Cemeteries, Convalescent Facilities		X	
Clubs and Lodges, Cultural Institutions	X		
Day Care, Emergency Health Care	X		
Government Offices, Hospitals	X		
Park & Recreation Facilities, Schools, Colleges			X
Public Safety Facilities, Residential Care		X	
Commercial Uses			
Banks and Savings & Loans	X		
with Drive-Up Service		X	
Building Materials and Services			X
Commercial Recreation and Entertainment		X	
Eating and Drinking Establishments	X		
Fast Food or Take-Out			X
with Drive-Through Service		X	
Bar and Tavern	X		
Food and Beverage Sales			X
Laboratories, Maintenance and Repair Services			X
Nurseries, Commercial		X	
Offices, Business and Professional			X
Personal Services	X		
Research and Development Services			X
Retail Sales	X		
Volume Discount Retail		X	
Travel Services	X		
Automobile Rentals			X
Automobile Washing, Repair, Sales, Storage		X	
Commercial Parking Facility			X
Automobile Service Stations		X	
Hotels, Bed and Breakfast Inns	X		
Motels		X	
Industrial Uses		X	

Overlay zones should also modify development standards. In this vein, Appendix C provides model regulations that address:

- Minimum floor area ratios
- Minimum residential densities
- Building setbacks
- Improvements between buildings and streets
- Maximum parking ratios
- Parking location
- Parking in-lieu payments
- Curb cuts
- Pedestrian connections

Zoning for pedestrian districts

The transit corridor zoning described in the previous section applies on a regional basis, with local adoption and implementation. It identifies corridors. Within these corridors, however, are specific nodes of development where more detailed planning should occur. Chapter 2 (and Appendix A) describes five generic types of development districts, and provides guidelines for the design of each. Overlay zones for these Pedestrian Districts can be combined with the overlay for transit corridors. Depending on the type of district, different overlay zones should be adopted that reflect expectations about the level of transit service and the type and intensity of use. Table 3-2 gives examples of zoning controls that might apply in different types of districts. To be effective, overlay zones should have supplemental design standards to ensure that streets, pedestrian and bicycle circulation, off-street parking, and bicycle parking are designed to encourage transit-supportive development.

Other implementation tools

To provide a foundation for transit-supportive zoning, comprehensive plans should include land-use policies that provide clear directions on such topics as minimum densities, density bonuses, incompatible uses, and adequate public services. New street and sidewalk standards may be needed. A traffic analysis report may be required in the transit overlay district. Other zoning tools include urban planned unit developments (PUDs), specific area plans, and supplemental development standards.
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Table 3-2: Zoning Controls for Different Types of Development Districts

Type of District	Types of Land Use	Typical Zoning Districts[1]	Types of Overlay Districts[2]	Use Limitations[3]	Special Requirements[4]
Mixed Use Centers	Office/Retail Housing	CC, CR RH, RM	TC, P1 TC, P1	a, b f	I, II, III, V ~
Urban Neighborhoods	Retail/Office Housing Neighhd Retail	NRO RLM, RLH NC	TC, P1 TC, P1 TC, P1	a, b, c, d, f ~ a, b, c, d, f	I, II, III, V II, III I, II, III, V

Table 3-2: Zoning Controls for Different Types of Development Districts

Type of District	Types of Land Use	Typical Zoning Districts[1]	Types of Overlay Districts[2]	Use Limitations[3]	Special Requirements[4]
Urban Corridors	Office/Retail Housing	CR, CO RH, RM	TC, P1 ~	b f	~ I, II, III
Suburban Neighborhoods	Neighhd Retail Housing	NC RL, RLM	TC, P2 TC, P2	a, b, c, d ~	I, II, III, V III
Suburban Employment Ctrs	Office Retail	CI CIP	TC TC	~ b, d, e	III, IV III

1.
- CR Commercial Retail
- CO Commercial Office
- NC Neighborhood Commercial
- NRO Neighborhood Retail & Office
- CC Community Commercial
- RH Residential High Density
- RL Residential Low Density
- RM Residential Medium Density
- RLM Residential Low-Medium Density
- CI Campus Industry
- CIP Campus Industrial Park

2.
- TC Transit Corridor
- P1 Moderate-High Density Pedestrian Zone
- P2 Low-Moderate Density Pedestrian Zone

3.
- a. Ground floor retail, upperstory office or housing
- b. No auto servicing (including tires, batteries & accessories
- c. Surface parking lots subject to limitations and performance criteria
- d. No drive-through facilities
- e. Limits on store sizes to maximize pedestrian orientation
- f. Allow “bonus” space for housing over commercial

4.
- I. Mandatory building line (no deep front setbacks)
- II. No parking between building entry and pedestrian access
- III. Pedestrian amenities and bicycle parking required
- IV. Preferential transit access within the center may be required
- V. Limit new driveway access on transit streets

Chapter 4: Economic Incentives

Overview

Will developers build the types of developments that the design guidelines and zoning allow, encourage, or require? The answer depends, in part, on a number of economic factors. One factor over which local governments have some control is the amount they charge for public facilities and services. This chapter looks at why and how those fees might be reduced for developments that conform to the design guidelines described in Chapter 2.[1]

In Oregon, most local governments impose system development charges (SDCs) to cover at least part of a new development's contribution to the need for and cost of future transportation improvements. These charges are usually based on an estimation of the automobile trips that the new development will generate.

In 1991, the Oregon Land Conservation and Development Commission adopted the Transportation Planning Rule (TPR).[2] The rule takes steps to integrate land use and transportation policy, promote urban growth management, and reduce reliance on the automobile. In 1995, the Oregon Legislative Assembly responded to the TPR by adopting Senate Bill 1156, a portion of which is designed to encourage the creation of transit-oriented developments (TODs), pedestrian districts, and other development "that utilizes pedestrian, bicycle or transit facilities to achieve reductions in vehicle trips."[3] Most important to the focus of this chapter on economic incentives, *the bill requires local governments that have, or are planning to adopt, transportation-related system development charges to establish lower fees for TODs and similar development types*.

This chapter summarizes Appendix D, prepared by Public Financial Management (with contributions from 1000 Friends of Oregon, ECONorthwest, Parsons Brinckerhoff Quade & Douglas), which estimates the reduction in automobile trips that TODs might cause, and the implication for reductions in SDCs.

1. Note that fee reductions are but one of many possible incentives that local governments can offer the private sector to encourage development consistent with public goals. Thus, this chapter is a case study of one such incentive, not a comprehensive description or evaluation of the range of incentives.
2. Oregon Administrative Rule (OAR) 660-12.
3. Oregon Laws, Special Session, 1995, Ch. 3, § 16b.

Assessing the potential benefits of TOD development

In theory, the use of TODs may cut capital costs for infrastructure in at least two ways. First, the higher concentration of people and activity in TOD developments may increase the *efficiency* of infrastructure use. That efficiency may result from economies of scale or economies of concentration in the provision of services. Second, TOD developments may also *decrease usage* of some infrastructure. For example, the pedestrian- and transit-oriented environment of TODs should reduce the number and average length of auto trips from what they would be in a typical subdivision, which in turn should result in fewer transportation system repairs and new construction requirements.

Though TODs may cut required costs for several types of infrastructure, the analysis here examines only those costs associated with transportation. The next section presents an analysis of those potential cost reductions. That analysis must be used cautiously, however. Isolating the unique effects of a particular development pattern (e.g., TOD) on the costs of infrastructure requires controlling for many other factors that contribute to the cost of service. In controlling for these factors, the following issues should be considered:

- *Scale of the TOD.* To understand the major effects of a development pattern on infrastructure cost, one must make an important distinction between an individual subdivision or neighborhood, and a pattern of such neighborhoods at the metropolitan level. In isolation, any single TOD may have little impact on the cost of infrastructure. But a *pattern* of development that clusters much of a metropolitan area's growth on lands adjacent to pre-existing urban areas and urban service connections would probably lead to lower costs of service provision than a pattern in which the individual developments were dispersed randomly throughout the area inside an urban growth boundary. Arguably many of the cost savings (especially those related to non-transportation infrastructure) could be achieved independent of TODs—all that is required is that standard subdivisions be more concentrated and less dispersed. The clustered pattern of development, however, is often associated, and certainly consistent, with TODs.

- *Type and incidence of costs.* Development typically pays on-site costs like local streets and alleys. Impact fees typically apply to the *off-site* highway system. They typically do not cover maintenance.[4]

4. In fact, in some states (e.g., Oregon), state law prohibits the use of SDCs for maintenance costs. *See, e.g.,* ORS 223.299(1)(b).

- *Extent to which current fees cover expected costs of future road improvements.* Ideally, traffic impact fees (a type of SDC) should be designed to recover revenues from the households and firms that are causing the need for new transportation services and facilities, and should be sufficient to pay for the full cost attributable to the new demand. Even when fees attempt to achieve this ideal, however, some problems remain. First, most analysts who have studied highway transportation believe that automobile travel is underpriced, certainly during peak periods. Second, even if one ignores the indirect social costs and limits the analysis to direct construction costs, the anecdotal evidence is that SDCs (at least in Oregon) do not cover those costs. Third, the methods for calculating traffic impact fees are not as well developed as those used by many electric, sewer, and water utilities: the fees may not consider many aspects of a full cost-of-service analysis or distinctions between average and marginal costs. Fourth, it is easy for an analysis to double count costs or benefits. For example, much of the estimated trip reduction for a TOD may be a result of its higher proportion of multi-family houses, which have lower trip generation numbers that already lead to reduced fees for development.

- *System issues.* Most of the hypothesized traffic advantages of TODs cannot materialize without improvements to alternative modes. If those improvements are not made (for example, because of reductions in federal funding of regional transit agencies), the TODs will not deliver the forecasted reductions in auto trips.

Estimating reductions in vehicle use at TODs

Several conditions can reduce vehicle trip generation rates in areas served by public transportation. What level of reduction is justified by the evidence in Oregon linking land use and travel behavior? What is the rational basis for reducing transportation impact fees in transit-oriented developments?

The number of trips per residential unit is a function of the mix of product types and their design. Since the type of residential product (for simplification, assume two types: single-family and multi-family (apartment) dwelling units) attracts households with different social and economic characteristics, each generates a different number of trips. For example, households in single-family units typically have higher incomes and larger families, both of which are known to account for a larger number of vehicle trips per unit.

The trip estimates published by the Institute of Transportation Engineers (ITE) take these factors into consideration. The ITE trip tables do not, however, account for the effects of urban design and land use mix on travel behavior. Data from the LUTRAQ Project allow a more detailed accounting and adjustments to the ITE trip generation rates. The analysis in Appendix D considers:

- *The mix of units there will be in the urbanized portion of Washington County in the future without transit-oriented developments.* LUTRAQ analysis: 63%/37% split between single-family/multi-family in 2010.
- *The average trip generation rate per unit this mix implies*. 10.0 average weekday trips for SF dwellings; 6.1 for apartments; 8.6 average.
- *How the number of vehicle trips per unit in transit-oriented developments differ from this average.* LUTRAQ analysis: a 13% reduction in vehicle trips per housing unit, roughly half of which is attributable to transit-supportive design (and public transportation), and half to other financial inducements to choose transit.
- *The benefits of financial incentives to use public transportation.* Anecdotal evidence indicates that financial incentives offered in conjunction with the sale or rental of new housing can have significant effects on encouraging households to locate near transit.
- *The location <u>within</u> a transit-oriented development site.* Evidence supports scaling the vehicle-trip reduction factor (and, thus, incentives) as a function of distance from transit stops.
- *Whether reductions in transportation impact fees in transit-oriented sites should be offset by increases elsewhere.* Decisions should be based on expected changes in a jurisdiction's expected capital improvement program for transportation.

Addressing each of these questions, the analysis in Appendix D comes to the following conclusion: in the western suburbs of the Portland metropolitan area, TODs can reduce average household vehicle trips by roughly 10%, 7% of which is attributable to the transit and pedestrian aspects of TOD developments, and 3% of which is attributable to the provision of a transit pass to the residents of units in these developments.

Case study: application to Washington County traffic impact fee

Like all local governments, Washington County and the cities within the county require revenue sources to fund improvements to transportation systems in their jurisdictions. These improvements fall into three categories: (1) maintenance, (2) replacement, and (3) expansion.

The county-wide *traffic impact fee* (TIF) is a fee placed on new developments in Washington County to support the costs of selected transportation infrastructure improvements. It funds a portion of the additional transportation capacity required to accommodate growth and development. It is assessed in proportion to the projected impact of a new development on the transportation system.

The county-wide TIF is calculated for residential, commercial, office, and industrial land uses based on three variables: (1) the number of weekday average vehicle trips per unit, (2) the number of units being developed, and (3) the cost per trip for the specific land use category. The formula used to calculate the TIF for each new development is illustrated below:

Weekday average trips per unit x number of units x fee (cost) per trip = TIF

The weekday average trips component of the formula represents an average of the number of trips per unit for each land use category on a typical weekday. These values are obtained from ITE surveys and are then set by ordinance. Table 4-1 below illustrates several examples of *weekday trip rates* for some typical land use categories as currently set by the county.

Table 4-1: Weekday Average Trips for Some Land Use Categories

Land Use Category	Unit Basis	Average Trip Rate
Residential		
Single Family Home	Number of Houses	10.00
Apartment Housing	Number of Apartments	6.10
Condominiums	Number of Condos	5.86
Commercial		
Hotel	Number of Rooms	8.70
Drive-In Restaurant	Thousand Gross Sq. Ft.	100.00[1]
Discount Store	Thousand Gross Leasable Sq. Ft.	70.21
Service Station	Number of Pumps	100.00[1]
Office		
Medical Clinic	Thousand Gross Sq. Ft.	23.79
General Office	Thousand Gross Sq. Ft.	12.40 - 16.31
Insurance Office	Thousand Gross Sq. Ft.	11.45

1. Trip rate capped at 100 average weekday vehicle trips.

Units can be measured in square feet, number of dwelling units, number of rooms, or number of employees. By multiplying the total number of units by the average weekday vehicle trips based on those units, total projected average weekday trips resulting from a development can be determined. The *fee per trip* is the actual development fee charged to a land use category per trip. The fee per trip for a residence in Washington County in 1995 is $159.

Thus, under current policies (i.e., without any reduction in fee for TOD design) a new single-family unit would be charged a fee of $1,590 ($159/trip x 10.0 average weekday vehicle trips/ SF unit). For a new 60-unit apartment complex, each apartment is expected to generate 6.10 average weekday vehicle trips; there are 60 units in the development; and the current residential fee is $159.00 per trip. The result is a $58,194 charge for the project.

Now consider the same 60-unit develop but assume that (1) the new development is not only located in a designated TOD area but that the developer also provides tenants with free transit passes, and (2) the county elects to reduce fees in proportion to the reduction in vehicle trips attributable to those factors as described above. Each apartment is then estimated to generate only 90% of the 6.10 average weekday vehicle trips of an average apartment unit located in a more suburban area. The other two variables (number of units and trip rate charge) in the TIF formula would not change. Thus, the total TIF would be reduced by 10% to $52,375.

A reduction in the Washington County TIF not only provides an incentive for developers to build in TODs but also allows the county and cities within the county to more equitably assess development charges to developers based on the real impact of their developments on local roads and bridges.

This analysis should be considered a first approximation of how a TIF might be adjusted to account for TOD-related reductions in motorized vehicle trips. Local jurisdictions should look carefully at the facts and findings presented here and compare them to local conditions and data.

Chapter 5: Plan Changes

Overview

How different are the land uses proposed in the LUTRAQ alternative from those now adopted in local comprehensive plans? More to the point, how different are the land uses proposed in the LUTRAQ alternative from those that are likely to exist when local governments revise their comprehensive plans to comply with new regional and state requirements? The analysis in this chapter, prepared by 1000 Friends of Oregon, provides some answers. Although the chapter contains maps indicating the general results of the research, more detailed maps are included in **Appendix E**.

The analysis presents two comparisons. The first compares the LUTRAQ plan (Figure E-1) with the "Land Use Plan Map" from Metro's Regional Land Information System (RLIS). The Land Use Plan Map (Figure E-2) contains generalized versions of the adopted comprehensive plan maps for all the jurisdictions in the study area. As part of the land use policies and laws developed and adopted by local governments, these comprehensive plan maps govern the types of land uses currently allowed within the study area.

There are, however, a number of recently adopted state and regional laws and policies that, over the next several years, will require major changes to the adopted comprehensive plan maps. The most prominent of these changes is reflected in the second analysis presented here: a comparison of the LUTRAQ plan with the Metro "2040 Growth Concept Map." The Growth Concept Map (Figure E-3) is an interim product in a series of planning exercises that will form the basis for new comprehensive land use plans for the Portland region. Metro will use the Growth Concept Map to develop a more detailed "Regional Framework Plan." Local governments will be required to amend their comprehensive plans to be consistent with the Regional Framework Plan when it is completed.

Another land use law that will change local comprehensive plan maps is the Transportation Planning Rule (TPR), adopted by the Oregon Land Conservation and Development Commission in 1991.[1] Among other provisions, the TPR requires local governments to amend comprehensive plans for lands along all existing and planned transit routes to allow transit-oriented development (TOD) and to designate "types and densities of land uses adequate to support transit."[2] These changes are required to be made by May 1997. To reflect these requirements, both comparisons in this chapter include Tri-Met's planned transit system for the study area.

Finally, station-area planning for the Westside Light Rail Line (now under construction) has resulted in a number of planning efforts that will substantially effect local

1. The text of the Transportation Planning Rule can be found at Oregon Administrative Rule (OAR) 660-12.
2. OAR 660-12-045(4)(g), (5)(a).

comprehensive plans. Although permanent station-area plans have yet to be adopted, all of the jurisdictions involved have adopted interim station-area zoning provisions to ensure transit supportive development.

Methods

The analyses presented in this chapter compared the LUTRAQ alternative, first with the existing land use plans, then with the Region 2040 Growth Concept. In both cases, full implementation of the TPR was assumed. Also, both comparisons incorporated the station planning areas for Westside Light Rail.

To complete the analyses, maps were prepared that overlaid the polygons (i.e., the colored land use designations shown in Figure E-1) from the LUTRAQ map on each of the two base maps (Planned Land Use and 2040 Growth Concept). Each map also contained the station planning areas for Westside Light Rail and a draft version of the Tri-Met Primary Transit Network. Then, for each LUTRAQ polygon, the planning designation under LUTRAQ was compared to the designation on the base map. The correlations listed in Table 5-1 were used to determine the consistency of the LUTRAQ designation with that of the base map.

Table 5-1: Similar Land Use Designations

LUTRAQ Alternative	Planned Land Use Map	2040 Growth Concept
Downtown Mixed Use	Central Commercial Office Commercial General Commercial	Regional Centers Town Centers
Urban TOD	Multi-Family Single-Family 5-7000 sq. ft. lots	Town Centers LRT Station Areas Corridors Inner Neighborhoods
Neighborhood TOD	Multi-Family 8-25 units/acre Single-Family	Corridors Inner Neighborhoods
Secondary Residential	Single-Family	Inner/Outer Neighborhoods
Large Lot Residential	Single-Family	Inner/Outer Neighborhoods
Employment	Industrial	Industrial
Commercial Core	Neighborhood Commercial	Town Centers Corridors

In addition to determining consistency between LUTRAQ designations and the designations of the base maps, attempts were made to incorporate Westside Light Rail station area planning efforts and the mandates of the TPR. To this end, LUTRAQ polygons containing transit-oriented developments (i.e., Downtown Mixed Use, Urban TOD, Neighborhood TOD) located adjacent to a portion of the Primary Transit Network or within a station area planning district were deemed to be consistent

with the base map, irrespective of base map designation.

Conclusion

The analyses show that the differences between the LUTRAQ map and the adopted comprehensive plan maps of the local jurisdictions (as depicted in the Planned Land Use Map) are relatively small when the effects of Westside LRT station planning and TPR implementation are factored in (Figures 5-1, E-4). Out of a total of 16,965 acres in the LUTRAQ polygons, 13,197 (78%) were deemed to be consistent, while only 3,768 (22%) were deemed to be inconsistent.

The differences between LUTRAQ and the 2040 Growth Concept are even fewer (Figures 5-2, E- 5). Considering the effects of the TPR and Westside LRT station planning, only minor inconsistencies between LUTRAQ and 2040 were detected. Starting, again, with a base of 16,965 acres in LUTRAQ polygons, only 1,452 acres (9%) in the LUTRAQ polygons were determined to be inconsistent. The balance of the acreage (15,513 (91%)) was deemed to be consistent with 2040. Given this low degree of variation, at this generalized level of planning it is accurate to say that the LUTRAQ Alternative and the 2040 Growth Concept are very similar and in many ways are identical.