Metro Corridors Project: Analysis of Land Use and Transportation Issues

PREPARED FOR

Metro and the Transportation Growth Management Program of the Oregon Department of Transportation and the Department of Land Conservation and Development

August 2004

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Abstract

This report, when accompanied by a final recommendation from the Technical Advisory Committee's for a case study Corridor, completes Phase I of the Metro Corridors Study. Phase I of this project investigated land use and transportation issues in Corridors and selected a single Corridor for a detailed case study. Phase II of this project applies the findings of the Phase I analysis to a specific Corridor and its related Centers.

This report provides information about Corridor planning and nine potential case study Corridors that the Technical Advisory Committee used to support its choice of a final case study Corridor. Chapter 2 describes a policy framework and associated definitions, typology, and market theory. Chapters 3 and 4 describe relevant literature and North American case studies to define land use and transportation issues in corridors, and how other communities have addressed them. Chapter 5 provides more detail about the characteristics of the nine candidate Corridors. Chapter 6 recommends a case study Corridor and identifies issues to address in Phase II. These chapters are partly based on the technical appendices: a literature review (Appendix A), land use and transportation case studies (Appendices B and C), evaluation of sample Corridors (Appendix D), and a market analysis (Appendix E).

The consultant team recommends the Beaverton Hillsdale Highway Corridor as the case study Corridor for Phase II. This Corridor has a variety of land use and transportation characteristics relevant to other Metro Corridors, and the City of Beaverton is actively soliciting the project. Beaverton's recent project on it Center will provide additional data and allow us to link our Corridor and Center analyses. The proximity of Canyon Road allows the consulting team to include an analysis of a specialty retail zone in the case study.

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Chapter 1

Introduction

PURPOSE OF THIS PROJECT AND REPORT

An important element to the success of the 2040 Growth Concept includes the coordination of land use decisions and transportation system elements, the focusing of mixes of use into key locations throughout the region and the promotion of transit, pedestrian, bicycle and auto accessibility. The 2040 Designated Corridors are key to successful achievement of the 2040 Growth Concept.

Most of Metro's analytical work and policy has focused on the various classifications of *Centers* identified in the Growth Concept. This report is part of a project that focuses on *Corridors.*[1] It is the required product for Phase 1 of the scope of work (referred to in the scope of work as Technical Memorandum 1.2).

The expectation for the entire project is that it will result in a better understanding of the relationship between Corridors and Centers designated on the 2040 Growth Concept Map, and recommendations regarding actions that could improve the performance of both with respect to the objectives of the Growth Concept. Phase I of this project investigates land use and transportation issues in Corridors, and selects a single Corridor as a case study for further evaluation. Phase II of this project applies the findings of Phase I analysis to a specific Corridor and its related Centers. This report, coupled with the recommendation of the Technical Advisory Committee (TAC) of a case study corridor, completes Phase I of this project.

POLICY CONTEXT FOR THE PROJECT

A key principle of the 2040 Growth Concept is that land use and transportation can be developed together in ways that improve the performance of each. Compact, mixed-use development increases the opportunities for transit, walking and cycling. It increases opportunities for a single trip to accomplish many tasks, often by driving to the area and walking from destination to destination. The pattern of development desired increases opportunities for local trips to remain on local roads, keeping the highway capacity available for through movement of traffic.

Improving transportation efficiency through these means and others (e.g., access management) delays the need to expand the state highways. In addition, accommodating growth along Corridors and in Centers reduce the

[1] The Regional Street designation is the street design classification one typically associated with the Corridor land use type. According to the Regional Transportation Plan (RTP), regional streets are designed to carry significant vehicle traffic while also providing for public transportation, bicycle, and pedestrian travel. (A full description of the Metro street design classifications can be found in Section 1.3.5 of the RTP.)

need to expand the Urban Growth Boundary and provide new transportation infrastructure on the edge of the region.

METHODS

The research plan for Phase I consisted of the following tasks:

- **Conduct a literature review.** ECO conducted a general literature review, as well as reviewing local TGM project reports.

- **Review of zoning code and comprehensive plan regulations and objectives for Corridors.** Angelo Eaton reviewed the zoning code and comprehensive plan regulations in three Metro Corridors (Beaverton-Hillsdale Highway in the City of Beaverton, Powell Boulevard in the City of Gresham, and McLoughlin Boulevard in Clackamas County) to describe what the envisioned, planned, and permitted land use and development types are for corridors.

- **Conduct a preliminary market analysis.** Johnson Gardner used vacancy, rents, construction year, parking, and other market data from Costar and land size, values, and improvement values from Portlandmaps.com to evaluate the retail/commercial uses in the candidate corridors.

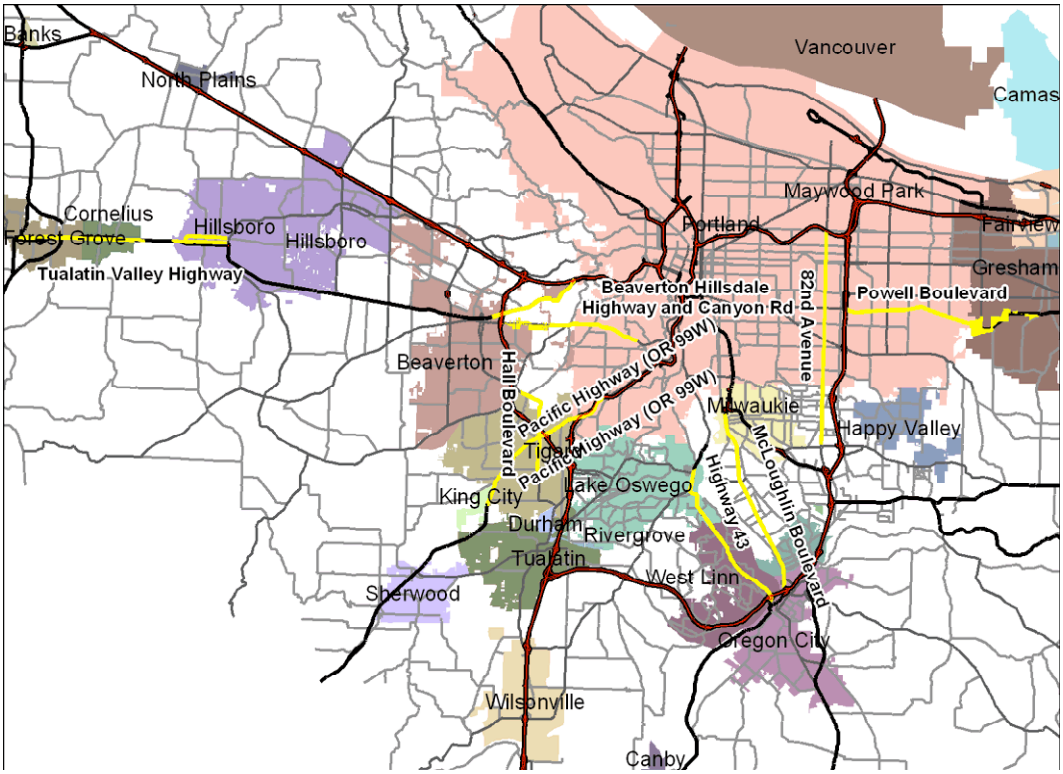
- **Review land use and transportation case studies in North America.** Freedman Tung and Bottemley prepared three land use case studies: Palm Canyon Drive in Cathedral City, California; Whittier Boulevard in Whittier, California; and Columbia Pike in Arlington, Virginia. Kittelson and Associates prepared two transportation case studies: Cathedral City, California, and Rosslyn-Ballson Corridor in Arlington, Virginia.

- **Evaluate appropriate land uses in Corridors.** Drawing from the market analysis, North American case studies, and contractor experience, the project team evaluated appropriate land uses in Corridors.

- **Evaluate transportation management techniques in Corridors.** Transportation management techniques evaluated included development management in nodes, Master Planning, limited curb cuts per parcel, regulated curb cuts per parcel, allocation of trips, elimination of curb cuts during redevelopment, connecting parcels, and improved street connectivity requirements.

- **Select a case-study corridor for Phase II.** The consultant team proposed criteria for a selecting a Corridor, reviewed them with the TAC, and toured several of the candidate Corridors, toward the end of making the recommendation of a single Corridor. The candidate corridors are shown in Figure 1-1.

Figure 1-1. Map of Corridors, Portland Metropolitan Area, 2004



Source: May 2004 Metro RLIS Lite, Corridor Boundaries from Metro (Carol Hall) June 2004, ECONorthwest GIS manipulation.

The candidate sites are:

- Beaverton Hillsdale Highway: Beaverton Regional Center through Raleigh Hills Town Center to Hillsdale Town Center;
- Canyon Road: Beaverton Regional Center to Sunset Highway
- Hall Boulevard: Washington Square Regional Center to Tigard Town Center;
- Highway 43: Lake Oswego Town Center to West Linn Town Center;
- McLoughlin Boulevard: Milwaukie Town Center to Oregon City Regional Center;
- Pacific Highway (Or 99W): West Portland Town Center to Tigard Town Center to King City Town Center
- Powell Boulevard: I-205 to Gresham Regional Center;
- Tualatin Valley Highway: Hillsboro Regional Center to Cornelius Main Street to Forest Grove Town Center; and
- 82nd Avenue: Clackamas Regional Center, Lents Town Center, and Station Communities.

ORGANIZATION OF THIS REPORT

The rest of this report is organized as follows:

- **Chapter 2: Framework.** This chapter describes the Metro and professional literature definitions of Centers and Corridors. It then discusses a typology for describing existing conditions in the Corridors.

- **Chapter 3: Land Use and Development.** Drawing from the land use case studies, the market analysis, and the literature review, this chapter describes general land uses and development in Corridors.

- **Chapter 4: Transportation.** This chapter draws from the transportation case studies, transportation analysis, and the literature review to describe transportation in Corridors.

- **Chapter 5: Application to Metro Corridors.** This chapter provides a description of each of the candidate Corridors.

- **Chapter 6: Conclusions and Recommendations.** This chapter includes the criteria for determining a case study and then evaluates the Corridors based on the criteria. Recommended case study.

- **Appendix A: Literature Review**

- **Appendix B: Land Use Case Studies**

- **Appendix C: Transportation Case Studies**

- **Appendix D: Evaluation of Sample Corridor Policies**

- **Appendix E: Overview of Market Conditions in the Corridors**

Framework

This chapter provides a framework for thinking about the characteristics of Corridors. It has three parts:

- Definition of Centers and Corridors, as described by Metro and the professional literature.
- Typology for describing existing conditions in the Corridors. This typology will be revised in Phase II of this project (as part of the work on the case study).
- Market forces that are conducive to change, and the market forces that make redevelopment unattractive to property owners.

DEFINITIONS

Corridors and Centers are terms that are used throughout North America, but they are defined differently in different places.

PORTLAND METRO DEFINITIONS

In the Portland area, Metro has defined Corridors and Centers as part of the 2040 Growth Concept, as described in the Regional Framework Plan.

CORRIDORS

Metro has designated over 400 miles of arterial streets within the region as Corridors. The Regional Framework Plan describes Corridors, stating,

"They provide a place for densities that are somewhat higher than today and feature a high-quality pedestrian environment and convenient access to transit. Typical new developments would include rowhouses, duplexes and one- to three-story office and retail buildings, and average about 25 persons per acre."

Metro's Urban Growth Management Functional Plan reiterates that recommendation for population and employment density of 25 persons per acre in Corridors.

The Regional Framework Plan also states:

"Transportation improvements in corridors will focus on nodes of activity – often at major street intersections – where transit and pedestrian improvements are especially important. Corridors can include auto-oriented land uses between nodes of activity, but such uses are carefully planned to preserve the pedestrian orientation and scale of the overall corridor design."

The target for non-single-occupancy-vehicle (SOV) trips[1] within Corridors and Centers is 45-55% of all trips—slightly higher than the 40-45% non-SOV share for neighborhoods, industrial areas, and employment areas, but significantly lower than the 60-70% target for the Central City.[2]

The Scope of Work for this project adds further dimensions to the definition of Corridors, describing them (emphasis added) as:

> *"a **continuous, narrow band** of higher intensity, **mixed-use** development along an arterial road **or a series of smaller centers** at major intersections or other locations along the arterial road. Generally, a corridor **is well connected to adjacent neighborhoods** and is served by good quality transit."*

The Scope of Work[3] also points out that Corridors are usually "regional streets," meaning they carry significant vehicle traffic plus public transit, bicycle, and pedestrian travel. They are typically planned to have four lanes of traffic plus bike lanes and sidewalks.

In summary, Metro defines Corridors as having the following characteristics:

- Relatively high density (25 persons [combined population and employment] per acre)
- Mixed-use development
- Continuous intensity or smaller centers/nodes (often at major intersection) with auto-oriented activities sometimes between the nodes
- Arterial street with four travel lanes and significant traffic flows
- High-quality bicycle and pedestrian environment
- Convenient access to good quality transit

Many of these characteristics are planned or envisioned for Corridors but do not reflect the current state of Corridors in the Metro region. Densities are not currently 25 persons per acre, not all provide a high-quality bicycle and pedestrian environment, the non-SOV shares are often not 45-55%, and the roadway does not always consist of four travel lanes plus bike lanes and sidewalks.

CENTERS

Metro describes Centers as "compact, mixed-use neighborhoods of high-density housing, employment and retail that are pedestrian-oriented and well

[1] I.e., shared ride, bike, walk, and transit trips.

[2] From Table 2.1 in Regional Framework Plan, Dec. 1997.

[3] While the Scope of Work is not adopted Metro policy (such as the Regional Framework Plan or the Transportation System Plan), however, it provides guidance on policy issues that this project will address.

served by public transportation and roads. Centers are defined as the central city, regional centers, town centers, station communities and main streets."[4]

Metro has designated one central city (the Portland CBD), seven regional centers (the downtown areas of Hillsboro, Beaverton, Oregon City and Gresham, as well as the Clackamas Town Center, Washington Square and Gateway shopping areas), and 30 town centers.

Regional Centers complement the Central City and serve large markets outside Portland. They are the most accessible areas in the region by auto and high-quality transit, highways and pedestrian-oriented streets.[5]

Town Centers, station communities and main streets are the smaller components of the 2040 Growth Concept. These are significant areas of urban activity connected to the regional centers by transit and key arterial streets. They provide local shopping and employment opportunities.[6]

In this project, the Centers being considering in relation to Corridors are Regional Centers and Town Centers[7]. The differences between the two types of Centers are worth highlighting:

- Regional Centers are generally served by existing or planned light rail service with excellent access to the regional highway transportation system, providing for the regional market, while Town Centers serve residents within a two to three mile radius.[8]

- Densities in Regional Centers are proposed in the Urban Growth Management Functional Plan to be 60 persons per acre, while densities in Town Centers are recommended as 40 persons per acre. (These are higher than the 1990 densities of 24 persons per acre in Regional Centers and 23 persons per acre in Town Centers, according to the Regional Framework Plan).

Metro proposes the following objectives for all Centers[9]:

- Promote more intensive mixed-use development

- Promote greater efficiency in the use of land

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[4] http://www.metro-region.org/article.cfm?articleID=6547, viewed 2 June 2004.

[5] ibid.

[6] ibid.

[7] One of the Study Corridors we are considering for a Phase II case study runs through the Cornelius Main Street. According to the Metro Regional Plan, Main Streets typically are neighborhood serving and may develop a specialty (such as antiques).

[8] From the project Scope of Work, p. 33.

[9] http://www.metro-region.org/article.cfm?articleID=6547, viewed 2 June 2004.

- Provide infrastructure to support more intensive development
- Provide roads for effective local and regional connections that provide access to, and circulation within, the center for all modes of travel, including freight
- Promote shared parking and driveways between developments
- Provide a pleasant, healthy, safe and convenient bike and pedestrian environment
- Promote walking, bicycling and public transit use
- Provide a distinct identification for each center through signs, street design and marketing, etc.
- Provide public spaces, such as town squares
- Incorporate "green" practices in developing buildings and infrastructure, particularly for stormwater runoff
- Recognize the natural environment (streams, wetlands) as a desired amenity
- Promote public/private partnerships to achieve center goals.

DIFFERENCE BETWEEN CORRIDORS AND CENTERS

Both Corridors and Centers are envisioned to be mixed-use, higher-density areas well-served by transit. So why have some places been designated as Corridors and others as Centers?

The primary difference is that Centers are focused at major intersections and include activity on a cluster of parallel and perpendicular streets, while Corridors usually connect Centers and are linear in nature. Corridors may also have nodes of activity at major intersections, but these nodes are generally smaller and more neighborhood-serving than Town Centers or Regional Centers. Between the nodes and official Centers, Corridors tend to be lower-density and more auto-dominated than Centers.

In many cases, these distinctions do not reflect existing conditions: some Centers are as low-density as portions of Corridors that are not in Centers, and some sections of Corridors contain large retail uses that serve a regional market. The economic relationship between Corridors and Centers is discussed in more detail in Chapter 3, Land Use.

OTHER NORTH AMERICAN DEFINITIONS

In urban planning literature and in practice in other North American communities, Centers and Corridors have similar definitions to those adopted in the Portland region. Corridors are usually thought of as linear bands of

reasonably high-density development that reach higher densities when they reach Centers, which tend to be a cluster of parallel and perpendicular streets with economic activity that has a citywide or regional market. In some communities, though, corridors do not necessarily have any denser land use than surrounding streets—they are simply arterials with high traffic volumes.[10]

Though the exact definitions may be a little fuzzy, most planners around the country agree that centers and corridors are different, if sometimes overlapping, elements of urban structure. Centers are meant to be places that provide a setting to accommodate the phenomenon of community. A successful center will certainly be thought of as the "heart" of the neighborhood, the city, or the region. As such they contain or are envisioned as containing a multiplicity of reasons for people to be there–that is, a mixture of uses. To function as the heart of cities or neighborhoods, centers are typically not only the most mixed use areas, but also the most intensively developed–again, in order to provide that multiplicity of reasons to come, as well as a sufficiently large captive market to support a concentration of activity-generating uses. Since Centers are by definition the most frequented places in our settlements, they typically have the greatest concentration and range of public spaces, from pedestrian streets to squares, greens, promenades, esplanades and plazas. In the portions of regions developed in the age of freeways and shopping malls (as opposed to older areas that have centrally located historic downtown and neighborhood cores), Centers are necessarily located at major intersections and include activity on a cluster of parallel and perpendicular streets.

In contrast, the role of corridors in a healthy metropolitan area has been much less well defined in North American planning practice, and therefore much more difficult for planners and community members to visualize in an ultimately desirable form. Nevertheless, it can be stated with certainty that corridors, along with centers, districts, and neighborhoods are one of the primary organizing elements of cities and metropolitan regions. In a healthy metro area, corridors are different than centers, districts, and neighborhoods in that they are *connectors* of the primary pieces of our cities, as well as connectors of cities themselves. Corridors contain a region's primary transportation infrastructure, from lanes for motorized vehicles to transit rights-of-way, and therefore must accommodate efficient movement of such vehicles. Corridors also serve as primary organizing features by providing the most common form of *edge* to neighborhoods and districts. Corridors also provide such neighborhoods and districts with the most viable locations for access to services and transit, in that corridors are "seams" between neighborhoods and therefore can serve multiple neighborhoods in ways that internal neighborhood streets cannot.

[10] See Appendix A, Literature Review, for more information on the relationship between corridors and centers in the literature, and Appendix C, North American Case Studies, for more information about specific corridor revitalization projects.

So the most fundamental difference between corridors and centers is that centers are always the primary destinations in our cities, whereas corridors connect such primary destinations. In many cases, corridors also contain, lead to, or form a part of those primary destinations.

The literature lacks agreed upon *types* of corridors because so little work has been done on creating such a typology. The next section addresses this issue.

CORRIDOR TYPES

REASONS FOR CLASSIFYING CORRIDORS BY TYPE

The main reason for a creating a typology for Corridors is **to provide a framework for different recommendations for different Corridor types**. The land use and transportation recommendations arising from this project will almost certainly not be "one-size-fits-all"; the recommendations will differ depending on characteristics of the Corridor in question. Therefore Corridors should be categorized in a way that reflects the dimensions which make a recommendation for one Corridor different from a recommendation for another Corridor.

There are a few related reasons why a Corridor typology is helpful:

- **Informing the choice of non-Oregon case studies for Phase I**. If the project team chose case studies that represent several different Corridor types, rather than very similar Corridors, there would probably be more lessons learned. These lessons can then be applied to whatever Portland-area case study is chosen for analysis in Phase II.

- **Helping to choose the Portland-area case study**. The scope of work lists various criteria for choosing a Phase II case study. Most of these (such as "willingness of local jurisdictions to participate" or "the potential for UBA designation along the Corridor") are not suitable for a Corridor typology, in some cases because they are not primary characteristics of the Corridors themselves, and in some cases because the answers to those questions would not have been obtained until further research was done later in the study. Still, a typology can help by showing how many of the eight potential case study Corridors (or their constituent segments) fall into each category. To maximize replicability of findings, the project team may want to recommend a Corridor that is of the same type as several other Corridors, rather than choosing an unusual, "outlier" Corridor.

- **Providing a general framework for future use by Metro and the project team**. The category in which a Corridor is placed will reflect important dimensions relating to transportation and land use, so this typology should be useful at later stages in this project and beyond this project. For example, if we create a typology of Corridors or Corridor segments that is composed of dimensions for which Metro

has standardized data, then we will be able, in Phase II, to prepare some summary information about the amount and location of different corridor types in the Metro area.

STATE OF THE PRACTICE REGARDING CORRIDOR TYPES

The North American Case Studies (completed by Freedman Tung and Bottomley) emphasize that during the last 50 years, highways have moved into cities, speeding traffic and discouraging pedestrian oriented land uses. Transportation engineers designed the corridors to move large numbers of vehicles long distances. For example, many corridors have 800-foot minimum intersection spacing to minimize traffic interruptions. While this transportation design helps move traffic, it creates superblocks that discourage pedestrian activity.

The official classification of roadway types into *arterial, collector,* and *local street*, is entirely traffic-oriented. This project will develop a classification system that reflects the necessarily mutually supportive relationship between street type and development type, that is, between the configuration of the thoroughfare and the form of contiguous development.

The current traffic-centric classification terminology, exacerbated by the typical separation between planning and public works departments in cities and counties, is probably a root cause of the limitations in thinking and language about problems and solutions in corridors. The official classification is too simplistic to accommodate the wide variety of street and corridor types that should exist in a healthy urban structure. A better classification system would provide a wider vocabulary of roadway types that speak to the relationship between a street's role in the circulation network as well as to the development type that it serves. A beginning for this improved system might include classifications that relate to the whole Corridor portion (and perhaps its sidewalks and primary furniture) rather than just the vehicular thoroughfare, like: Freeway/highway; Boulevard; Parkway; Avenue; Main Street; Neighborhood street; Roadway; Lane; Path.11

CONSIDERATIONS FOR DEVELOPING A TYPOLOGY

GENERAL ISSUES

We start an exploration of corridors types with transportation and land use dimensions, since this is a study about transportation and land use. But this still leaves dozens of sub-dimensions that in combination could yield hundreds, if not thousands, of typologies. Here are some assumptions we made to solve the problem by reducing the dimensions:

- Choose dimensions that capture the most salient issues relating to Corridors. For example, while the roughness of the road surface is a

[11] From Appendix C: North American Case Studies, Freedman Tung & Bottomly, 2004.

transportation characteristic, it is not likely to be one that affects the functioning of Corridors in a way that Metro cares about.

- Choose dimensions on which the Corridors actually vary. As an example, it would not be meaningful to choose "paved vs. unpaved roads" when all Corridors are paved. Knowing something about the Corridors, therefore, is helpful in choosing the dimensions on which to form a typology.

- Aim at definitions that work for corridor types that exist in the Portland area and are relevant to this project. In other words, we are not necessarily trying to define a typology that could be used in general by metropolitan areas around the country.

DIMENSIONS THAT DEFINE CORRIDOR TYPES

Following is a list of possible dimensions that the project team initially considered as a basis for a typology:

Transportation characteristics:

- Road width
- Number of travel lanes
- Traffic volumes
- Average travel speed
- Congestion levels (V/C ratios or LOS-based)
- Intersection spacing
- Access (limited access vs. 1 curb cut per activity)
- Distance from Centers

Land use characteristics:

- Urban design (for commercial areas, "Main Street"-type frontage vs. large setbacks with in-front parking)
- Type of activity (primarily residential vs. primarily commercial)
- Density (based on population/employment density or floor-to-area ratio)
- Land values per square foot
- Improvement-to-land value ratios
- Average age of structures

The eight transportation characteristics and the six land use characteristics above would have led to thousands of potential corridor types. The project team wanted a maximum of eight typologies. Prior to visiting the candidate corridors, we reduced the dimensions to create the preliminary typology shown in Table 2-1, which combines four land use categories with two transportation categories.

Table 2-1. Preliminary Corridor typologies

	Higher traffic volumes (30K-50K ADT)	**Lower traffic volumes** (10K-30K ADT)
Higher-density retail/commercial: "intensification zones" with high levels of neighborhood or community-serving activity, often at major intersections, and often with shared parking and minimal setbacks		
Lower-density retail/ commercial: small-scale "strips" or larger "power centers", malls, or shopping centers; with large setbacks, automobile orientation, and often without shared parking		
Residential: Any density, but not including mixed use		
Specialty segments: Dominated by large non-retail employers and institutions (manufacturing plants, hospitals, schools, government offices), parks, and open space, etc.		

Source: ECONorthwest, developed for this project.

The categories forming this typology are composed of a mixture of quantitative and qualitative dimensions. The transportation categories are based on quantitative measures of traffic volumes. The land use categories are based on quantitative measures like population/employment density or FAR, as well as qualitative measures like urban design and land use activity.

Many of these categories could be subdivided. For example, residential could be divided into higher density (townhouses, apartments, etc.) vs. lower density (single-family detached homes). Both higher- and lower-density retail/commercial could be subdivided according to its economic health ("blighted" or "stagnant" vs. "thriving") or according to its economic significance (neighborhood-serving vs. city-serving vs. regional-serving).

SEGMENTS VERSUS WHOLE CORRIDORS

Most Corridors change along its length with regard to any dimensions upon which a typology is based. There are two ways of dealing with this:

- Segmenting a Corridor (into, say, half-mile segments; or based on visual inspection for uniform characteristics) and categorizing those segments based on their predominant or average characteristics; or

- Categorizing an entire Corridor based on its average or predominant characteristics.

The first approach (segmenting) probably provides the most accurate representation of a Corridor, in terms of recognizing its distinct parts. The latter approach is somewhat simpler in terms of data analysis, and it also allows the eight study Corridors to each be classified once, rather than in their many constituent parts.

The project team chose the first approach of segmenting a Corridor, to reflect the fact that most Corridors have very different characteristics at different points along their length.

PROVISIONAL CORRIDOR TYPES FOR THIS STUDY

We developed all these ideas above *before* the site visits (end of June 2004). It gave us a place to start. We then tested the theory against what we observed in the field. The field work led us to the following conclusions:

- Corridors types should be, as we suggested, applied to segments of real Corridors. Some Corridors had very different segments: trying to define an "average" corridor type would have been useless for evaluation and policy.

- There are many types of corridors and corridor segments that can be found in the state of Oregon and throughout North American metropolitan regions that are not found within the boundaries of this study (that is, that are not part of the set of Corridors that have been officially designated as Corridors by Portland Metro). Examples of such corridor types include roads in greenbelts, rail corridors, utility corridors, special use segments such as workplace segments, etc. Rather than developing a typology of corridor segment types that classify the general phenomenon of corridors, it would be more useful to the purposes of this study to classify corridor segment types that cover the set of types that can be found within the Portland Metro designated corridor zones. These corridor zones feature corridor segment types that appear to fall rather easily into four types: 1) strip commercial segments, 2) residential parkway segments, 3) segments featuring auto sales and service as the dominant land use (a type of "specialty segment"), and 4) neighborhood sales and service segments.

- Residential parkway segments are common throughout the study areas. These segments are characterized by exclusively residential uses on properties contiguous with the right-of-way, and are always or almost always buffered from the thoroughfare by landscaping, grade changes, and/or orientation of development away from the thoroughfare.

- The residential corridor segments, in general, did not seem very vulnerable to change. Thus, there will be many fewer opportunities for

change and we would assume that there are few if any members of the community that would like to see these segments redeveloped. We would therefore conclude they are less important for study.

- Commercial (primarily retail) strip segments are characterized by auto-oriented, low-intensity development, rapidly moving traffic, long blocks, visual confusion, and placeless design character. The discussion of land use during the site visits always gravitated back to (1) general versus specialty or clustered retail, (2) the intensity and quality of development, and (3) its vulnerability to or ripeness for change.

- Corridor segments featuring auto sales and service as the dominant use are different than strip corridors in terms of the uniformity of use, the typically large scale and low coverage of their properties, the need for substantial on-site parking (for fleet storage), and the need for visibility and access for prospective customers.

- Neighborhood sales and service segments often share many of the characteristics of strip development, but not always. Their most obvious and common difference from commercial strip segments is their short length. They are often short interruptions in residential parkway corridors–linear clusters of neighborhood serving uses in the midst of two or more neighborhoods supported by those residents as well as drive-by traffic. Also, neighborhood clusters appear to be found on the narrower Corridors and not along the widest Corridor segments with the greatest vehicular capacities.

- For transportation, the key issues were volume, number of lanes, level of congestion, curb cuts, and ability to create anything different (partially a function of right-of-way).

We also concluded that we did not have to decide a final typology in Phase I. As Chapter 6 shows, we have been able to consider all these variables in the selection of a case study even though we have not done so in a matrix defined by typologies. We do intend, however, to create some type of typology, along the lines outlined in this Chapter, in Phase II so that we can comment on the applicability of our findings to other Corridors in the Metro area.

Ultimately, the test for the best typology for this project is the typology's usability in developing manageable and effective recommendation packages of envisioned development-type/policy/right-of-way configurations for Metro and the local jurisdictions to consider. The key is to not be too fine-grained, or the result is an unmanageable number of condition-types that have to then be matched with different recommendation packages. At the same time, the typology should not be too coarse-grained, or the result comes close to a simplistic one-size-fits-all set of recommendations that ignore the "facts on the ground."

MARKET FORCES IN CORRIDORS

Commercial corridors are in transition. Most corridors around metropolitan areas, like those around Portland, developed as the economic activity of central cities moved outward along new arterials to take advantage of the profitable mix of land and access that they provided. The result in most cases was a linear arrangement of low-intensity retail uses with surface parking. Economically, businesses in these corridors (often referred to as commercial strips) were independent islands, each with their own parking lot, signs, and marketing program. Physically the buildings were almost irrelevant—the signs were much more visible than the buildings.

Things changed and continue to change. Retail power concentrates increasingly at freeway interchanges and major intersections in the form of a power center, a center anchored by a big-box or superstore, and a number of hybrid types. These retail patterns have succeeded, by market standards, because they offer a product that caters to contemporary consumer behavior patterns.

The traditional small-scale corridor properties have not been able to compete with the convenience and locational advantages of retail concentration centers. The resulting instability along the in-between segments, combined with the problem of congestion, provides the first widespread opportunity since the advent of the strip to reinvent the corridor form to meet market demand as well as other community and regional objectives (such as reducing congestion, enhancing air quality, and creating meaningful, vital cities and towns). In many metropolitan areas, the weakening of demand for retail in between major intersections, combined with pent-up demand for housing provides the ingredients necessary to loosen retail's exclusive grip on properties fronting on wide arterials.

Because the Corridors considered for possible evaluation in this study are largely built out (even though that build out, for some of them, is in relatively low-density residential uses), redevelopment of existing properties will represent a substantial share of new development in these corridors.

If we are correct about these broad trends, they have two important implications for this study:

- What we expect to happen in corridors—i.e., what trends in markets and policies suggest about how corridors will change—has an impact on the kinds of policies that the public sector might try to implement in corridors, and how effective those policies will be. That is an implication we will explore in Phase II of this study.

- Which Corridors we choose should be influenced by our assessment of their ripeness for change. That is an implication we will explore in Chapter 6 of this report.

Chapter 3 Land Use and Development

This chapter discusses land use and development patterns brought about by the redevelopment of corridors. It has two parts:

- Land use and development issues in corridors: how have corridors developed, what purposes do they serve, and what problems do they have now and are they likely to have in the future?

- Directions for improvements to corridors: what are other jurisdictions doing to improve corridors and what are Metro's policies for improving Corridors?

LAND USE AND DEVELOPMENT ISSUES IN CORRIDORS

THE EVOLUTION OF CORRIDORS

There is general agreement among urban analysts about the main force that led to corridor development: it was improvements in transportation technology and investments in transportation systems. The first significant urban corridors developed along rail lines: the better transportation allowed businesses and residences to break away from the older urban cores but still maintain the essential connection to the economic activity, shipping, markets, and jobs of the central city.

Later, the automobile and highways expanded the number and expanse of corridors. It also allowed corridors to decentralize internally, shifting from a series of nodes along a rail line to a uniform density of economic activities, each with direct access to the corridor. Relatively cheap transportation (especially in the happy decades of government spending (the 1950s and 1960s) gave access to cheap land. Congestion was low (fewer drivers and vehicles per driver). Corridors worked.

From the perspective of urban and real estate economics—the perspective typically taken by the development industry—the urban pattern called corridors (as defined in Chapter 2) would not exist if it did not work. This notion primarily stems from the physical fact and undeniable ubiquity of particularly commercial corridors. Most retail development in any urbanized region that is not specifically located in the largest urban agglomerations is located along commercial corridors, and this is taken as evidence that "the market" prefers commercial corridors. This notion is most succinctly addressed by the urban planner Jonathan Barnett, in his recently published book.

> The local highway lined on both sides with franchise restaurants, strip shopping centers, car dealerships, and all

> sorts of other commercial development can be found so often in the United States that most people assume it has been created by market forces. But the commercial strip is actually a zoning concept, derived from an outmoded model adopted long ago by most local governments. . . . After World War II, when cities and suburbs began expanding, the kinds of zoning districts originally devised for main streets and streetcar streets were mapped along suburban and rural highways. At first, this pattern had advantages, creating sites with plenty of parking for businesses that had been constricted by downtown locations. . . Today, in most places, the only available retail locations, and most office and hotel sites, are along commercial strips or in traditional downtowns. The market has had little choice. (Footnote info: Barnett, Jonathan. Redesigning Cities. Planners Press, American Planning Association, 2003, p.151.)

Notwithstanding the role of zoning in the invention of the strip, market demand did indeed rush in to fill in the broad outlines that zoning provided. Shop owners found the opportunity to be located closer to increasing numbers of passing motorists impossible to resist. Once sufficient numbers of shops had located along the arterials, unforeseen problems arose. With each shop came a driveway and the need for accessibility to left-turning vehicles, creating a cacophony of conflicting turning movements, each of which ate further into the capacity of the thoroughfare to achieve its primary purpose–to move vehicles from neighborhood to neighborhood, and from city to city.

Two forces have both reinforced and redefined the role of commercial strips as contemporary shopping destinations: First, the construction of grade separated freeways relieved the role of many arterials to connect cities (many of them were the original highways), relocating a large number of motorists on bypass routes and shrinking the number of available customers and/or changing the nature of the population of drive-by motorists to daily short-distance travelers with different buying patterns. Secondly, and more recently, changes in retail formats emphasizing the benefits that economies of scale offer retailers have resulted in the increasing concentration of retail uses on large properties with the best access–typically major intersections. This last has begun to make the linear arrangement that originally characterized commercial strips appear to be becoming obsolete.

Not all aspects of the first form of commercial strips will likely go away: they will, for example, continue to provide areas where communities can put development uses that they don't want or that they cannot often accommodate in their historic downtown cores, if they have them. In particular, auto-oriented uses such as gas stations, auto sales, drive-in uses and big box buying clubs are all generally undesirable in centers and appropriate along certain corridor segments. Although certain types of big box or superstore retail may be economically desirable in downtowns and centers, cities with older historic downtown cores are typically unable to

locate appropriate big box retail in their historic cores, and must locate such large-scale uses along corridors.

Given that the conditions that created and sustained corridors have changed, it should not be surprising to find that their function and functionality has changed also. Congestion is much worse. To get the traffic through, corridors have been widened, one-way couplets have been introduced, and signals have been timed. At the same time, those improvements have often been accompanied by concessions to local property owners that allow direct access (curb cuts) and left turns that delay the traffic.

COMMON PROBLEMS WITH CORRIDORS

The vast majority of corridors and corridor segments in metropolitan regions are zoned for and developed commercial "strip development." Corridors (and segments of corridors) within urbanized areas not zoned for commercial development are most commonly lined with buffering landscaping and are not considered problematic. Perhaps most relevant to this study, land along commercial corridors and in urban centers contains the vast majority of the retail development assets of our cities–retail uses are the only ones capable of generating and sustaining activity and conviviality in urban life. Given the importance of retail use to community character, and the necessarily symbiotic relationship of centers to commercial corridors, this study focuses on the commercial corridor and the challenges and opportunities to be found there.

Nationwide, commercial strips have exhibited a variety of undesirable characteristics:

- **Exclusive orientation to motorists (otherwise characterized as a hostile pedestrian environment).** Almost all commercial strips are dependent on customers that arrive by automobile. In order to capture that business, business owners prefer to have large parking lots easily visible and accessible from roadways, and large pole-mounted and monument signs that are easy to read from a car. Due to the fact that strip development is oriented to the motorist view along high-speed thoroughfares, little thought is given to the comfort of the pedestrian. Sidewalks are not always present, and if they are, then pedestrians must walk along loud, fast moving, and exhaust filled arterials.

- **Aesthetically unappealing.** Buildings and improved areas along commercial strips are often characterized as aesthetically unappealing. Buildings are often one-story, enfronted or surrounded by surface parking lots that are sparsely landscaped, and monument signs that dwarf the scale of the typically low-rise structures. The resulting cacophony of outsized colorful signs competing for the attention of speeding motorists is a frequent complaint of community members concerned about visual blight.

- **Low-density development that discourages walking and transit use.** Zoning that creates an overabundance of commercially zoned property creates a disincentive to use land efficiently, typically resulting in low land values. Historically low land values and auto oriented development almost always results in low-density development along commercial strips. The low-density development discourages pedestrians that must walk long distances between businesses and negotiate large parking lots to get to those businesses. Low densities then encourage auto transportation and discourage transit use.

- **Economic vitality drained away from centers.** The amount of activity-generating retail and restaurant use a given community can support is inherently limited. By zoning too much land for commercial development, and including long stretches of highly traveled arterials in that ration of commercially zoned property, planners have inadvertently used up precious demand along arterials, leaving little to no demand to support centers. A specific instance of this is the detrimental effect of strip development on historic downtowns, the subject of our next item.

- **Competition with "Main Street" or "Downtown."** The growth of commercial corridors as the primary location for all forms of retail resulted in the deterioration of historic downtown cores (in communities that had them, and the prevention of their development in cities that did not). Economic value simply drained out of the older downtown cores onto the land zoned for commercial development along arterials. Major disinvestment in historic downtown cores was the immediate or eventual result.

  A few jurisdictions that are revitalizing corridors are worried that these redeveloped areas will compete with core commercial districts, such as Main Streets or Downtown (Whittier, one of the case studies, is a case in point). Conversely, many cities seeking to revitalize their downtowns need to be concerned about the viability of downtown revitalization objectives in the face of unchecked retail development along commercial strips.

- **Traffic congestion on primary arterials.** The linear pattern of commercial development along corridors requires closely spaced driveways and frequent left turn access. This creates a multitude of traffic movements along segments of roadways originally intended to move significant amounts of traffic, and that are currently needed to provide alternate routes to congested freeways. The pattern of land use and development that has emerged on our widest at grade roadways is in direct conflict with the primary purpose of these major transportation corridors.

The increasing problems in corridors—problems that are simultaneously about land use, transportation, and economic development—are causing

communities and institutions across the country to study and undertake projects to redevelop corridors. Corridors have many characteristics that local jurisdictions indicate are undesirable. The Urban Land Institute summarizes historical strip development as: "one-dimensional forms of development that lack a distinct sense of place or community and that increasingly are plagued by problems to do with fragmentation, congestion, inconvenience, inefficiency, deterioration, and visual blight. Created in a generally laissez-faire environment well suited to the first generation, low-density scale of postwar suburbia, they are no longer suited to the denser, more complex urban context of metropolitan America."[1]

DIRECTIONS FOR IMPROVEMENTS TO CORRIDORS

REDEVELOPMENT GOALS FOR NORTH AMERICAN CORRIDORS

Many jurisdictions in the U.S. are attempting to redevelop and revitalize corridors; often using urban renewal plans under the authority of local redevelopment agencies. This section summarizes our sense of the trends based on the literature review and case studies.

Much corridor revitalization is based on an economic rationale, not an urban design rationale. For example, the Sacramento government proposed an automobile sales mall as a "tax increment engine" for an economically stagnant section of Northgate Boulevard.[2] Even where transportation and urban design improvements are suggested for corridors, it is often to enhance their economic vitality. It is uncommon for jurisdictions to focus on urban design characteristics (such as improving pedestrian friendliness) without explicit consideration of economic issues.

Corridor revitalization and redevelopment often focuses on key vacant or redevelopable parcels, rather than on corridor segments or the corridor as a whole.

Few jurisdictions appear to be simultaneously trying to improve corridors *and* protect downtowns (or centers) from competition by corridors. If efforts are made to revitalize or improve corridors, it is usually without explicitly balancing that improved vitality with the vitality of centers. In many cases jurisdictions appear to be trying to make corridors look and behave more like centers.

Other communities addressing corridors and town centers have taken many different approaches. Several American jurisdictions have adopted a framework of "centers and corridors" to guide development. Some jurisdictions treat centers and corridors similarly. For example, Spokane's

[1] Michael D. Beyard and Michael Pawlukiewicz, *Ten Principles for Reinventing America's Suburban Strips*. Washington, D.C.: ULI-the Urban Land Institute, 2001.

[2] www.natomasjournal.com/Northgate.html

centers and corridors both have a focus on pedestrian-related improvements, auto accommodation, provision of street trees, and screening of parking.[3] Prince George's County designates both centers and corridors for compact, higher-intensity, mixed-use areas.[4]

Other jurisdictions see corridors as distinct from centers. Albuquerque recognizes that corridors have "nodes" but that those nodes are not the same as centers.[5] A discussion of the Memphis region states that "corridors are the region's connecting systems, while centers are the hubs of various activities."[6] Monroe County, Pennsylvania, says that centers will be pedestrian- and bike-friendly, while corridors will be characterized by consolidated business parks with good landscaping.[7] Sheridan, Colorado has plans for large retail businesses on most of the South Santa Fe Drive Corridor, while a gateway area at a major intersection will have more mixed uses and higher densities.[8]

One jurisdiction expressed corridors as virtually the antithesis to centers. Colorado Springs describes "new/developing commercial corridors" as having "major retail uses, services, and strip centers accessible exclusively by automobile and characterized by large dominating parking lots," while "mature/redevelopment corridors" are described as having "retail uses and auto-oriented services developed in a typical strip commercial pattern, with multiple curb cuts, individual parking lots, cluttered signage, and small lots." Activity centers, in comparison, "are intended to be mixed use and pedestrian-oriented and to establish good connections and transitions to surrounding areas." The Comprehensive Plan includes strategies for corridors to locate development in existing centers or to form new centers, rather than to exhibit the traditional corridor characteristics.[9]

Some jurisdictions' focus on corridors and centers is part of an overriding effort to encourage transit and general multi-modal transportation. The Delaware Valley Regional Planning Commission's Land Use and Transportation Plan, adopted in 1994, focuses growth in centers and corridors to support intermodal transportation options.[10] The City of Charlotte and Mecklenburg County adopted a centers and corridors plan in

[3] www.spokaneplanning.org/Documents/Centers_and_Corridors_land_use_standards_7-20-03.pdf

[4] www.mncppc.org/cpd/developingtier.htm

[5] www.cabq.gov/cip/planning/cipmaps.html

[6] www.memphisregion.com/pdf/Mem06_Metro.pdf

[7] www.monroe2020.org/IC.pdf

[8] www.ci.sheridan.co.us/renewal/plan.pdf

[9] www.springsgov.com; see Chapter 1 of Comprehensive Plan.

[10] http://ntl.bts.gov/DOCS/RPC.html

1994 that is focused on increasing transit along five main corridors extending spoke-like from downtown Charlotte.[11]

As part of this study, Freedman Tung & Bottomley conducted a more detailed review of a few corridor redevelopment projects in the U.S.[12] Key findings:

- **Palm Canyon Drive, Cathedral City, California.** This case study was selected because it involved the restructuring of a typical commercial strip into a boulevard with a downtown center (for a city that was without a downtown). On this case study, the new center occupies only one side of the arterial. It demonstrates the use of capital improvements and policy to effect dramatic transformation of the form, character, development intensity and mixture of uses along a primary arterial corridor. Also, this case study demonstrates redevelopment of a blighted corridor.

- **Whittier Boulevard, Whittier California.** This case study demonstrates an approach to a seven-mile corridor that appeared to be one long strip. The project is the best demonstration that we know of the effectiveness of "pruning back the retail zoning", and refocusing development into segments with their own market focus, dominant uses and character. In contrast to the Palm Canyon Drive Case Study, this one demonstrates planning for the reconstruction of a corridor with very little short-term vulnerability to change.

- **Columbia Pike, Arlington, Virginia.** This project demonstrates the restructuring of a corridor to create a series of centers. In this case each center is located directly on both sides of the new "Main Street" thoroughfare at major intersections. This case study also differs with the first two in that it emphasizes incentives to induce change along the corridor, rather than using policy to require the restructuring.

All three case studies demonstrate an approach to planning for growth and development along corridors that integrates modifications to street design with the types of development envisioned for each corridor segment. All of the case study projects started as strip development and are largely built out. The communities have worked to redevelop the corridors because they wanted something other than a strip.

The case studies are potentially useful on at least two levels. First, they illustrate ideas for the revitalization and restructuring of commercial strips in different circumstances and with different desired results. They provide a range of options for thinking about the transformation of commercial strip corridors. Second, they all address ways to enhance the walkability and livability of commercial strips *and* improve vehicular capacity. The shared

[11] www.charmeck.org and www.asu.edu/caed/proceedings99/AVIN/PAPER1.HTM

[12] See Appendix B for more detail. See Chapter 4 for a related discussion that focuses on *transportation* issues.

problems faced by the corridors in all three case studies, and the similarities in the way these problems were addressed, provide us with a strategy framework for similar if not identical challenges posed by the commercial strip corridors in the Portland Metro region. While the success of these strategies is still largely unproven—widespread corridor disinvestment and resulting consultant project case studies are thus far relatively few and relatively recent—these lessons provide some significant insight into how regions and municipalities might address the key issues faced by today's corridors.

The efforts to restructure corridors—as evidenced by the case studies presented as well as other significant corridor projects that we are aware of—share a number of common goals, including:

Transform the high-volume arterial network that carried the traffic vital to retail centers into a pedestrian-friendly environment. In other words, prove that Americans are wrong about wide roads – they can be made to be very comfortable places to walk, work and live.

Facilitate the clustering of retail uses, in a walkable-scaled environment with shared parking, transit access (or at least set up to be a great future transit access point) and in close proximity to homes, and workplaces.

Encourage the transformation of the long in-between segments flanked by such clusters towards housing, office, lodging and uses that are not competitive with the pedestrian oriented clusters of retail/entertainment/services.

Create better edges to the neighborhoods behind the arterials.

Provide a pattern of land use that supports primary centers, rather than drains them. This goal is complicated by the fact that some corridors need to be planned to include centers (see case studies attached, particularly Cathedral City and Colombia Pike), and others need to be planned to stop draining pre-existing centers not located on corridors.

Facilitate the transition of separated uses and low intensity everywhere to the development of a *multi-nucleated development pattern* that provides a good pedestrian realm, vital street life at centers, and transit access while also providing a large section of the population with the kind of single-family detached neighborhoods that many people crave. Transitioning corridors from linear, all-the-same development patterns to nodal development patterns are central to this goal.

GOALS FROM METRO DOCUMENTS

Chapter 2 pointed out that Corridors are distinguished from Centers in part by their lower densities and their inclusion of auto-oriented uses. The Regional Framework Plan states: "Corridors can include auto-oriented land uses between nodes of activity, but such uses are carefully planned to preserve the pedestrian orientation and scale of the overall Corridor design."[13]

The Metro 2040 Growth Concept and the Regional Framework Plan provide a vision for Corridors. In summary, these Metro documents describe the following goals for Corridors:

- Relatively high density (25 persons per acre)
- Mixed-use development
- Continuous intensity or smaller centers/nodes (often at major intersection) with auto-oriented activities sometimes between the nodes
- Arterial street with four travel lanes and significant traffic flows
- High-quality bicycle and pedestrian environment, and
- Convenient access to good quality transit

Denser development in Corridors may result in more efficient use of land within the UGB, reducing the need to expand the UGB in the near future.

Our evaluation of Metro Corridors indicates that land uses are in fact relatively low-density along most segments. They include a mix of residential, office, retail, industrial, and institutional uses. These characteristics are described in greater detail in Chapter 5 in terms of each Corridor segments' fit with the proposed Corridor typology described in Chapter 2.

Central to any decision about which land uses are appropriate for Corridors is a judgment about which land uses should go into Centers rather than Corridors. Metro has made it clear that some land uses are to be discouraged outside of Centers, so that non-Centers (including Corridors) do not provide too much competition and drain Centers of activity-generating uses.

In section 3.07.610 of the Urban Growth Management Functional Plan, Metro states its intent to: "*enhance Centers by encouraging development in these Centers that will improve the critical roles they play in the region and by discouraging development outside Centers that will detract from those roles.*" Just what constitutes development that will detract from the critical roles Centers play in the region is not stated explicitly. It can be assumed, however, that development creating competition that significantly weakens the economic activity within Centers is development that Metro would like to discourage.

[13] Regional Framework Plan, p. 76.

Metro is concerned about the low-density "sprawl" characteristics of Corridors. Not only are Corridors viewed as competing with Centers, but they are doing so in a fashion that is auto-dominated, unwelcoming for pedestrians and bicycles, and low-density. This limits the ability to achieve the target non-SOV mode share, and puts pressure on the Urban Growth Boundary.

Chapter 4

Transportation

This chapter addresses the transportation issues, opportunities, and best practices found in the Corridor case studies, transportation analysis, and the literature review. It has three parts:

- A review of applicable Oregon Highway Plan and Regional Transportation Plan policies.
- A discussion of transportation issues in Corridors. How has transportation engineering affected Corridors, both positively and negatively?
- Directions for improvements to Corridors. What are other jurisdictions doing to improve transportation in Corridors?

STATE AND REGIONAL POLICY REVIEW

The Oregon Highway Plan and Metro's Regional Transportation Plan (RTP) provide guidance regarding appropriate corridor design and operation. A brief description of the policy review is provided below.

REGIONAL TRANSPORTATION PLAN

The Regional Transportation Plan (RTP) provides vision and guidance regarding the transportation system that is planned to support the 2040 Growth Concept, including Corridors and Centers. In accordance with the RTP, a Corridor emphasizes "high quality" pedestrian and bicycle environments as well as convenient access to transit. Improvements within a Corridor should be focused at centralized nodes of activity (e.g., at major street intersections) and should emphasize transit and pedestrian travel. The RTP further states that auto-oriented uses are appropriate between activity nodes but should not conflict with the pedestrian orientation and overall Corridor scale.

A discussion of the guidance provided by mode within the RTP is summarized below.

REGIONAL STREET DESIGN POLICIES

According to the RTP, the street design classifications that are most appropriate for Corridors are Regional Streets and Community Streets. All of the potential case study Corridors for this project are currently classified as Regional Streets. In contrast, Boulevards are most appropriate for Centers. A comparison of the two types of facilities is provided in Table 1. As is discussed in Table 1, Streets emphasizes a balance of vehicular, pedestrian, bicycle, and transit travel whereas Boulevards have a greater emphasis on pedestrian,

bicycle, and transit travel. The Metro publication "Creating Livable Streets" provides additional guidelines regarding Street and Boulevard designs.

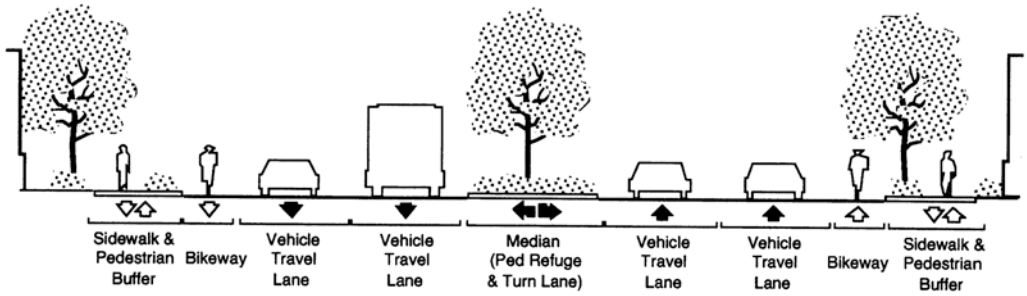
Table 4-1. Comparison of Streets and Boulevards

Characteristic	Streets	Boulevards
Traffic Mix	Emphasize significant vehicular travel and provide for pedestrian, bicycle, and transit travel	Mix significant vehicular travel with transit, pedestrian, and bicycle travel
Scope of Pedestrian Improvements	Travel along corridor is important; improvements focused at major activity nodes, such as major intersections	Significant improvements along entire length of Boulevard
Transit Facilities and Service	High quality service with facilities focused on stops and stations	Same as streets
Bicycle Travel Facilities	Bike lanes or wide outside shoulder lanes if lanes not physically possible	Same as streets
Vehicular Speeds	Moderate	Low
Local Street Grid/Access Management	Number of local street connections dependent on location, consolidation of driveways along corridor when possible	Supported by well developed local street system; some driveways may be present although consolidation of accesses is desirable
Provision of On-Street Parking	May be included (but limited)	When possible (highly desireable)
Number of vehicular travel lanes and median	Typically four travel lanes with more provided where appropriate; medians provided for pedestrian refuges and left-turn movements at intersections	Same as streets, but with narrower travel lanes
Freight Service	May serve as primary freight routes; loading facilities may be incorporated into street design	Same as streets
Building orientation	Land uses may be set back from the street	Dense development is oriented toward the street

Source: KIA, 2004.

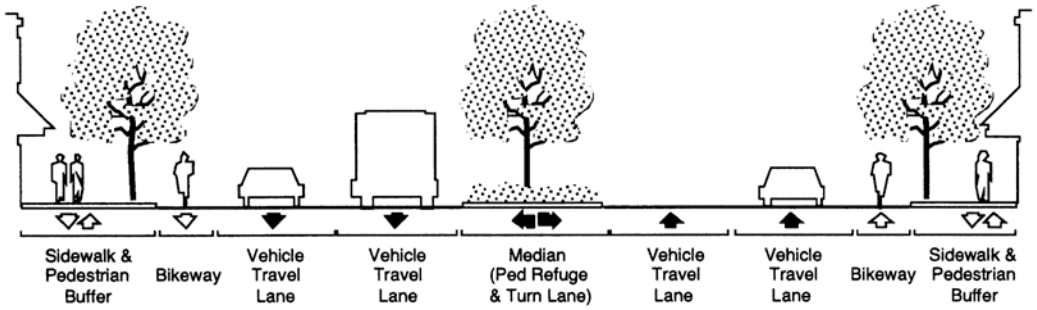
The cross-section of the two design types are illustrated in Figures 4-1 and 4-2.

Figure 4-1. Regional Street Design Elements, RTP, 2000



Source: Metro, 2000 Regional Transport Plan.

Figure 4-2. Regional Boulevard Design Elements, RTP, 2000



Source: Metro, 2000 Regional Transport Plan.

REGIONAL MOTOR VEHICULAR SYSTEM

Both Regional Boulevards and Regional Streets are typically classified as Major Arterials. By definition, major arterials, in combination with principal arterials, are intended to serve overall mobility functions in the region for both vehicular and freight travel.

REGIONAL PUBLIC TRANSPORTATION SYSTEM

The RTP specifies that Regional Buses are the "best public transportation mode" to serve Corridors. This type of bus service operates with maximum frequencies of 15 minutes with conventional stop spacing along the route. It recognizes that rapid bus, streetcar and frequent bus, community bus, mini-bus, paratransit, and park-and-rides can also serve Corridors. In contrast, Centers are best served by light rail, commuter rail, rapid bus, streetcar and frequent bus, regional bus, park and rides, and intercity bus. Centers can also be served by all other service types. The primary difference in service types between Corridors and Centers is that Centers represent an intermodal confluence between regional and local systems whereas Corridors facilitate regional travel through the Corridor with pedestrian and local transit system travel at stops and stations.

REGIONAL FREIGHT SYSTEM

By definition, Streets and Boulevards may serve as primary freight routes; however no guidance is given as to the appropriate freight system classification system within Corridors or Centers. A review of the Regional Freight System Map revealed that many of the Centers are adjacent to Main Roadway Routes and/or Road connectors. Among the potential Corridor case study candidates, there are inconsistent designations, depending on the regional freight mobility needs served by the facility. For example, Oregon 99W and McLoughlin Boulevard are classified as Main Roadway routes whereas Beaverton-Hillsdale Highway is not classified.

Per the Regional Freight System Policies, the design of Corridors should reflect the need to "provide efficient, cost-effective, and safe movement of freight in and through the region," as appropriate.

REGIONAL BICYCLE SYSTEM

Bicycle lanes are the preferred bikeway design for both Streets and Corridors. Corridors are typified by Regional Corridor Bikeway designations that are longer in length and emphasize "point-to-point" bicycle mobility. In contrast, Centers are served by Regional Access Bikeways that are shorter in length with higher bicycle volumes. As the classification implies, Centers focus on bicycle access within high-density locations.

REGIONAL PEDESTRIAN SYSTEM

Corridors are designated as "transit/mixed-use corridors", which are priority areas for pedestrian improvements. The types of design features that should be incorporated in Corridors to promote pedestrian travel (especially near neighborhood-oriented retail development, schools, parks, and bus stops) include: wide sidewalks that are buffered from the roadway; street crossings every 530 feet (with the exception of those locations that have no street intersections, transit stops, or pedestrian generators); enhanced crossing treatments at major intersections; and amenities designed to enhance the quality of the pedestrian environment such as benches, awnings, special lighting, bus shelters, and street trees.

Centers are classified as pedestrian districts. These districts emphasize a walkable environment to ensure high volumes of pedestrian travel. Design features to promote a walkable environment include building orientation to the street and boulevard-type street design. All streets within a pedestrian district are considered important to the pedestrian system.

MODE SPLIT TARGETS

As part of the Region's Transportation Demand Management strategies necessary to meet the provisions of the Transportation Planning Rule, the RTP identifies mode split targets for each design type. For both Centers and Corridors, the 2040 non-single occupancy vehicle (SOV) modal target is 45% -

55%. The 2020 target for Corridors is 39%. These mode share targets need to be incorporated into each affected jurisdiction's local Transportation System Plan (TSP). The local TSPs must identify an action plan for achieving the targets.

OREGON HIGHWAY PLAN

STAs AND UBAs

The Oregon Highway Plan (OHP) Policy 1B recognizes that highway corridors can serve multiple purposes and aims to balance the needs of the multiple users of the highway as well as the adjacent land uses. The policy "implements the Oregon Transportation Plan's Urban Accessibility Policy to assure balanced, multimodal accessibility to existing and new development within urban areas to achieve the state goal of compact, highly livable urban areas." The designation of Special Transportation Area (STA), Urban Business Area (UBA) and Commercial Centers is identified in the Policy as a tool that can be used to focus growth in more compact development patterns.

The Oregon Transportation Commission amended this policy in January 2004[1]. There are eleven actions within the amended Policy 1B that address the planning, management, and interagency jurisdiction required within the STA, UBA, and Commercial Center designations.

Special Transportation Areas

An STA designation is intended to indicate situations in which providing appropriate accessibility is more important than providing mobility for through travelers. The focus of travel within STAs is on local pedestrian, bicycle, and transit movements; the streets are intended to look, feel, and function like "Main Streets," and vehicular travel speeds are intended to be low. The policy identifies a number of building design, land use, street design, and parking strategies that characterize STAs. These are summarized in Table 4-2.

Our interpretation of this policy is that STA designations may be more appropriate for Centers or small segments/nodes within Corridors but not for long segments of the Corridors. As of January 2004, the majority of STA designations are on one mile or shorter segments of highway; the policy seems to be on potentially even shorter segments.

Among the potential case studies Corridors, the following segments have STA designations as of January 2004:

- Oregon 213 in the Clackamas Regional Center (82nd Avenue) (approximately three-quarters of a mile)

[1] (http://www.odot.state.or.us/tdb/planning/highway/documents/1badoptedchanges2.pdf).

- Oregon 8 in Cornelius (Adair and Baseline) (approximately one-quarter mile)
- Oregon 43 in Lake Oswego (State Street) (approximately 0.9 miles)
- Oregon 99E in Milwaukie (McLoughlin Boulevard) (approximately 0.6 miles; this designation was to be removed on June 30, 2004 if no management plan was adopted)
- Oregon 43 in Oregon City (approximately 0.1 miles at the southeast end of the Willamette River Bridge)
- Oregon 141 in the Washington Square Regional Center (1 mile)

Urban Business Area

An UBA designation is indicative of a need for balanced accessibility and mobility functions. Speeds in UBAs are intended to be higher than STAs and vehicular movement is as important as pedestrian, bicycle, and transit accessibility. The description of UBAs seems to recognize that many of the Corridors developed over time as auto-oriented transportation routes with adjacent strip land use development. Development guidance tends to focus on tools that can be used as the Corridor transitions through redevelopment and new development.

Our interpretation of the UBA designations is that they are intended for longer Corridor segments and would be appropriate for several of the potential Corridor case studies. As of January 2004, there are no UBA designations in the Metro Area.

COMPARISON OF UBAS AND STAS

Performance Standards

According to the Oregon Highway Plan, highway segments with an STA designation outside of the Metro area are subject to more lenient mobility standards (i.e., higher volume-to-capacity ratios on the highways are allowed) than are undesignated segments or UBAs. Within the Metro area, there is no differentiation amongst the performance standards by highway segment designation. Instead, location (i.e., regional centers, station communities, etc) is the differentiating factor.

For the Study Corridors, the applicable standard is a volume-to-capacity ratio of 0.99 during both the first and second hour. In contrast, the Central City, Regional Centers, Town Centers, Main Streets, and Station Communities are subject to a volume-to-capacity ratio of 1.1 during the first hour and 0.99 during the second hour.

Access Spacing Standards

Access spacing standards for highways are specified by the highway classification (e.g., statewide, district, etc.) and designation (STA, UBA, or non-designated). Table 4-2 provides a comparison of the spacing standards by classification and designation. These values are only provided for statewide and district facilities. All of the potential Study Corridors are classified as District Highways, with the exception of Tualatin Valley Highway and Oregon 43, which are both statewide facilities. There is only a 50-foot difference in spacing between a non-designated segment and a UBA designated segment. STA designations encourage only public roadway intersection and discourage private access points.

Table 4-2. Access Spacing Comparison

Classification	Posted Speed (mph)	Spacing Standards		
		Other	UBA	STA
Statewide Highways	40 & 45	990 feet		
	30 & 35	770 feet	720 feet	Public road spacing is city block spacing per existing configuration or local comprehensive plan. Private accesses are discouraged; if allowed and land use patterns permit, the spacing is 175 feet or mid-block if the block spacing is less than 350 feet.
	25 or less	550 feet	520 feet	
District Highways	40 & 45	500 feet		
	30 & 35	400 feet	350 feet	Public road spacing is city block spacing per existing configuration or local comprehensive plan. Private accesses are discouraged; if allowed and land use patterns permit, the spacing is 175 feet or mid-block if the block spacing is less than 350 feet.
	25 or less	400 feet	350 feet	

Source: Oregon Highway Plan.

Street Design Standards

The STA street design focuses on pedestrian, bicycle, and transit movement; therefore, different design standards are applied in these areas than in UBAs and non-designated facilities. ODOT's Highway Design Manual provides guidance on specific street standards.

Table 5-6 compares STA and UBA characteristics.

Table 5-6. Comparison of UBA and STA Characteristics, Oregon Highway Plan, 2004

	Special Transportation Area	Urban Business Area
Access Along Highway	Private accesses discouraged; grid system of city blocks to support local access needs	Private accesses are consolidated over time as properties develop and redevelop; barriers to providing inter-parcel circulation removed over-time
Building Orientation	Compact, mixed use buildings spaced close together with minimal setback from street;	Buildings may be set back from highway and separated by parking fields; drive-thru and parking facilities may be visible from highway
Non-Auto and Transit Facilities	Wide Sidewalks between building and street; Transit stops with well designed pedestrian and bicycle facilities to encourage intermodal trip-making	Focus on safe and accessible movements along, across and within commercial areas
Parking	Parking behind or to side of buildings; on-Street parking allowed	Parking often occurs between building and highway; on-street parking generally not available or appropriate
Street Design	Focus on pedestrian, bicycle and transit movements	Auto accessibility as important as pedestrian, bicycle and transit movements; recognize auto accessibility as important to economic vitality
Speeds	Generally 25 miles per hour or less	Generally 35 miles per hour or less with provisions for good traffic progression

Source: KIA, 2004.

ADOPTION PROCESSES

An STA or UBA designation begins with adoption in a local plan (e.g., Transportation System Plan, downtown plan, etc.). This local adoption occurs through a collaborative process between the local agency and ODOT with public input. Local adoption also may require amendments to plans, policies, and ordinances needed to implement the designation. Written management plans are required for OHP Freight Routes and Regional Transportation Plan freight systems. Following local adoption, the Oregon Transportation Commission can formally designate the segment as an STA or UBA.

TRANSPORTATION ISSUES IN CORRIDORS

Modern transportation improvements focused on automobile mobility are beginning to give way to high traffic volume streets that also provide service quality for pedestrians, bicycles and transit. To be sustainable for the long term, corridor development is seeing market changes that present opportunities to rethink how transportation improvements are conceived and designed.

Two practices in suburban corridor redevelopment have emerged in recent years. Each represents a different perspective of the market opportunities provided by a substantial and well-connected arterial roadway network.

One practice that is being applied is building fully integrated, mixed-use centers at a pedestrian scale; the other provides maximum ease of access and circulation for the automobile and is typically reinforced by development traffic review processes. Rather than enhancing street appeal and pedestrian function, this auto-oriented development creates barriers between areas that should be linked. Pedestrian and bicycle facilities are limited or absent with few safe connections between major activity centers and neighborhoods. Transportation system management measures to make more efficient use of existing infrastructure are absent (Many case studies are characterized by frequent curb cuts, no shared access or parking, etc.). These types of designs are usually inconsistent with adopted planning guidance that calls for a mix of modes and a walkable pedestrian realm. A resolution of the conflict between plan desires and actual results that favors dynamic, walkable corridors will build not only stronger economic generators but safer, more efficient, and attractive transportation systems.

The perspective of a road as solely the means to safely and efficiently convey traffic is increasingly giving way to a second practice, one that considers multi-modal safety and broad transportation efficiency in urban environments.[2] Tort liability concerns have contributed to the problem of single-mode environments, creating standards that reflect the notion that a wider street is a safer street. Still in flux, most traffic standards and many development regulations have not yet adapted to a more integrated systems view.

More and more communities are striving to provide better support for the perspective that recognizes the value of walkable places at key transportation nodes and along specific corridor segments. They are also recognizing the importance of mode choice and making strides to bring greater bicycle safety

[2] The phrase urban environments refer to a concept of pedestrian-scale highly connected places. In the Portland Metro area the Hawthorne District, the Multnomah Village, and Downtown Lake Oswego would be examples of urban environments.

and transit access and safety into their plans for private developments and capital improvements. Bringing these other modes into the roadway improvement processes requires consistency in the rules and standards of engagement.

Arterial corridors typically provide excellent regional access for private vehicles and the greatest access to suburban areas in a regional mass transit network. Often, these transportation characteristics offer a market advantage allowing the corridor to successfully compete for both business and households seeking convenient access to the broader region.

The regional access on these corridors needs to be preserved while providing for more mode choice, safety, and connectivity to immediately adjacent land uses as well as land uses off of the specific roadway. The institutional and policy tools identified thus far have shown that context, broader transportation and development planning, and comprehensive (e.g. for all modes from a "place" to "system" perspective and across jurisdictions) planning are important tools for creating successful corridors.

From a transportation perspective, bringing together ideas to create centers along corridors is critical to the identification of policy tools to improve our corridors. Policies to be identified will:

- Enhance the "place"/land use and transportation relationships to improve mobility on the segments.

- Support all modes within segments and help to promote "place" improvements.

Develop distinct and complimentary modal facility requirements when implemented in the context of a place or segment.

DIRECTIONS FOR IMPROVEMENTS TO CORRIDORS

ROLE OF THE TRANSPORTATION PLANNER

In the age of the private automobile, guidance for the transportation planner and traffic engineer has been typically oriented to building roadway capacity and balancing land use access rather than considering land use and urban design impacts on an integrated transportation network. Over time, this emphasis has created mismatches between transportation and adjacent land use in many older communities. One typical example is the road through "Main Street" that loses its on-street parking to a travel lane as demand for traffic capacity grows. Storefront businesses gradually decline and properties become ripe for redevelopment. Smaller parcels are assembled and new development is oriented to a new market that is supported by increased traffic volumes. Residences located close to the core continue to bring pedestrians to spaces designed for optimal auto accessibility. New development that creates barriers to pedestrian movements between strip

centers puts people back into their cars and on to the network for multiple stops in the same area.

To better balance the transportation system, the tools of transportation planning and traffic engineering need to be applied with the expressed goal of safely bringing pedestrians, bicyclists, and transit users back to the streets, particularly those with good regional transit access. System and functional design alternatives should be developed and analyzed to reinforce important pedestrian and bicycle connections and crossing enhancements.

The historical focus on congestion mitigation in sub-area plans has created a gap that needs to be bridged in building strong land use-transportation relationships. In the Rosslyn-Ballston case study (described below), the 1986 Master Transportation Plan was the only place where the corridor was viewed in its entirety. The document did not reflect the addition of major transit and recent thinking in street cross-section design. An update of the document would be necessary to resolve issues at a key intersection that falls between two sub-areas and to evaluate any changes in the corridor as part of a larger roadway network. A coordinated transportation plan update can help to ensure that changes belong to the larger system.

PLANNING PROCESSES: VISION THROUGH IMPLEMENTATION

A re-emergence of the desire for walkable retail streets has created the need to thoughtfully reconnect the road with nearby land uses. Sub-area plans can be the blueprint for these reconnections. Typically developed with active community involvement, these plans not only guide development review decisions but also become the main reference document for public improvements required by the state access permit and joint transit development processes. Fully integrating transportation improvements for better modal integration and urban design will help reduce conflicting goals in planning rather than during project design. Planning the transportation system for capacity, multi-modal travel, *and* safety when evaluating land use alternatives is consistent with emerging Federal Highway initiatives in Safety Conscious Planning.

The following goals are identified for greater integration of transportation elements into successful corridor design and development:

- **Create expectations and design guidance for system improvements as part of future development/redevelopment in a corridor.** Recognizing function/place mismatches is part of the transportation planner's task. The transportation element of any plan must consider the broader placemaking objectives for the built environment. The tools of traffic operations, functional street design, transit planning, and pedestrian/bicycle systems design can and should help to inform the process of integrating the travel systems with surrounding land use plans.

- **Reflect and respect community context and values**. A strong planning element helps to ensure that local context and values are reflected in improvements. This is especially important as communities seek to distinguish their uniqueness and expect that physical changes will actually enhance the quality of their environment.

- **Coordinate among public agencies and private partners**. Large and complicated bodies of government with various pieces of oversight responsibility can easily loose sight of the big picture. Regular communication and collaboration in addition to clear agency consensus is critical to creating a single place with many hands. The traditional divisions between transportation and land use, engineering and planning, developer and community can only be overcome when each recognizes what the other brings to the table and seeks ways to compromise. This is especially important when financial resources are limited. Projects that take on multiple and compatible objectives, particularly those coordinating several jurisdictions, have the ability to make the best use of limited resources.

- **Seek active community participation.** Community members offer an informed and critical perspective on how their community uses the transportation system. Volunteers working to better the place for their families and neighbors are vital to bringing about the most appropriate improvements. For volunteers to be fully effective, they must be offered the opportunity to understand the professional tools available to them. Deliberate efforts to involve community members in project development also help to create a more informed public. The goodwill generated through these types of projects helps to build relationships of trust between the public and those that are served.

The following is a list of technical approaches to improve corridor transportation systems design:

- **Develop a supporting street grid for circulation, access, and local trip-making.** Site design and layout of new development must consciously extend logical pathways back into the surrounding neighborhoods and along the corridor. Key entry points oriented properly to the street will reinforce the safest crossings of major roads. Where appropriate, new links and streets added at well-spaced intervals can create an urban grid, increase connectivity, and reduce mid-block crossings through the addition of a greater number of controlled, marked crossings.

- **Build pedestrian connections and crossings.** A balanced, pedestrian-oriented transportation system requires a comprehensive network of well-spaced, highly visible pedestrian crossings of the major corridors linked to pathways that connect to and through development nodes. Improved safety at managed conflict points within the roadway relies on a system of well-designed, clearly

marked crossings that occur at reasonable intervals along the roadway, are highly visible to approaching traffic, and provide adequate crossing time.

- **Allocate planning and dollar resources to address the mismatch between functional street standards aimed strictly at automobile mobility versus those aimed at establishing a balanced system.**

Planning and resource allocation should:

  - Collaborate and consistently prioritize across jurisdictions so that public investment is effectively targeted,

  - Reduce the scale of roads that favor high off-peak travel speeds and auto-oriented land-use access,

  - Use traffic operations techniques and geometric improvements to promote through traffic use of larger order roads rather than residential streets, and

  - Maintain the entire system, pavement and markings, sidewalks, and transit shelters and waiting amenities to a pedestrian scale and standard.

- **Manage traffic speed.** Greater driver awareness of pedestrians and reduced speeds must be reinforced at critical transition points. These typically occur when moving from suburban to urban places. Regulated signal timing in an interconnected system can provide speed control. However, the most effective speed management typically requires clear visual cues that pedestrians should expect in and around the roadway.

  Urban design guidance and related use strategies are typically needed to increase pedestrian sidewalk activity and enclose the street with strong building edges within the area and at the entry points. Including an organized system of orientation signage at the entry points and throughout the urban area helps unfamiliar users to navigate the street system.

- **Manage parking.** Parking management (e.g. supply management, pricing, location and design) is also important to the success of a healthy urban center.

  Establishing a parking district in a healthy urban corridor can be the first step to creating opportunities to share parking for compatible uses. Establishing a fee-in-lieu option in the development code should tie any fee amount to the estimated parking demand associated with a particular development. This typically provides a revenue stream for public parking, reduces the total amount of parking required, injects public planning and design into parking development, and increases

flexibility for developers by providing an alternative to on-site parking.

Major pedestrian generators should be accessible to off-street parking that does not require a major arterial crossing. Way finding systems should be developed to clearly manage and direct pedestrians and vehicles to off-street parking.

Provide full-time on street parking wherever possible.

- **Manage access.** Traditional corridor access management concepts separate regional mobility functions from local circulation for all modes. These techniques reduce driveway access from the main corridors and allow crossover access between parcels at evenly spaced intervals along the corridor. This is not a complete tool without a comprehensive, area-wide strategy of connectivity for all modes and supporting urban design concepts.

  In the absence of local planning to accomplish this, statewide transportation policy can provide a consistent set of standards and guidelines. This provides highway agencies with a set of guidelines that can be applied to state-funded and developer improvements. The guidance can

  - Relay optimal standards for the design of sidewalks, crosswalks, and right-turn lanes; and, operational possibilities for the spacing of driveways and intersections in urbanizing areas.

  - Require site circulation, building orientation, and overall site layout to place structures in a pattern that can become a street grid and ties to critical street grid links across the corridor.

  - Redesign unconventional, at-grade intersections to provide the greatest safety for crossing pedestrians. Safe intersection designs typically avoid free right turn lanes and include low vehicle speed curb radii, vehicle sight distance of crossing pedestrian improvements, and reduced pedestrian crossing distances.

  Guidance for local planning should promote a systems view of the transportation network that considers its regional function and its service to existing and future land use. Planning and project development resources within state and local Departments of Transportation can help to bring about greater balance between transportation systems design and alternative land use options. An integrated systems approach will bring about planned improvements that consider impacts and opportunities across modes for both intersection improvements and system connections. Combining traffic and non-motorized transportation concepts in plan alternatives development can ensure that resulting plans have resolved conflicts (between congestion mitigation and non-motorized facility provision)

as ideas are vetted and run through a basic feasibility analysis. This approach can also promote solutions that build systems rather than widen roads. Not only will critical links be identified but opportunities to include them in projects will also be maintained.

- **Encourage the use of transit.** Efforts to engage transit service providers in the process of building safer pedestrian environments have resulted in important changes in the land use/transportation relationship of many communities.

    - Transit joint development processes have been used to successfully bring a more progressive pedestrian development model to suburban environments. This leadership by public or quasi-public landowners can begin to shift the direction of subsequent developments.

    - An important aspect of corridor safety and redevelopment is found in bus stop location criteria that consider pedestrian access and orient stops to marked crossings.

    - Efforts to coordinate system routes, paths to area destinations, and bus arrival and departure information will also improve use of the system. While not yet supported with data, better real time information made available at stops intuitively helps to increase user understanding of the schedule and supports being at the right place at the right time to receive bus service. This can be critical to transit-reliant workers living in suburban areas where headways are long and alternative modes are expensive if available at all.

- **Improve streetscapes and cross-sections.** Streetscape improvements have had varying degrees of success in changing the nature of a corridor. Improvements only reinforce area character if they are part of a working urban system. When cross section plans have become part of a complete transportation system, changes occur as part of new development or through capital projects.

    - Regularly evaluate the results of executed design plans and change design guidance to reflect lessons learned and best practices. Streetscape techniques and design processes are evolving within most planning and transportation agencies in response to greater interest in producing better pedestrian environments. While aesthetic considerations dominated early designs, functional design and maintenance is now considered critical to a project's long-term success.

    - Establish stronger oversight of design exceptions to area streetscape standards to ensure that both public and private projects build a unified street system.

The purpose of the case study review was to examine how jurisdictions across the country address transportation problems in commercial corridors

and inform this study regarding desirable attributes in Metro Corridors. This section summarizes case studies in two North American communities analyzed by Kittelson and Associates[3]:

- **State Route 111 (Palm Canyon Drive), Cathedral City, California.** State Route 111, through Cathedral City, began as a two-lane road and had been widened to a four-lane road. Typical highway development straddled both sides of the roadway with main street sections gradually overtaken by auto-oriented strip redevelopment. By the late 1980s, downtown retail and commercial activity had become limited with very few travelers stopping as they passed going to and from the popular resort communities of Rancho Mirage and Palm Springs. By the early 1990's, the segment of Route 111 through Cathedral City had become congested, and many businesses along the roadway had failed. The community and the State identified that roadway improvements were necessary, but Cathedral City staff believed that a roadway widening was not the best solution. A design team was hired to conduct a community involvement process and develop design concepts for a revitalized downtown Cathedral City. The result was an urban village with a main community activity corridor off the state highway and a new design of the highway to separate higher volume and speed through traffic from transit, pedestrian, and business activity at the road edge.

- **Rossyln-Ballston Corridor, Arlington, Virginia.** The Rosslyn-Ballston Corridor concept emerged in the 1960's as Arlington County contemplated the Washington area heavy rail alignment. Metro routes along I-66 and the Columbia Pike were abandoned in favor the Wilson Boulevard/Fairfax Drive corridor to revive the corridor's aging commercial centers. By the time the first Orange Line Train Stations opened in 1979, a wide ranging community vision embraced "a high density central spine throughout the Corridor, with the most intense development centered in quarter-mile bulls-eyes around stations, tapering off to preserve existing single family and apartment communities." The experience of earlier office redevelopment in Rosslyn, a dense urban area close to the District of Columbia, focused on the need for a balance of uses and residential amenities such as parks and open space that would not turn station areas into ghost towns after hours. It has taken nearly 25 years to create the five centers envisioned in the early plans. The corridor is engaged in a true transformation particularly in the core metro areas where vibrant urban streets and successful retail centers attract daytime and evening visitors. New residential and mixed used development is steadily replacing automotive services, car dealerships, and freestanding suburban-style retail. Arterials are lined with on-street parking, bicycle lanes, and corner bus stops serving Arlington Regional Transit riders.

[3] See Appendix C for a detailed analysis of the North American transportation case studies.

These two corridors have mixed land use characteristics, are vibrant areas for retail/commercial development, serve pedestrian and bicycle modes of transportation, and provide for efficient vehicular transportation as well.

Transportation corridors that are multi-modal, safe, efficient, and that contribute to broader goals of community design have the following characteristics:

- **Institutional expectations are predictable and progressive.** A visionary, collaborative, and detailed planning effort at the outset can establish a broad-based community vision and guide interrelated transportation and land use decisions on the corridor. At regular intervals, actions should be reevaluated and plans and guidance refined to reflect lessons learned and evolving perspectives of the public, market, and agency participants.

  Developers and implementing agencies anticipate the agency review expectation that project plans balance and integrate transportation environments in the corridor area. Design, parking, access management, and capacity solutions will be more easily approved when they consider and contribute to a larger community vision.

- **Transportation respects the community context and values.** Recognizing function/place mismatches is part of the transportation planner's task. The transportation element of any plan must take on the broader placemaking objectives for the built environment. The tools of traffic operations, functional street design, transit planning, and pedestrian/bicycle systems design can and should help to inform the process of integrating the travel systems with surrounding land use plans.

  Parking strategies support function and place concepts by reducing surface, suburban- style parking and limiting multiple access points to and from the corridor. New parking is provided in off-street structures throughout and on-street parking is available wherever possible in mixed use/retail centers and along residential side streets.

  Transit partners are integrated in planning to ensure context understanding and facilities support where transit is a viable transportation component of the corridor.

- **Systems view of the transportation network.** A street hierarchy system should incorporate land use characteristics into the functional classification of the roadway (i.e. arterials characterized as boulevards, etc); address circulation opportunities off the corridor; and focus any corridor capacity needs at intersections to maintain the quality of the road as a conveyor of regional traffic.

  Streetscape amenities (e.g. sidewalks and streetscape facilities) are provided to reinforce user activity and support pedestrian circulation.

This includes pedestrian access along and across the corridor as well as and to/from the neighborhoods and transit facilities in the vicinity of the corridor.

There are limits to how wide the road should be. Safe pedestrian, bicycle, and transit environments require that space in the roadway for vehicular movement is limited. In addition to lane widths, this can include driveway width and spacing and intersection spacing.

Roadway capacity is not necessarily the main improvement driver, but is considered relative to the other goals for the area. When viewed in context, solutions other than road widening will be more likely to be among improvement alternatives.

- **Adjacent neighborhood enhancements are appropriate for the transportation system.** Capture tax increment from business growth to reinvigorate and beautify older nearby residential neighborhoods.

  Manage and calm growth in traffic impacts that may occur from new development (i.e. increasing cut-through traffic on local streets).

  Transportation enhancements can lead major reinvestment when part of a planned strategy with targeted local funding.

- **Highly accessible multimodal transportation environments.** Growing traffic congestion generally is creating a market advantage to corridors that successfully enhance links to the larger region and provide multiple mode choice. Mode choice and regional access is a key factor in household and business location decisions.

  Pedestrian safety and comfort enlivens street activity and is increasingly seen as an amenity in mixed-use, retail, and office locations.

  Design guidance to preserve and enhance community character should be integrated into the elements of the transportation system to reinforce unique characteristics of place.

Chapter 5 Application to Metro Corridors

This chapter describes the characteristics of nine Corridors that were selected by Metro staff as candidates for a more detailed case-study evaluation in Phase II of this project. The chapter has three sections:

- Overview of candidate Metro Corridors. Compares the nine Corridors broadly on various land use, market, and transportation variables.
- Corridor-by-Corridor description. More detail about each Corridor.
- Review of local policies. An evaluation of land use and development policies in three of the candidate Corridors, for the purpose of getting a sense of the policies that apply generally to all Corridors.

An evaluation of the Study Corridors and a recommendation for a Phase II case study Corridor is in Chapter 6.

OVERVIEW OF CANDIDATE METRO CORRIDORS

The case study Corridor analyzed in Phase II of this study will be selected from a pre-selected subset of State Highways that are designated as Corridors on the 2040 Growth Concept Map and that run through one or more Centers. These Corridors are collectively referred to as the Study Corridors. The Study Corridors are:

- Beaverton Hillsdale Highway: Beaverton Regional Center through Raleigh Hills Town Center to Hillsdale Town Center;
- Canyon Road: Beaverton Regional Center to Sunset Highway
- Hall Boulevard: Washington Square Regional Center to Tigard Town Center;
- Highway 43: Lake Oswego Town Center to West Linn Town Center;
- McLoughlin Boulevard: Milwaukie Town Center to Oregon City Regional Center;
- Pacific Highway (Or 99W): West Portland Town Center to Tigard Town Center to King City Town Center
- Powell Boulevard: I-205 to Gresham Regional Center;
- Tualatin Valley Highway: Hillsboro Regional Center to Cornelius Main Street to Forest Grove Town Center; and
- 82nd Avenue: Clackamas Regional Center, Lents Town Center, and Station Communities.

The Study Corridors are state highways (for at least part of the Corridor) as well as Metro designated Corridors. Their land uses and transportation characteristics differ, to varying degrees, from other Metro Corridors. For example, many of the Metro designated Corridors are along neighborhood-

serving, mixed-use streets, such as Belmont Street and Hawthorne Street in Portland.

METHODS

The project team attempted to categorize the various segments of the study Corridors according to the typology from Chapter 2. The methodology for determining characteristics of study Corridors was as follows:

- Examination of aerial photographs of the Corridors from the MetroMap program on Metro's website
- Tour of the study Corridors on June 28, 2004
- Analysis of data from Metro on land use, land values, and other characteristics
- Analysis of average daily traffic volumes from the ODOT website

LAND USE CHARACTERISTICS

If the Study Corridors were categorized based on their average characteristics, they would all be considered low-density, though most have residential uses as well as retail and commercial uses along their length. In most cases, setbacks are large, and parking for retail and commercial uses tends to be in front of the buildings.

The Study Corridors represent only a small fraction (about 6% of the gross acres) of all Metro designated Corridors, as shown in Table 5-1[1]. Almost half of the land in the study corridors is designated as commercial, compared to about 22% in all Metro corridors.

Table 5-1. Gross acres, Metro Corridors and Study Corridors, 2004

Land Use	All Metro Corridors	% of Metro Corridors	Study Corridors	% of Study Corridors	% of all Metro Corridors
Commercial	7,922	22%	983	46%	12%
Industrial	2,256	6%	33	2%	1%
Single-family	13,296	38%	541	25%	4%
Multi-family	3,167	9%	218	10%	7%
Public	3,191	9%	116	5%	4%
Rural	2,486	7%	0	0%	0%
Agriculture	2,342	7%	0	0%	0%
Forest	595	2%	0	0%	0%
Vacant	6,654	19%	235	11%	4%
Grand Total	35,253	100%	2,126	100%	6%

Source: May 2004 Metro RLIS Lite, Corridor Boundaries from Metro, ECONorthwest GIS analysis.

[1] The data in Tables 5-1, 5-2, and the individual Corridors is from Metro RLIS data. The RLIS data includes land and improvement values provided by the Clackamas, Multnomah, and Washington County Assessors. Even though the data is inconsistent in some instances, it is the best data available at this time.

Table 5-2 shows that the market values (land and improvement value) in the Study Corridors are about 1-1/2 times higher than all Metro Corridors. The market value of commercial land in the Study Corridors is about 75% of the value of all Metro Corridors. The higher value of multi-family uses may mean that there is a premium for multi-family residential along the Study Corridors.

Table 5-2. Market value per acre of land, Metro Corridors and Candidate Case Study Corridors, 2004

Land Use	All Metro Corridors	Study Corridors	% of All Metro Corridors
Commercial	$1,687,099	$1,283,477	76%
Industrial	$3,544,246	$796,792	22%
Single-family	$1,271,145	$1,227,591	97%
Multi-family	$1,330,215	$1,483,135	111%
Public	$148,764	$589,256	396%
Rural	$171,499	$0	0%
Agriculture	$37,410	$0	0%
Forest	$45,297	$0	0%
Vacant	$187,703	$301,531	161%
Grand Total	$1,067,551	$1,136,115	106%

Source: May 2004 Metro RLIS Lite, Corridor Boundaries from Metro, ECONorthwest GIS analysis.

MARKET CHARACTERISTICS

Table 5-3 shows that Canyon Road has the highest average land value, improvement value, improvement value per square foot, and rent among all the study corridors.

Table 5-3. Land and improvement values, vacancy rates and rents for select commercial properties, Study Corridors, 2004

Corridors	Avg. Land Value/SF	Average Improvement Value	Avg. Improvement Value/SF	Vacancy Rates	Quoted Rents
Beaverton Hillsdale Highway	$8.67	793	$24.40	6.1%	$13.96
Canyon Road	$16.98	4,009	$87.36	11.2%	$21.29
Hall Boulevard	$12.58	1,160	$47.14	11.4%	$10.85
Highway 43	$8.40	2,644	$52.32	4.0%	$17.53
McLoughlin Boulevard	$6.89	2,310	$50.15	25.6%	$13.19
Pacific Highway (or 99W)	$10.13	2,292	$64.04	6.7%	$14.94
Powell Boulevard	$9.58	729	$51.31	3.5%	$15.00
Tualatin Valley Highway-Baseline	$5.20	1,485	$50.20	8.8%	$14.52
82nd Avenue	$13.07	930	$13.61	1.9%	$21.20

Source: Johnson Gardner and Associates, 2004.
Note: The width of each corridor was delineated by JOHNON GARDNER to include properties defined as retail/commercial use that were located within two blocks of either side of the corridor. Thus, properties with high visibility and access from the main corridor could be included. Under this methodology, almost 75% of the properties had addresses located directly on the main corridor.

The data in this table on vacancy, rents, construction year, parking, rentable square feet, leasing activity, and absorption was discovered using Costar. Data for land size, land values, and improvement values originated from Portlandmaps.com.

The study corridors vary greatly with respect to the nature and magnitude of development activity. Corridors such as 82nd Avenue, Beaverton-Hillsdale Highway, Canyon Road, and Powell Boulevard have significant and vital commercial developments, while other corridor such as

Hall Boulevard remained largely suburban and residential in nature.

The key market findings include:

- There is currently little premium in terms of land value associated with Town Center or Corridors compared to Regional Centers. The value of both land and improvements was generally higher on average in the Study Corridors than Town Center. This may reflect the relative age of development, as Town Center developments are typically older and lower in quality.

- Retail development in the Study Corridors is outperforming the general market in terms of occupancy, although conditions vary widely. Extremely low vacancy rates were reported in the 82nd Avenue and Powell Boulevard Corridors, while the McLoughlin Boulevard Corridor reported a retail vacancy rate of over 25%.

- The most valuable property in the study is in the Canyon Road Corridor. This area boasted the highest average land values ($16.98 per square foot). Meanwhile the Corridor with the lowest average land values is in western Washington County. The Tualatin Valley Highway Corridor averaged only $5.20 land value per square foot.

- The Corridors were impacted by the recent recession, with a negative net absorption in almost every instance. Only the northeast (82nd Avenue and Powell Boulevard) Corridors posted net absorption gains this year.

- The average quoted rent across all corridor properties is estimated at approximately $15 per square foot. The highest rents are along Canyon Road ($21.29 per square foot) and 82nd Avenue ($21.20 per square foot) by a significant margin. Rents along these two Corridors are nearly double that of the lowest rents in the region located along Hall Boulevard ($10.85 per square foot).

TRANSPORTATION CHARACTERISTICS

In terms of traffic volumes, half of the Study Corridors would be considered higher-volume (30,000-50,000 vehicles per day) and half would be considered lower-volume (10,000-30,000 VPD), as shown in Table 5-4.

Table 5-4: Average daily traffic volumes, 2002, study Corridors

Study Corridor	Average Daily Traffic Volumes	Higher- or Lower-Volume (H or L)
Beaverton-Hillsdale Highway (Beaverton R.C. through Raleigh Hills T.C. to Hillsdale T.C.)	30,000-40,000, with the higher volumes at the western (Beaverton) end	H
Canyon Road (Beaverton R.C. to Sunset Highway)	22,000-31,000, except for 42,000 just west of 217 (in Beaverton R.C.)	L
Hall Blvd (Washington Square R.C. to Tigard T.C.)	12,000-25,000	L
Highway 43 (Lake Oswego T.C. to West Linn T.C.)	20,000-35,000, but mostly around 20,000 except for State Street in downtown Lake Oswego	L
McLoughlin Blvd. (Milwaukie T.C. to Oregon City T.C.)	40,000-50,000, but mostly around 40,000 south of Milwaukie T.C.	H
Pacific Highway (Or 99W): West Portland Town Center to Tigard Town Center to King City Town Center	40,000-60,000, but mostly around 50,000	H
Powell Blvd. (I-205 to Gresham R.C.)	20,000-25,000	L
Tualatin Valley Highway (Hillsboro T.C. to Forest Grove T.C.)	30,000-40,000, except for a small segment in western Forest Grove at around 10,000	H
82nd Ave. (I-84 to Clackamas R.C.)	25,000-35,000 (at the lower end near the County line, at the higher end by Sunnyside Road)	H

Source: Oregon Department of Transportation, http://www.odot.state.or.us/tdb/traffic_monitoring/tvtable.htm

CORRIDOR SEGMENTS

The notes in the Table 5-4 indicate that the traffic volumes vary across the length of any given Corridor. The same is true of other transportation characteristics—including the number of travel lanes—and of land use characteristics. When one looks at aerial photographs or drives down the Study Corridors, it is obvious that some segments are residential, some are retail/commercial, some are institutional or industrial, and some are parkland. By and large, though, the densities are quite low. The few exceptions are residential segments with apartment buildings—though these apartment buildings are usually set back from the Corridor with ample parking and open space—and retail/commercial segments in older Main Streets like Cornelius and Forest Grove. Even thriving retail centers with a large market area, while they constitute economic intensity, are almost exclusively built with substantial parking lots between the buildings and the Corridor.

Therefore, nearly all of the segments within the study Corridors would fall into the following four categories out of the eight categories in the typology:

- Higher traffic volume, lower-density retail/commercial

- Lower traffic volume, lower-density retail/commercial
- Higher traffic volume, residential (mostly lower-density)
- Lower traffic volume, residential (mostly lower-density)

There are a few segments with either higher and lower traffic volumes that exhibit higher-density retail/commercial, and there are several "specialty segments" with large industrial, institutional, or parkland uses; nonetheless, the four categories above seem to be the most prevalent part of the typology found in the constituent segments of the study Corridors.

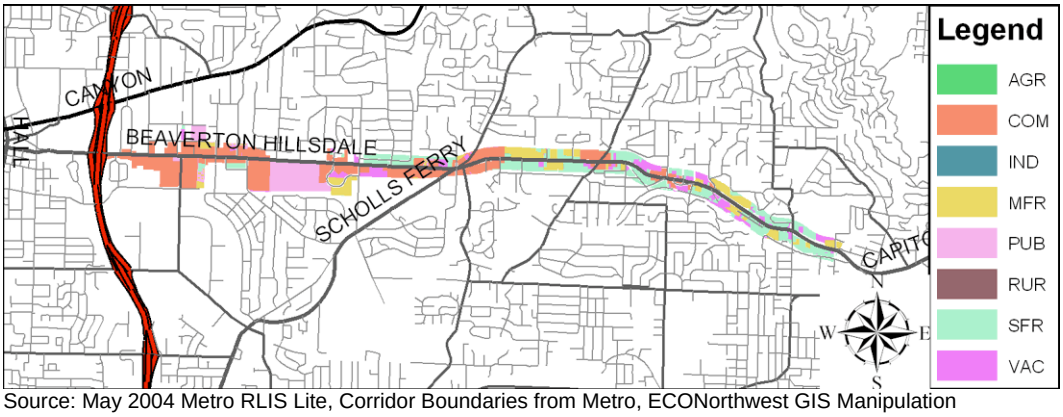
CORRIDOR-BY-CORRIDOR DESCRIPTION

This section illustrates the diversity of land uses and transportation characteristics along the study Corridors by describing the study Corridors from one end to another based on aerial photographs, on-the-ground examination by the project team, and analysis of Metro RLIS data.

BEAVERTON-HILLSDALE HIGHWAY (BEAVERTON REGIONAL CENTER TO HILLSDALE TOWN CENTER)

Figure 5-1[2] and Table 5-7 show the land use and market values in the Beaverton-Hillsdale Corridor. This Corridor has one of the highest concentrations of residential land (42% of the Corridor is residential), however, most of the residential use is located east Scholls Ferry Road.

Figure 5-1. Land use in the Beaverton-Hillsdale Highway Corridor, 2004[3]



Source: May 2004 Metro RLIS Lite, Corridor Boundaries from Metro, ECONorthwest GIS Manipulation

[2] The study area for all the Study Corridors was determined by selecting entire tax lots that have a boundary within 350 feet of the center line of the Corridor.

[3] The land use maps for the Study Corridors may include some land uses that are in designated Centers. However, the land use tables that follow each map include only the uses that are within designated Corridors.

Table 5-7. Land use and land and improvement values, Beaverton-Hillsdale Highway Corridor, 2004

Land Use	Gross Acres	Building Square Feet (SF)	SF/Acre	Total Market Value	Improvement Value	Improvement Value/SF	Improvement Value/Acre
Commercial	118	289,445	2,455	$175,205,950	$112,484,790	$389	$954,231
Industrial	0	0	0		$0	$0	$0
Single-family	68	647,651	9,551	$87,053,900	$54,661,170	$84	$806,093
Multi-family	42	683,983	16,309	$67,627,420	$57,079,910	$83	$1,360,990
Public	8	11,925	1,406	$10,602,550	$1,985,840	$167	$234,179
Rural	0	0	0		$0	$0	$0
Agriculture	0	0	0		$0	$0	$0
Vacant	27	0	0	$7,972,980	$88,830	$0	$3,259
Grand Total	**263**	**1,633,004**	**6,200**	**$348,462,800**	**$226,300,540**	**$139**	**$859,249**

Source: May 2004 Metro RLIS Lite, Corridor Boundaries from Metro, ECONorthwest GIS analysis.

This Study Corridor is primarily a mix of low-density residential and retail/commercial uses. It has four travel lanes with a painted median strip most of the way.

Going west to east, the segment between Highway 217 and 91st Avenue fits generally into the lower-density retail/commercial and high traffic volume typology. At the intersection of Highway 217 and the Beaverton-Hillsdale Highway is "big box" development with large parking lots at the corner of SW 110th, at 109th near Highway 217, and continuing east to 91st Ave. A specialty segment, Jesuit High School at 91st Avenue, bisects this segment. Single-family residential use is predominant east of Laurelwood and near 77th Ave. There is also a vacant lot and a shopping center in this area.

Figure 5-2. Land and transportation development along the Beaverton-Hillsdale Corridor, 2004

Source: Becky Steckler, ECONorthwest, June 2004.

The corner of Scholls Ferry is very auto-dominated, with large parking lots and shopping centers and little orientation towards the street. Once the Beaverton-Hillsdale Highway crosses the Washington County line, it is no longer a state highway. This segment continues for a short distance east of Scholls Ferry with some apartment buildings, but there is still a fair bit of low-density retail/commercial use with large parking lots. The amount of residential activity increases east of 50th Ave. and typifies a residential Corridor segment, with a higher concentration of streetscape trees and

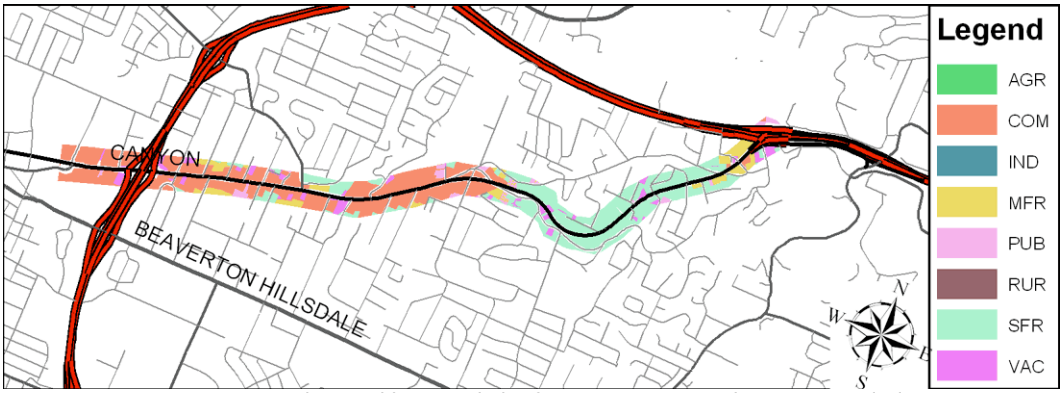
limited access in a parkway style east of Dosch Road. The Corridor ends with low-density commercial uses at the interchange with Capitol Highway.

This Corridor has lower than average market values compared to other Study Corridors.

CANYON ROAD (BEAVERTON REGIONAL CENTER TO SUNSET HIGHWAY)

Figure 5-3 and Table 5-8 shows the land use and market values in the Canyon Road Corridor. This Corridor has two well-defined segments: a residential segment for the northern third of the Corridor, and a low-density commercial segment for the southern two-thirds. The topography changes from hilly in the northern residential end of the Corridor to the flatter commercial end in the southwest. The low-density commercial uses are surrounded by large parking lots at Canyon Road for the length of the commercial corridor segment.

Figure 5-3. Land use, Canyon Road Corridor, 2004



Source: May 2004 Metro RLIS Lite, Corridor Boundaries from Metro, ECONorthwest GIS analysis.

Table 5-8. Land use and land and improvement values, Canyon Road Corridor, 2004

Land Use	Gross Acres	Building Square Feet (SF)	SF/Acre	Total Market Value	Improvement Value	Improvement Value/SF	Improvement Value/Acre
Commercial	83	0	0	$80,909,400	$37,349,570	$0	$447,461
Industrial	0	0	0		$0	$0	$0
Single-family	42	499,589	12,030	$55,467,050	$28,234,700	$57	$679,863
Multi-family	12	21,503	1,765	$15,384,691	$12,646,191	$588	$1,038,275
Public	3	0	0	$301,060	$0	$0	$0
Rural	0	0	0		$0	$0	$0
Agriculture	0	0	0		$0	$0	$0
Vacant	11	0	0	$4,005,790	$3,830	$0	$362
Grand Total	**151**	**521,092**	**3,460**	**$156,067,991**	**$78,234,291**	**$150**	**$519,450**

Source: May 2004 Metro RLIS Lite, Corridor Boundaries from Metro, ECONorthwest GIS analysis.

Figure 5-4. Land and transportation development along the Canyon Road Corridor, 2004

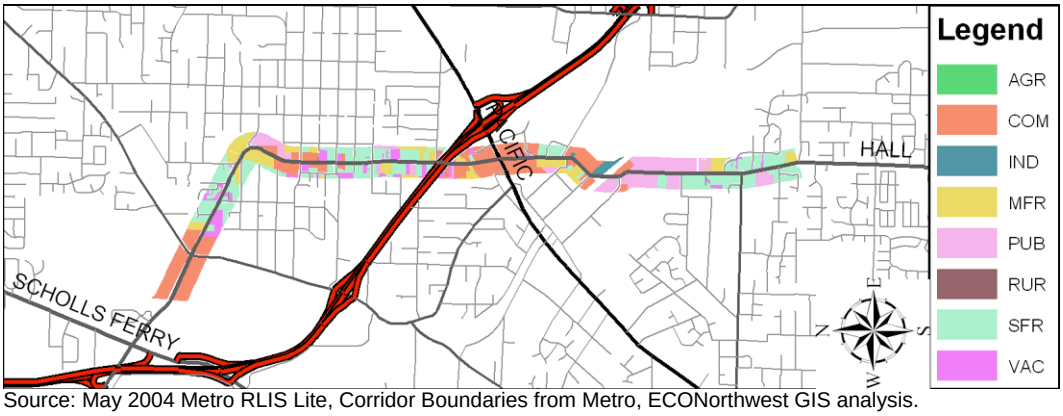
Source: Becky Steckler, ECONorthwest, June 2004.

This study Corridor has two lanes in either direction plus a painted median strip. Auto dominated uses, including several new and used car sales lots, are located in the northern section of the commercial segment.

HALL BOULEVARD (WASHINGTON SQUARE REGIONAL CENTER TO TIGARD TOWN CENTER

Figure 5-5 and Table 5-9 show the land use and market values in the Hall Boulevard Corridor. This study Corridor contains a mix of low-density residential, low-density retail/commercial, and civic and parkland uses. It begins with two lanes of traffic in either direction at Washington Square Regional Center and then narrows to two travel lanes to the southeast.

Figure 5-5. Land use, Hall Boulevard Corridor, 2004



Source: May 2004 Metro RLIS Lite, Corridor Boundaries from Metro, ECONorthwest GIS analysis.

Table 5-9. Land use and land and improvement values, Hall Boulevard Corridor, 2004

Land Use	Gross Acres	Building Square Feet (SF)	SF/Acre	Total Market Value	Improvement Value	Improvement Value/SF	Improvement Value/Acre
Commercial	55	8,508	155	$78,500,710	$48,050,140	$5,648	$874,912
Industrial	0	0	0	$99,560	$42,380	$0	$201,810
Single-family	58	409,157	7,064	$48,860,290	$22,813,620	$56	$393,882
Multi-family	26	29,284	1,122	$30,117,130	$24,782,230	$846	$949,147
Public	41	47,456	1,161	$9,824,000	$3,167,770	$67	$77,527
Rural	0	0	0		$0	$0	$0
Agriculture	0	0	0		$0	$0	$0
Vacant	18	0	0	$3,546,340	$0	$0	$0
Grand Total	**198**	**494,405**	**2,501**	**$170,948,030**	**$98,856,140**	**$200**	**$500,082**

Source: May 2004 Metro RLIS Lite, Corridor Boundaries from Metro, ECONorthwest GIS analysis

Figure 5-6. Residential land use along Hall Boulevard Corridor, 2004

Source: Becky Steckler, ECONorthwest, June 2004.

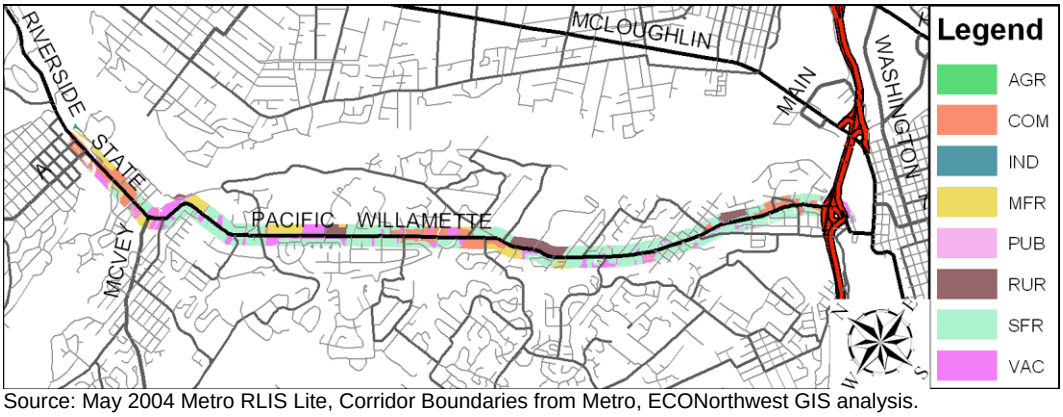
Big-box retail is found at the study Corridor's beginning in Washington Square Regional Center and is followed by a mix of apartments (not oriented towards Hall Blvd.) and some industrial and commercial uses.

Tigard Town Center has low-density commercial uses with large setbacks and parking lots at the corner of Pacific Highway, especially the northwest, northeast, and southeast corners. Industrial uses exist south of Pacific Highway up to the City Hall/Library complex and Fanno Creek Park. After the park, low-density residential use dominates the study Corridor until its end just south of McDonald Street.

HIGHWAY 43 (LAKE OSWEGO TOWN CENTER TO WEST LINN TOWN CENTER)

Figure 5-7 and Table 5-10 show the land use and market values in the Highway 43 Corridor. This study Corridor is primarily low-density residential, though there are some industrial and commercial segments.

Figure 5-7. Land use, Highway 43 Corridor, 2004



Source: May 2004 Metro RLIS Lite, Corridor Boundaries from Metro, ECONorthwest GIS analysis.

Table 5-10. Land use and land and improvement values, Highway 43 Corridor, 2004

Land Use	Gross Acres	Building Square Feet (SF)	SF/Acre	Total Market Value	Improvement Value	Improvement Value/SF	Improvement Value/Acre
Commercial	21	0	0	$83,489,112	$59,324,470	$0	$2,845,298
Industrial	0	0	0		$0	$0	$0
Single-family	35	1,217,192	34,678	$139,868,624	$86,219,750	$71	$2,456,403
Multi-family	17	198,608	12,015	$38,798,922	$34,731,960	$175	$2,101,147
Public	0	0	0		$0	$0	$0
Rural	0	0	0	$4,894,098	$4,240,970	$0	$0
Agriculture	0	0	0		$0	$0	$0
Vacant	24	814	33	$7,027,301	$0	$0	$0
Grand Total	**97**	**1,416,614**	**14,636**	**$274,078,057**	**$184,517,150**	**$130**	**$1,906,366**

Source: May 2004 Metro RLIS Lite, Corridor Boundaries from Metro, ECONorthwest GIS analysis.

After some low-density industrial, commercial, and residential uses on State Street in Lake Oswego Town Center, Oregon 43 becomes leafy and residential Willamette Drive, with most access onto side streets instead of onto OR 43. Willamette Drive widens to four travel lanes to accommodate the large land use of Marylhurst College and then progresses south to low-density residential uses. Some low-density commercial uses are found near Cedar Creek before returning to low-density residential uses. Some apartments are found in the Hughes Dr. and Fawn Ct. area, which is zoned R10. There is a large intersection at the corner of Elliot/West A St., with a surrounding grid of streets and commercial zoning. South of that intersection, the land use is higher-density residential and lower-density commercial until I-205.

Figure 5-8. Land and transportation development along the Highway 43 Corridor, 2004

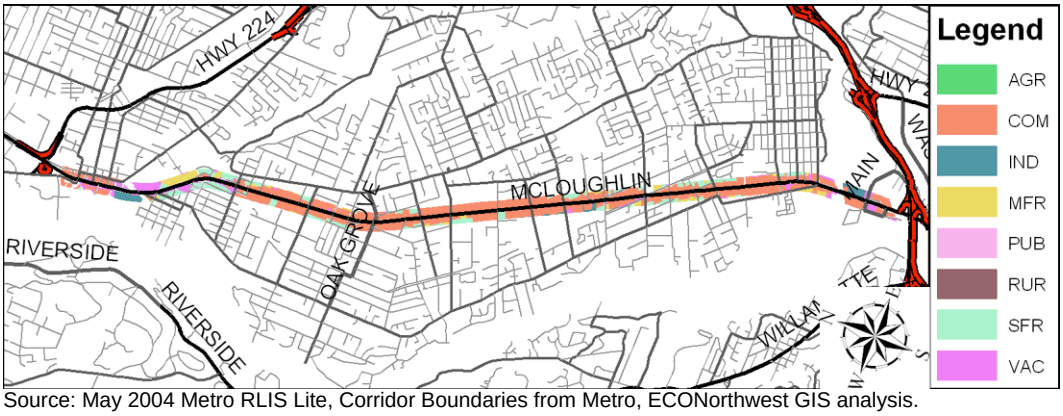
Source: Becky Steckler, ECONorthwest, June 2004.

This Study Corridor is mostly two travel lanes with the exception of State Street in Lake Oswego, the Marylhurst College area in West Linn, the Elliott/West A. St. intersection in West Linn, and the junction with I-205.

MCLOUGHLIN BOULEVARD (MILWAUKIE TOWN CENTER TO OREGON CITY TOWN CENTER)

Figure 5-9 and Table 5-11 show the land use and market values in the McLoughlin Boulevard Corridor. The majority of the Corridor (78%) is designated as commercial. Less than 20 acres of residential and 20 acres of vacant land exist in the Corridor and are concentrated in the northern most section.

Figure 5-9. Land use and land and improvement values, McLoughlin Boulevard Corridor, 2004



Source: May 2004 Metro RLIS Lite, Corridor Boundaries from Metro, ECONorthwest GIS analysis.

Table 5-11. Land use and improvement values, McLoughlin Boulevard Corridor, 2004

Land Use	Gross Acres	Building Square Feet (SF)	SF/Acre	Total Market Value	Improvement Value	Improvement Value/SF	Improvement Value/Acre
Commercial	138	9,758	71	$210,560,971	$117,303,770	$12,021	$847,509
Industrial	4	0	0	$11,099,961	$10,243,430	$0	$2,567,276
Single-family	12	308,824	26,395	$30,374,128	$17,429,960	$56	$1,489,740
Multi-family	5	7,481	1,582	$15,964,326	$12,580,900	$1,682	$2,659,810
Public	0	0	0		$0	$0	$0
Rural	0	0	0		$0	$0	$0
Agriculture	0	0	0		$0	$0	$0
Vacant	20	0	0	$5,073,738	$17,800	$0	$912
Grand Total	**178**	**326,063**	**1,828**	**$273,073,124**	**$157,575,860**	**$483**	**$883,520**

Source: May 2004 Metro RLIS Lite, Corridor Boundaries from Metro, ECONorthwest GIS analysis.

This five-mile Corridor is mostly low-density "strip" retail/commercial. It begins with small-scale strip development in Milwaukie Town Center and then becomes a parkway with single-family residential and apartments on either side. A large building with parking is found across from Evergreen Ave. Another large building is at the northeast corner of Oak Grove Blvd. and to the southwest. A large commercial use is just east of the intersection with Concord Rd. There are car lots near Naef Road on the east side and then on the west side moving south. The land use stays low-density but gets smaller-scale, until the area north of Gloucester Street in Gladstone, which has an abundance of car lots. The buildings here, while surrounded by parking, do not appear small and inexpensive. The southernmost part of this study Corridor is the large, low-density Oregon City Shopping Center north of I-205.

Figure 5-10. Land and transportation development along McLoughlin Boulevard Corridor, 2004

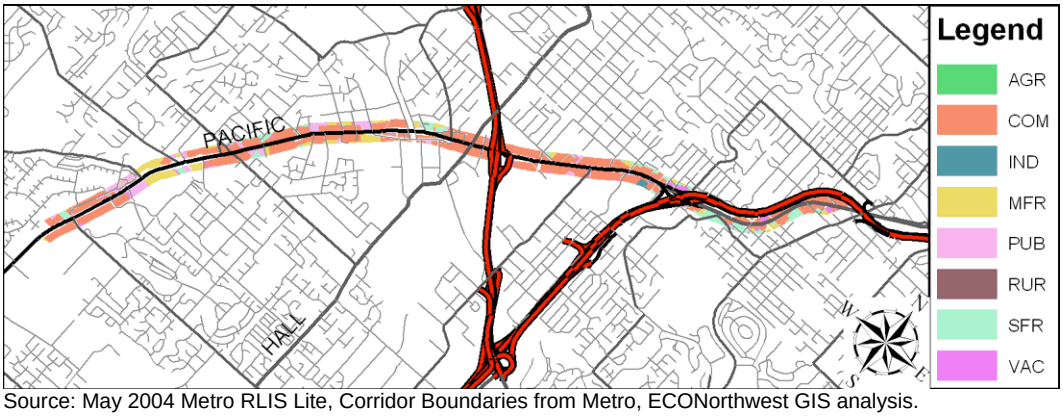
Source: Becky Steckler, ECONorthwest, June 2004.

In terms of road type, this study Corridor consists mostly of two-way left turn lanes in either direction plus a painted-on median strip.

PACIFIC HIGHWAY (OR 99W): WEST PORTLAND TOWN CENTER TO TIGARD TOWN CENTER TO KING CITY TOWN CENTER

Figure 5-11 and Table 5-12 show the land use and market values in the Pacific Highway (99W) Corridor. Almost 80% of this Corridor is designated as commercial.

Figure 5-11. Land use, Pacific Highway (99W) Corridor, 2004



Source: May 2004 Metro RLIS Lite, Corridor Boundaries from Metro, ECONorthwest GIS analysis.

Table 5-12. Land use and land and improvement values, Pacific Highway (99W) Corridor, 2004

Land Use	Gross Acres	Building Square Feet (SF)	SF/Acre	Total Market Value	Improvement Value	Improvement Value/SF	Improvement Value/Acre
Commercial	326	463,671	1,421	$384,552,300	$218,623,240	$472	$670,048
Industrial	0	0	0		$0	$0	$0
Single-family	17	204,874	11,808	$23,048,320	$11,322,780	$55	$652,610
Multi-family	36	164,994	4,529	$48,056,650	$40,984,330	$248	$1,125,016
Public	22	12,720	591	$9,373,350	$1,988,610	$156	$92,408
Rural	0	0	0		$0	$0	$0
Agriculture	0	0	0		$0	$0	$0
Vacant	13	0	0	$5,263,290	$51,780	$0	$3,917
Grand Total	**415**	**846,259**	**2,040**	**$470,293,910**	**$272,970,740**	**$323**	**$658,078**

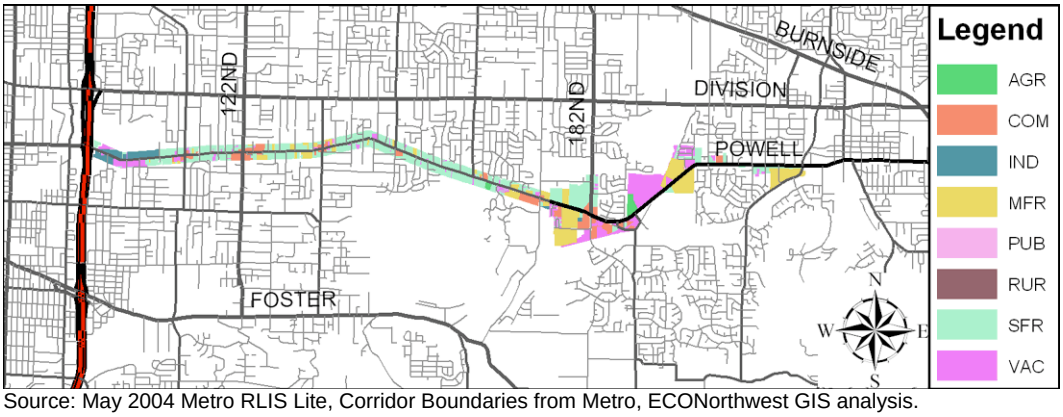
Source: May 2004 Metro RLIS Lite, Corridor Boundaries from Metro, ECONorthwest GIS analysis.

Moving southwest to northeast, the Corridor is low-density commercial around the Durham Road/Pacific Highway intersection. Moving northeast, there is a residential segment (primarily residential) from Royal to about 112th Avenue. The apartment buildings to the west are close to the Highway, while trees buffer the apartments on the east side. Commercial uses continue until past Highway 217. The Corridor has a mix of commercial and residential land uses as it parallels I-5.

POWELL BOULEVARD (I-205 TO GRESHAM REGIONAL CENTER)

Figure 5-12 and Table 5-13 show the land use and market values, and floor-to-area ratio of land uses in the Powell Boulevard Corridor. Unlike most of the other Study Corridors, the Powell Boulevard Corridor is primarily low-density residential—almost 70% of the gross acreage is designated as single-family or multi-family residential.

Figure 5-12. Land use, Powell Boulevard Corridor, 2004



Source: May 2004 Metro RLIS Lite, Corridor Boundaries from Metro, ECONorthwest GIS analysis.

Table 5-13. Land use and land and improvement values, Powell Boulevard Corridor, 2004

Land Use	Gross Acres	Building Square Feet (SF)	SF/Acre	Total Market Value	Improvement Value	Improvement Value/SF	Improvement Value/Acre
Commercial	56	479,101	8,558	$48,546,790	$31,465,280	$66	$562,081
Industrial	13	110,259	8,567	$12,059,870	$9,527,040	$86	$740,252
Single-family	193	1,815,862	9,413	$161,224,310	$111,740,700	$62	$579,267
Multi-family	92	1,874,781	20,338	$135,901,530	$124,158,370	$66	$1,346,912
Public	0	0	0		$0	$0	$0
Rural	0	0	0		$0	$0	$0
Agriculture	0	12,528	0	$608,420	$433,990	$35	$0
Vacant	57	2,773	49	$16,155,220	$417,830	$151	$7,354
Grand Total	**411**	**4,295,304**	**10,457**	**$374,496,140**	**$277,743,210**	**$65**	**$676,186**

Source: May 2004 Metro RLIS Lite, Corridor Boundaries from Metro, ECONorthwest GIS analysis.

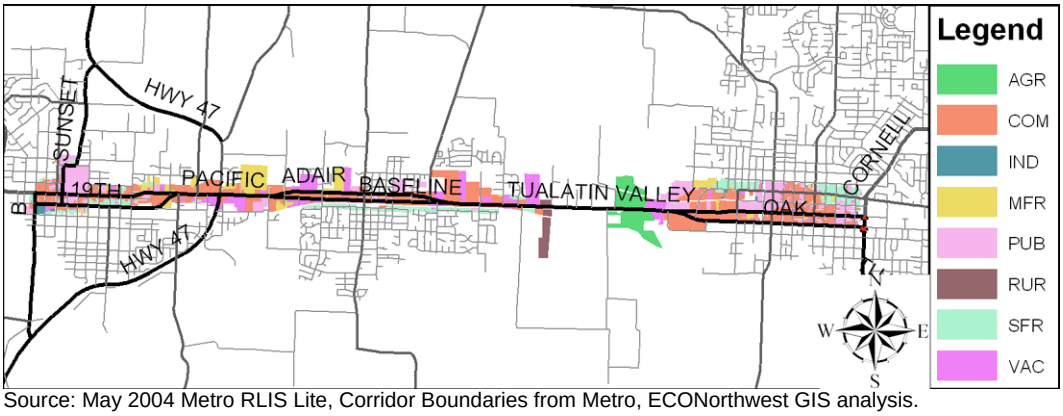
The western portion of this Study Corridor begins with industrial uses and Edward Benedict Park and then becomes residential with a mix of single-family homes on small lots and some apartments. There is some low-density commercial activity around 112th Ave. A large shopping center with ample parking is found on the south side of 122nd Ave., and there is commercial activity with zero setback at the northeast corner. Continuing to move east, the land use is mostly residential with many apartments and little direct access onto Powell. The land use remains mostly residential past 145th Ave. with many subdivisions. There is a large commercial use with a large parking lot at 164th Ave., and a large shopping center at the south side of 174th Ave. Manufacturing uses appear northeast of 174th. Subdivisions and a retirement village are found to the east.

The road then widens to two lanes in either direction. There is a large commercial use near the Springwater Corridor, then the South West Community Park and a very large vacant site. Moving east towards the Gresham Regional Center, there are more apartments, subdivisions, and single-family residential homes with low-density commercial at the intersection of Eastman Parkway. East of Main Ave., within the Gresham Regional Center, land uses become higher density with zero setbacks in many cases.

TUALATIN VALLEY HIGHWAY (HILLSBORO TO FOREST GROVE)

Figure 5-13 and Table 5-14 show the land use and market values in the Tualatin Valley Highway Corridor. This Corridor has a mix of different land uses that make it more difficult to segment compared to the other Study Corridors. It has one of the highest concentrations of public use (52 acres) and vacant land (50 acres).

Figure 5-13. Land use, Tualatin Valley Highway Corridor, 2004



Source: May 2004 Metro RLIS Lite, Corridor Boundaries from Metro, ECONorthwest GIS analysis.

Table 5-14. Land use and land and improvement values, Tualatin Valley Highway Corridor, 2004

Land Use	Gross Acres	Building Square Feet (SF)	SF/Acre	Total Market Value	Improvement Value	Improvement Value/SF	Improvement Value/Acre
Commercial	178	317,033	1,781	$206,938,420	$137,372,860	$433	$771,801
Industrial	1	0	0	$196,840	$42,120	$0	$35,100
Single-family	20	470,162	23,976	$44,173,767	$22,692,247	$48	$1,157,177
Multi-family	16	0	0	$16,231,430	$12,229,040	$0	$784,416
Public	52	33,909	649	$45,414,370	$24,997,190	$737	$478,598
Rural	0	0	0	$0	$0	$0	$0
Agriculture	0	0	0	$0	$0	$0	$0
Vacant	50	3,065	61	$11,965,610	$47,010	$15	$943
Grand Total	**316**	**824,169**	**2,604**	**$324,920,437**	**$197,380,467**	**$239**	**$623,694**

Source: May 2004 Metro RLIS Lite, Corridor Boundaries from Metro, ECONorthwest GIS analysis.

This Study Corridor—it's two travel lanes in either direction plus a painted median strip—begins near 10th Ave. in Hillsboro with a mix of densities in downtown Hillsboro. Some uses have zero setbacks, while others have substantial in-front parking. The hospital is a prominent use, as is the Civic Center on the western edge of downtown. Manufacturing uses are present west of Dennis Ave. The uses continue to become lower-density moving west with a large shopping center at the southeast corner of 17th Ave. across from Hillsboro Cemetery. A vacant site zoned for manufacturing exists before crossing the Urban Growth Boundary, to the west of which is agricultural land stretching to Cornelius.

Figure 5-14. Land use along Tualatin Valley Highway Corridor, 2004

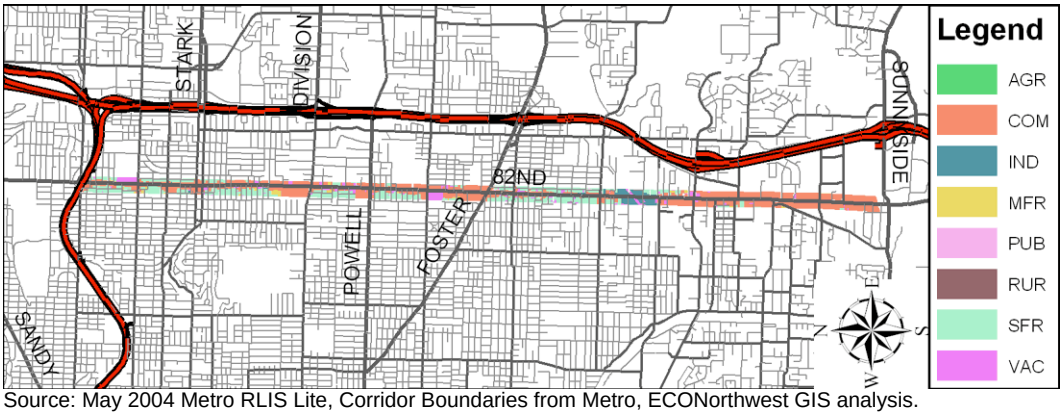
Source: Becky Steckler, ECONorthwest, June 2004.

The Cornelius section of Tualatin Valley Highway is fairly low density with significant vacant commercial land and a large school. The urban form becomes more "main street" west of 14th Ave. but is still fairly low-density. A large vacant field is found in western Cornelius. Entering Forest Grove, there are a substantial number of parking lots and empty space as Pacific Ave. narrows from four lanes to two. Land uses densify near Pacific University, especially at the intersection of Main Street and a few blocks to the west.

82ND AVENUE (I-84 TO CLACKAMAS REGIONAL CENTER)

Figure 5-15 and Table 5-15 show the land use, market values, and floor-to-area ratio of land uses in the 82nd Avenue Corridor. The Corridor has a mix of residential and commercial segments. It is two travel lanes in each direction, plus a painted median strip.

Figure 5-15. Land use, 82nd Avenue Corridor, 2004



Source: May 2004 Metro RLIS Lite, Corridor Boundaries from Metro, ECONorthwest GIS analysis.

Table 5-15. Land use and land and improvement values, 82nd Avenue Corridor, 2004

Land Use	Gross Acres	Building Square Feet (SF)	SF/Acre	Total Market Value	Improvement Value	Improvement Value/SF	Improvement Value/Acre
Commercial	188	1,543,194	8,224	$297,241,854	$142,826,500	$93	$761,173
Industrial	19	172,849	9,273	$13,787,410	$7,066,870	$41	$379,124
Single-family	121	1,217,853	10,071	$132,392,461	$81,182,300	$67	$671,316
Multi-family	7	177,565	24,159	$13,720,600	$10,878,020	$61	$1,480,003
Public	0	0	0		$0	$0	$0
Rural	0	0	0		$0	$0	$0
Agriculture	0	0	0		$0	$0	$0
Vacant	39	23,976	622	$17,190,387	$1,742,520	$73	$45,178
Grand Total	**373**	**3,135,437**	**8,403**	**$474,332,712**	**$243,696,210**	**$78**	**$653,113**

Source: May 2004 Metro RLIS Lite, Corridor Boundaries from Metro, ECONorthwest GIS analysis.

Near Glisan, 82nd is primarily commercial on the west side and has Montavilla Park on the east side. Moving south, the land uses are small-scale "strip" developments. At the northwest and southwest corner of Burnside, there are larger commercial buildings with large parking lots and large setbacks. The same thing is true south of Burnside.

Figure 5-16. Commercial uses along 82nd Avenue Corridor, 2004

Source: Becky Steckler, ECONorthwest, June 2004.

Moving south, there is a large mall at the northwest corner of Division St and large shopping centers at the northwest corner of Powell Blvd and on the east side opposite Center Street. Then Multnomah Cemetery is across from some "medium-box" retail (the Eastport Plaza). Large buildings are found northwest of Foster Road. Smaller-scale buildings with a bit of residential are found south of Foster Rd. with larger parking lots and commercial uses near the Springwater Corridor. There are large buildings with ample parking to the southeast of Johnson Creek Boulevard (the Clackamas Crossing shopping center) extending south to Clackamas Town Center and Sunnyside Road.

REVIEW OF LOCAL POLICIES

The Study Corridors analysis includes a review of comprehensive plan designations, land uses, and transportation policies for three selected Metro 2040 Corridors. Beaverton (Beaverton-Hillsdale Highway), Gresham (Powell Corridor), and Clackamas County (McLoughlin Boulevard) were characterized in this examination. Appendix D, completed by Angelo Eaton and Associates, contains a technical memorandum and a descriptive land use

and transportation matrix. The Appendix, excerpted below, identifies comprehensive plan designations, zoning districts, permitted uses, Transportation System Plan (TSP) policies, function street classifications, and street cross sections for the respective jurisdictions.

COMPREHENSIVE PLAN DESIGNATIONS

The Comprehensive Plan (CP) designations vary for the selected Corridors. Beaverton adopted "Corridor" specific CP designation and policies/objectives in its CP. Gresham did not have a "Corridor specific" CP designation along the corridor, and Clackamas County adopted a "Corridor" CP designation. Within the Transportation System Plan (TSP) portion of their CPs, the jurisdictions included specific policies as *briefly* summarized below:

- **Beaverton (Beaverton-Hillsdale Highway).** Maintain livability; consider arterial noise in re/design; provide accessible pedestrian/bikeways; design arterials to accommodate transit pads; design streets to function in Comprehensive Plan; preserve functional integrity of motor vehicle system; and support regional trips.

- **Gresham (Powell Corridor).** Protect existing and planned transportation Corridors from conflicts with adjacent land uses; provide a street system that focuses on access; provide a street system accommodating a variety of travel options; designate pedestrian districts; and improve traffic flows and access from west Gresham to I- 205 via the Powell Boulevard corridor (Oregon Statewide Bicycle Master Plan).

- **Clackamas County (McLoughlin Boulevard).** Encourage circulation between businesses by requiring that adjacent parking lots be connected to each other or to a street at the side or rear of the development; enforce the County's sign ordinance; maintain access standards between curbs; apply the typical cross sections; transit improvements should include a transit shuttle; and office and commercial developments shall integrate with adjacent neighborhoods by providing, at a minimum, excellent pedestrian access.

ZONING

A review of the zoning for the sample Corridors provides insight into the three jurisdiction's approach to managing future land uses for these areas. Zoning designations for all three Corridors include commercial and residential zones. Powell Boulevard also has some light industrial (LI) zoning primarily located along a small section just east of SW Pleasant View Drive. All three Corridors also employ mixed-use zones where residential, commercial and office uses are allowed. Beaverton's Office Commercial (OC) zone on Beaverton-Hillsdale allows a "mix" of medium and high density residential uses with office and "compatible commercial purposes, Powell Boulevard has a Corridor Mixed Use (CMU) zone for this purpose, and the Special High Density zone on McLoughlin Boulevard allows for "intense

urban residential development in conjunction with supportive commercial and office uses." Housing is also allowed as a secondary use, in conjunction with commercial construction, in Gresham's Community Commercial (CC) zone, which is located along a section intersected by SE 182nd Ave on the Powell Boulevard Corridor.

Residential zoning varies in the type and intensity allowed in the Corridors. In summary:

- **Beaverton (Beaverton-Hillsdale Highway).** Of the three study corridors, Beaverton-Hillsdale Highway is the only Corridor that allows single-family, detached residential dwellings. Detached dwellings are allowed in the City of Beaverton's R7 zoning (7,000 sq. ft./unit) and Commercial Services (CS) zones, both found in the Beaverton-Hillsdale corridor[4]. Overall, the Beaverton-Hillsdale Highway Corridor has residential districts that allow a range of high to low densities, ~32- to 3.2-units per net acre. Medium and high density residential is allowed under the OC zone (~32- to 9-units per net acre).

- **Gresham (Powell Corridor).** For the Powell Corridor, Gresham has a special designation for residential uses along Corridors; Powell Boulevard includes the Corridor Multi-Family (CMF) and Corridor Mixed Use zoning districts (CMU), both of which allows "moderate-density" residential. The density range is from 6.22 to 20 units per net acre.

- **Clackamas County (McLoughlin Boulevard).** There are four residential zones on McLoughlin Boulevard in Clackamas County: Special High Density (SHD, 60 dwelling units per net acre), High Density Residential (HDR, 25 dwelling units per net acre), Medium High Density Residential (MHDR, 18 dwelling units per net acre), and Medium Density Residential (MDR, 12 dwelling units per net acre). Despite the multiple residential zones, the McLoughlin Blvd. corridor is largely zoned commercial.

LAND USE SUMMARY

While residential units are allowed in many of the zoning districts in all of the study Corridors, they are not a requirement of development in these areas. Land costs are high enough in the area zoned for single family residential in Beaverton-Hillsdale to discourage the low level of residential development allowed. The selected study Corridors include specialty districts such as Corridor Mixed Use and Special High Density, showing that planning visions and policies are perhaps ahead of the market on the Corridors. The existing conditions examination, which will be conducted later in this study, should review the actual new re/development that is occurring in these specialty districts. Generally, these specialty districts are permissive rather

[4] Residential zones are not located directly on the highway, but are within the width of the corridor (700', 350' from centerline).

than prescriptive. For example, they do not require mixture of residential and retail, nor do they limit commercial development to "nodes" or intersections, with the exception of Gresham's work along Powell, which appears to cluster districts to specific properties and intersections. These policies reflect the lack of policy direction, political and regulatory forces to change the current conditions of these Corridors, regardless of the planning and overarching goals attributed to them.

TRANSPORTATION SYSTEM PLAN DESIGNATIONS

A summary of transportation policies, functional classifications, and street cross-sections from locally adopted transportation system plans for the sample Corridors can be found in the land use and transportation matrix in Appendix D.

CLASSIFICATION

Powell Boulevard and Beaverton-Hillsdale Highway are classified as arterials in the respective jurisdictions' Transportation System Plans. McLoughlin Boulevard is classified by Clackamas County as a Major Arterial. Gresham defines an arterial as a "moderate speed, high volume street" that accommodates the majority of regional travel through Gresham and provides access to major activity centers. Beaverton's transportation system plan states that the purpose of arterial streets is to interconnect and support the principal arterial highway system. These streets "link major commercial, residential, industrial and institutional areas" and "many of these routes connect to cities surrounding Beaverton." Major arterials in Clackamas County carry local and through traffic to and from destinations outside local communities and connects cities and rural centers. These major arterials have moderate to heavy volume and moderate to high speed. The planned street cross-sections are described below:

- **Beaverton (Beaverton-Hillsdale Highway).** Four travel lanes with 96' Right Of Way (ROW) (6' sidewalk, 7.5' pedestrian buffer, 5' bikelane, two vehicle lanes 12', 11' and 12' median/turn lane), also called a five lane cross section. These facilities may include on-street parking when possible.

- **Gresham (Powell Corridor).** Four travel lanes, 100' ROW, based on 20,000 to 40,000 vehicles per day volumes. Four travel lanes, median, bicycle lane, parking allowed only within centers, median, and left turn lane only where necessary.

- **Clackamas County (McLoughlin Boulevard).** Six different types of road ROW for this area of McLoughlin. Generally, four 12' travel lanes, in 120' ROW. Two bike lanes (6'), 14' center lane/median, two landscaped buffers (10' each), two 8' sidewalks, two utility easements (5' each). On street parking is not allowed.

TRANSPORTATION SUMMARY

Although the policies in the Comprehensive Plans reflect access to commercial and transit streets, the adopted ROW cross sections emphasize through traffic movement, especially McLoughlin Blvd. The adopted road cross-sections for these developed areas come into play when the road might be rebuilt by an adjacent property owner or through a local government transportation improvement project.

SUMMARY OF LOCAL POLICIES

We studied three Corridors to get a snapshot of the visions, policies, and permitted uses. The selected Corridors came from around the region and included two incorporated cities and an unincorporated county roadway. All three Corridors have been planned to address Metro's Corridor designation, and each includes policies and objectives that focus development to support the higher "Centers" designation in Metro's hierarchy. However, the actual zoning districts may not fully implement these visions, and/or Comprehensive Plan designations. A majority of the land in these studied Corridors is zoned for General Commercial development to support the neighboring residential areas; unfortunately, there are few design standards applied to these districts.

Similarly, the ROW cross sections vary and may not allow for a variety of development/redevelopment as might be desired along these roadways. For example, on-street parking is limited in all three cases. If additional mixed use "nodes" are desired as an outcome along Corridors (the "string of pearls" corridor development pattern) then regulations must be developed that will implement the desired outcomes.

Chapter 6

Recommendations

The recommendations in this chapter are in two broad categories that address:

- **Selection of a case-study corridor for Phase II of this study**. The Technical Advisory Committee must choose one case-study corridor from eight candidates. That choice requires evaluating the relative performance of the candidate corridors on selection criteria. There could be five to 10 broad categories of criteria; some of those criteria could have five to 10 specific measurements. At its meeting on April 27, 2004, the TAC approved three primary criteria. This section describes the criteria for selecting a case study corridor, applies the criteria to the candidate corridors, and recommends to the TAC a case-study corridor for Phase II.

- **Considerations for the work in Phase II**. This section summarizes the points we want to make sure get addressed in Phase II. In general, they do not require changes to the scope of work.

SELECTION OF A CASE-STUDY CORRIDOR

CRITERIA FOR SELECTING A CASE-STUDY CORRIDOR

ECO prepared a memorandum entitled *Criteria and Methods for Selecting a Case Study*, April 26, 2004 that made preliminary recommendations about selection criteria. The TAC discussed those criteria at a meeting on April 27, 2004 and generally agreed that three criteria should be used to choose a case study based on usefulness, data availability, and willingness of the local jurisdiction to participate.

On June 28 the project team toured several of the candidate sites. Prior to that tour they met to discuss again the evaluation criteria. During the site tour it became clear that team members were agreeing broadly that some sites were better than others. The reasons for that agreement fit under the criteria listed below, but the team did not try to make measurements of the criteria.

The conclusion of the consultant team is that all the key criteria have been considered, that it is possible to get to a logical and defensible recommendation for a case-study Corridor, and that the original idea of a detailed matrix showing measurements for each candidate corridor on each criterion would create a technical and budget burden that is not justified by the decision being made.

In the next section we provide an assessment of each of the candidate corridors on three broad criteria (which cover all the more detailed criteria and measurements discussed in the ECO technical memorandum and during

the site visits). In a following section we provide our recommendations for a case-study corridor, and our reasons for it. The broad criteria are:

- **Usefulness** (which includes generalizability and replicability). Is the corridor likely to give useful insights (assuming it has the data and willingness to participate)?

  Factors that help define usefulness include:

  - The level of planning undertaken at the local level for the Corridor or an adjacent Center
  - Regional studies or projects in progress or planned for the Corridor;
  - The applicability of the findings, and replicability of the evaluation methods, from the case-study corridor for other Corridors in the Metro Region. In other words, how do the characteristics of the case-study corridor (including corridor type, market characteristics that are favorable to change, congestion, transit needs and deficiencies, importance of freight, safety, land use, density, and so on) compare to characteristics of Corridors throughout the Metro area?

- **Data availability**
  - Metro
  - Local jurisdictions
  - Other agencies
  - Related TGM grant projects
  - Other related projects
- **Willingness to participate** ((or, alternatively, a stated inability or unwillingness to participate). Depending on how much data we have from other sources, a lot of the analysis could happen without willingness. But working out the code issues and other policies, and having local meetings regarding a plan requires a willing jurisdiction.

APPLICATION OF THE CRITERIA TO CORRIDORS

BEAVERTON-HILLSDALE HIGHWAY CORRIDOR

- **Usefulness.** The Beaverton-Hillsdale Highway Corridor may provide some of the most useful information for Phase II. The existing land uses from Beaverton to Hillsdale may provide the best opportunity to look at a number of different segment (typology) types. The lower than average land and improvement values may allow greater flexibility in land use changes.

  Washington County indicated that there are a number of projects in the Beaverton-Hillsdale (BH) Corridor. The County is pursuing

funding for the BH Olsen Scholls intersection. The Highway 217 Corridor study may also provide additional information.

- **Data availability.** The City of Beaverton has data to contribute to the Phase II study. Data collected for the Metro Centers project is also available.

- **Willingness of local jurisdictions.** According to Hal Bergsma of the City of Beaverton, the City is willing to participate in Phase II and they have staff and data to contribute to the project. Washington County has very few resources to contribute, but they think this Corridor is the most interesting Corridor to study. Representatives from the City of Portland did not indicate that this is a Corridor they are interested in studying.

CANYON ROAD

- **Usefulness.** While the Corridor has a strong mix of commercial and residential uses, they are highly segregated. The high land and improvement values along Canyon Road make it unlikely that this Corridor is ripe for change.

- **Data availability.** No special data availability.

- **Willingness of local jurisdictions.** The City of Beaverton indicated that they would be interested in both Canyon Road and the Beaverton Hillsdale Highway Corridors. No other jurisdictions expressed interest in studying this Corridor.

HALL BOULEVARD

- **Usefulness.** This Corridor is dominated by low-density residential uses, with less commercial compared to the other Study Corridors. Hall Boulevard has the third highest land values, though improvement values are in the low- to mid-range. With an 11.4% vacancy rate and the lowest quoted rents, it may be vulnerable to change.

  The City of Tigard did not indicate that there were any additional studies or planning activities in this Corridor.

- **Data availability.** No special data availability.

- **Willingness of local jurisdictions.** The City of Tigard did not indicate that they were interested in a Phase II study of Hall Boulevard.

HIGHWAY 43

- **Usefulness.** Highway 43 has about 20 acres of commercial land and over 50 acres of residential. With 24 acres of vacant land, there may be potential to *develop* this Corridor with the preferred land and transportation uses, instead of having to *redevelop* the Corridor.

- **Data availability.** No special data availability.

- **Willingness of local jurisdictions.** Clackamas County did not indicate whether or not they were interested in participating in a Phase II case study of Highway 43, though they said that they did not have staff resources to dedicate to other Phase II Corridors. West Linn was not asked if they were willing to participate in a study. Lake Oswego said that they were interested in a Phase II study and that they would have staff and resources available to contribute. Lake Oswego received a TGM grant to develop a land use/transportation plan for the existing industrial area on the east side of Highway 43 between downtown and the Willamette River. This area as viewed as a new mixed-use extension of the downtown and is expected to redevelop with housing and employment.

MCLOUGHLIN BOULEVARD

- **Usefulness.** McLoughlin is a strong candidate for a Phase II study based on usefulness. The high vacancy rates, low land values, low rents, and commercial concentration make it a Corridor that may be ripe for change.

  According to Dan Drentlaw, Community Development Director of Oregon City, there are a number of transportation improvements planned in this Corridor, including a new train station and Amtrack stop in the Oregon City regional center; light rail extensions between Milwaukie and Portland (eventually to Oregon City); and rapid bus transit is in effect between Milwaukee and Oregon City. The McLoughlin Corridor Enhancement Plan was recently completed (by Clackamas County?) and the federal government provided $3.7 million for engineering and construction.

- **Data availability.** The 1999 McLoughlin Corridor Plan (TGM grant to Clackamas County) provides in-depth information about the Corridor, though it is somewhat dated. The City of Milwaukie indicated that the Metro Trolley Trail and the McLoughlin Boulevard retrofit would provide additional information about the Corridor.

- **Willingness of local jurisdictions.** Oregon City is very interested in a Phase II study of the McLoughlin Boulevard. They have conducted significant Town Center planning in the past five years. Milwaukie is also interested in a Phase II study, though they have very limited staff time to participate.

Most of the Corridor is in Clackamas County. Clackamas County staff indicated that they are not interested in a Phase II study of the McLoughlin Corridor. According to Doug McLain, staff resource limitations make it difficult to participate effectively at this time. The County completed a planning effort for the McLoughlin Corridor approximately four years ago (the 1999 McLoughlin Corridor Plan). While the topic is somewhat different, many of the issues have been looked at during the 1999 review.

PACIFIC HIGHWAY (99W)

- **Usefulness.** Pacific Highway has a high concentration of commercial uses with mid to low vacancy rates and mid to high improvement values per square foot and rental rates. There are pockets of high density residential.

- **Data availability.** No special data availability.

- **Willingness of local jurisdictions.** The City of Tigard indicated that they were very interested in a Phase II study of Pacific Highway. City staff took the issue to the City Council and the Council indicated that the study would be complimentary to the downtown improvement planning currently underway. There would be significant political support for a Phase II study in Tigard. The City has staff and data to contribute.

  Washington County did not indicate if they had resources, or interest, in a Pacific Highway Phase II study.

POWELL BOULEVARD

- **Usefulness.** Powell Boulevard is primarily low-density residential Corridor, with commercial land uses at the eastern end. The average improvement values and rental rates are very low in the Corridor, however vacancy rates are also low, making it less vulnerable to change.

  Metro completed a Transportation Plan for Powell Boulevard (and Foster Road) in 2003 that evaluated improvements to the Corridor.

- **Data availability.** Data collected and analyzed for the Powell Boulevard/Foster Road Transportation Plan would be available for a Phase II study.

- **Willingness of local jurisdictions.** The City of Gresham indicated that they are interested in a Phase II study. They have staff resources and data to contribute to a study. According to Rebecca Ocken, City of Gresham, the City has funding from the Oregon Transportation Investment Act to add capacity, sidewalks, bike lanes, medians, and

other road improvements. However, the state is transferring responsibility of Powell to the City within a month.

TUALATIN VALLEY HIGHWAY

- **Usefulness.** The Tualatin Valley Highway has a mix of land use types, but they are interspersed making it difficult to apply typology segments. The low land value, improvement values, and rents coupled with above average vacancy rates (8.8%) make this Corridor more susceptible to change. Given the Corridor's location (the western edge of the UGB), there is less pressure to redevelop.

  The City of Forest Grove recently received a TGM grant to study the TV Highway Corridor. The study has three objectives: (1) determine the extent of commercial use along the Corridor and examining higher density (than currently allowed) residential opportunities, (2) develop strategies to further encourage multi-modal transportation use, (3) reduce congestion and improve design along the Corridor. These objectives, at one level or another, relate to the Town Center/Corridor connection. Additionally, Tri-Met is conducting a study of the Bus 57 corridor to examine service and improve pedestrian safety.

- **Data availability.** Data related to the TGM project (mentioned above) and possibly the TriMet study, would be available for a Phase II study of this Corridor.

- **Willingness of local jurisdictions.** The City of Forest Grove indicated that they are willing to participate in a Phase II study and can contribute staff and resources. They recently received a TGM grant (the project has not started yet) to study their Corridor. It is unclear if the Metro Corridors study would be duplicative.

82ND AVENUE

- **Usefulness.** This Corridor has a mix of commercial and residential uses. Medium- and big-box commercial segments cluster around major intersections (Division, Powell, and Johnson Creek). The above average land values and rents, coupled with the lowest vacancy of the Study Corridors, makes this Corridor less vulnerable to change.

- **Data availability.** No special data availability.

- **Willingness of local jurisdictions.** Clackamas County staff expects to be conducting station area planning in approximately two years and believe it makes more sense to use what is learned from another corridor in this subsequent planning effort, rather than to conduct two planning efforts for the same general area in close succession. The City of Portland indicated that this is a Corridor they are interested in studying. According to Supervising Planner Bob Clay, some recent developments along 82nd Avenue have building orientation with

pedestrian and transit oriented development-type designs at certain locations, yet the overall corridor remains very auto dominated.

RECOMMENDED CASE-STUDY CORRRIDOR

The previous section describes the Corridors one by one. For the purposes of explaining our recommendation, however, we think it is clearer to summarize the process by which candidate Corridors were removed.

Relatively easy to eliminate

- Tualatin Valley Highway (Forest Grove). Not very representative of the more common, complicated, and (from the perspective of 2040 and objectives) important corridors closer to the center. About to be the subject of a new and extensive TGM study.
- Highway 43: Primarily a residential corridor constrained by environmental considerations and high-value residential development. Not ripe for change. Limited ability of Clackamas County to participate.

Good justification for elimination relative to top sites

- Canyon Road: Beaverton Regional Center to Sunset Highway. Going all the way to Sunset Highway made no sense: the northeast end of the corridor, like Highway 43, is residential, constrained by slope and development, and not likely to change. The southwest end is specialty retail and relatively short: interesting, but not easily generalizable. (But, this Corridor comes back later because it can be combined with the Beaverton Hillsdale Highway Corridor; see below).
- Powell Boulevard: Downtown Portland and Gresham Regional Center. Gresham staff willing to assist, but ODOT is transferring authority for this segment to the City, so it is less interesting to ODOT. For that reason, not visited on site visits.
- 82nd Avenue: Clackamas Regional Center, Lents Town Center, and Station Communities. Technically, a good commercial corridor to study: complicated and generalizable. But Clackamas County staff expect to be conducting station area planning in approximately two years and believe it makes more sense to use what is learned from another Corridor in this subsequent planning effort,
- Hall Boulevard: Washington Square Regional Center and Tigard Town Center. Dominated by low-density residential uses, with less commercial compared to the other Corridors. Potentially willing, but not actively soliciting the project.
- Pacific Highway (Or 99W): West Portland Town Center to Tigard Town Center to King City Town Center. This Corridor is not as conducive to change due to high rental rates and improvement values. While the City of Tigard is interested, they do not have additional data or resources to contribute.

- McLoughlin Boulevard: Milwaukie Town Center and Oregon City Regional Center. An archetype commercial strip. But very long, multiple jurisdictions, less ready for change than Beaverton-Hillsdale Highway, and Clackamas County staff note resource limitations that make it difficult for them to participate effectively at this time.

Recommendation

- Beaverton Hillsdale Highway: Beaverton Regional Center. Complicated, ready for change, generalizable. City of Beaverton actively soliciting the project. Recent "Centers" project a bonus for data and for the ability to link Corridor analysis to Center analysis. The proximity of Canyon Road allows the consulting team to add an analysis of the specialty retail part of Canyon Road to this case study.

  The study area along the Beaverton-Hillsdale Highway extends from the Center boundary to the west (approximately Hwy 217) to the proposed Raleigh Hills Town Center boundary to the east (just west of Scholls Ferry Road). The eastern boundary stops short of the Raleigh Hills Town Center due to the challenges experienced during the Town Center planning for Raleigh Hills and the lack of interest in participating in the study from the City of Portland. The southern, commercial section of Canyon Road was also added to the study due to its close proximity, interest of local citizens and the City of Beaverton, and because the project team wished to study an auto sales commercial area.

CONSIDERATIONS FOR THE WORK IN PHASE II

TECHNICAL POINTS TO BE ADDRESSED

Following is a summary of points from Chapters 1–5 that will influence our work and report in Phase II:

- **Corridors in transition.** Corridors grew in response to a set of economic and policy factors that have been steadily changing. Our hypothesis, which we may provide more evidence for in Phase II, is that corridors are going to continue to change in response to factors we discussed in Chapters 2 and 3 (some of which are repeated below).
- **Density in Corridors**: **balancing Corridors and Centers.** A fundamental advantage of strip development (cheap and quick access to relatively cheap land) is becoming its fundamental problem. The access is available often because (1) transportation investments have been made by the state in the interest of moving non-local traffic *through* (not *to*) an area, and (2) the highway expansions have been accompanied by increased direct access, accessibility, traffic, and congestion. A solution to the problem is to create areas of denser activity along the otherwise low-density corridor. But that sounds a lot like creating Centers. Phase II has to sort through these issues and arrive at solutions and a vocabulary for talking about how nodes of

higher-density activity along corridors can fit into the Metro hierarchy of places and complement and support the nearby designated Center(s).

- **Metropolitan demand for retail space.** The consultant team understands retail markets, retail market analysis, the state requirements for buildable land analysis, and the continuing belief by many developers that there is not enough land in the UGB for all kinds of development, including retail. We would like to do some analysis in Phase II to estimate just how great the demand for retail land is, especially when one considers redevelopment, increasing density, and increasing sales per square foot.
- **Entitlements.** The previous two points suggest that one possible finding is that the traffic, economic, and public amenity functions of corridors could be improved by concentrating some of the low-density retail development along the commercial strip into nodes of higher-density commercial activity. If that is a finding, then a logical policy implication is that commercial and retail entitlements cannot be allowed along the entire length of the strip: entitlements may have to be removed. There are reasons that this could work, even for property owners who lose entitlements, but it is a tough policy to sell. We expect to focus on how this could work in the Phase II case study.

ALTERNATIVE DIRECTIONS FOR CORRIDOR POLICY

Phase II of the study will include policy suggestions based on the case study research. Our research to date suggests four broad directions for policy with respect to Corridors and the issues they face:

1. STATUS QUO

One option is to allow the market to determine the highest and best use of land within Corridors, given current regulations and policies. This option implies that jurisdictions will not provide incentives (whether financial or regulatory) to encourage different land (or transportation) uses in Corridors. There are short-term benefits to local jurisdictions:

- **Preservation of scarce local resources.** Few jurisdictions have the resources (financial or staff) to dedicate to Corridor revitalization.
- **Political expediency.** Presumably the property and business owners currently located along Corridors have profitable businesses and have few incentives to change. They may resist efforts to redevelop their Corridor. At a minimum, Corridor redevelopment efforts will require public involvement and education to convince local property and business owners that they can benefit from redevelopment.

  Another scenario includes changing land uses, for example, from commercial to residential. Property owners assume the development risk of redeveloping their property, a risk that some owners will resist.

There are, however, a variety of problems with this approach. The short-term benefits may be less beneficial than many of the long-term benefits of revitalizing the Corridor. For example, more efficient land use in Corridors may result in time and resource savings to expand and service additions to the UGB.

2. EXCLUSION OF CERTAIN USES FROM CORRIDORS

One option is to exclude most retail and office land uses from Corridors, so as not to compete with Centers—leaving only small retail outlets like gas stations and convenience stores on Corridors, as well as residential uses. But there are three problems with that approach:

- The remaining allowed uses would not make the Corridors the mixed-use environment that Metro envisions them to be.

- It doesn't address the question of why certain retail and office uses are locating in the Corridors rather than Centers in the first place. The auto-oriented environment of a Corridor may be better suited than Centers for certain retail and office uses, in which case those uses might not automatically migrate to Centers if they were excluded from Corridors. They might go to a non-Center, non-Corridor environment. If they couldn't locate anywhere else, they might even shut down or move outside the region.

- The competition may be more perceived than real. The fact that Corridors contain a significant share of retail and office activity in the region is not necessarily an indication of competition with Centers. If the auto-oriented environment of a Corridor is in fact better suited than Centers for certain types of businesses, the land uses currently along Corridors may be complementary, catering for business types that rarely are compatible with Centers.

To deal with the concern with low densities and the poor environment for bicycles and pedestrians, the general approach would be to improve the functioning and appearance of Corridors through increased densities and streetscape improvements.

In doing so, the goal should not be to replicate the Centers in a linear fashion along the Corridors. If the same urban design product leads to the same business activity, this could make any competition worse, and could create competition where none had previously existed. For example, "Main-Street"-type streetfronts along an entire 5-mile Corridor would compete with the Centers for activities that find that urban design suitable, like cafés, bookstores, and restaurants. Centers might have an advantage in this competition due to their proximity to transit nodes and their historic character, but they might still be worse off than when they were offering a different product than Corridors.

One problem with this approach is that it would not guarantee that desired land uses would locate in Centers. A previous report on Metro Centers pointed out the following:

> *"Regulations that restrict development within the UGB outside of Urban Centers do not guarantee that development will occur within Urban Centers. The businesses that currently use suburban land may not find it profitable to do business in Urban Centers. The result could be that this section of the economy, rather than re-locating in a denser environment in Urban Centers, will simply disappear or re-locate outside the region. To the extent that the economy of Urban Centers depends on the existence of these other segments of the economy, the economy of Urban Centers could be weakened rather than strengthened by these regulations."*[1]

That observation suggests that land uses outside Centers might be competing with Centers in terms of similar land uses and products offered to consumers, but that similarity might not translate into a similar compatibility with Center-like urban form. A large "big-box" retail operation might be competing with a small hardware store in a Center but would not find it economically (or physically) viable to locate in a Center.

It is also possible that land uses in Corridors might not even be competing with those in Centers, even though they have a large share of the region's retail and office activity. They may be complementary, in that they are catering for business types that rarely are compatible with Centers (drive-through restaurants, car sales, etc.).

It could be that Metro is not concerned if big-box retail, drive-through restaurants, or car sales cannot locate on Corridors. Presumably they could locate elsewhere in the region. It is likely, however, that they would be less economically viable on non-arterial streets. To the extent that they were economically successful, these land uses would still present competition for Centers.

Another problem with this approach is that without significant retail and office uses, Corridors would not be the mixed-use places they are envisioned to be by Metro. This problem could be ameliorated by a limit on the size of retail and office space on each site, rather than an outright exclusion of retail and office uses on Corridors.

3. REDEVELOPMENT AND INFILL TO DENSIFY CORRIDORS

Redevelopment and infill along Corridors is desired by Metro planners, but the current type of development—low-density—may be the most profitable one that is allowed by zoning. If higher-density development is not more profitable than the current low-density development, it will not occur. Even if high-density land use is more profitable than low-density land use for

[1] ECONorthwest and Johnson Gardner, *Metro Urban Centers: An Evaluation of the Density of Development*, July 2001.

new construction (including infill), the cost of redevelopment (demolition and site preparation) may make it unprofitable in the short- to medium-term.

Another consideration, besides the fact that higher densities might not be profitable for Corridors, is that higher densities might increase competition with Centers by making Corridors more Center-like in their urban form. Where they had previously presented a complementary product of auto-dominated retail and office, Corridors would now be presenting a product with similar urban design features. In the extreme case, Corridors would become extended Centers or continuous Main Streets. While from an urban designer's perspective this might not pose much of a dilemma, it might be uneconomic if form dictated function and the Center-like Corridors could only attract the uses commonly found in Centers (book stores, cafes, government centers, restaurants, etc.). In other words, it might be better off for both Centers and Corridors if Corridors allowed at least some lower-density uses like drive-through restaurants, car yards, and big box retail rather than providing higher-density urban form that would probably accommodate the same activities targeted for Centers.

On the other hand, some redevelopment and infill is probably possible and could be encouraged with the types of uses that are currently on the Corridors—Corridors might not have to mimic the same economic composition of existing Centers.

4. TRANSPORTATION IMPROVEMENTS AND STREETSCAPE IMPROVEMENTS

This option takes an approach that is not focused on the economic effects of Corridors on Centers, or the lower densities of land uses along Corridors. Instead, it focuses on the transportation and streetscape aspects of the Corridors themselves. In terms of transportation improvements, the goal should be to maximize not only automobile flow but also pedestrian and bicycle and public transit flow as well. A systems view would consider all transportation modes as they move from Centers through Corridors into other Centers.

Access management is one possible technique that may improve through-flow for all modes. It may support the higher densities that are desired for Corridors. But as densities increase, the amount of congestion may increase as more trips are made to and from locations along the Corridor, in addition to the trips going through the Corridor to and from Centers. As congestion increases, a higher degree of access management may be required. At some level, access management may prove to be a deterrent to further development and higher densities.

Streetscape improvements would include those urban design elements that are not part of the private land uses. Rather than requiring higher densities or smaller setbacks, for example, streetscape improvements would focus on wider sidewalks, street trees, boulevard treatment with planted

median strips, street lights, banners, benches, etc. The goal, ultimately, should be to improve Corridors without making them linear Centers.

RECOMMENDED LAND USES AND DEVELOPMENT PATTERNS FOR CORRIDORS AND CENTERS

One of the key final products of this portion of the study is to develop a recommended land use and development framework that promotes and supports the healthy coexistence of Centers and Corridors that can be used as a guideline in the revision of local building codes and capital improvement programs to achieve the best possible city form and function. To achieve such a framework, this section provides our first draft that attempts to address the following issues:

- What land uses/development types should go into the Center rather than along the Corridor?
- What are the ideal land uses/development types to support a vibrant, 24-hour Center?
- What land uses/development types should be discouraged from locating in Centers?
- What land uses/development types should be along Corridors rather than in Centers?
- What land uses/development types should be discouraged from locating along Corridors?
- What size/site/design/development guidelines are required to support the desired land uses/development types while providing for efficient use of multi-modal transportation facilities within Corridors?

Portland Metro's objectives are to accommodate the regional growth within the UGB by enhancing land use efficiency, by creating a development pattern that is supportable by transit, and that enhances mobility as well as livability in the region's communities. *In order to meet the goals of the 2040 Framework Plan, many Centers and most Corridors will need to be restructured.* Such restructuring begins with land use and development policies that are supported by capital investments in the form of transit improvements and street design.

The recommendations contained in this section will be refined in response to discussions with Portland Metro Staff, the Technical Advisory Committee, among the consultant team members, as well as in response to lessons that come out of the Phase II case study. Some of the recommendations are already in place in Centers and Corridors; others have been considered and discarded. The purpose of this section to create a preliminary inventory of appropriate land uses in Corridors primarily and Centers secondarily based on the research to date.

LAND USE AND DEVELOPMENT IN CENTERS

By definition, Centers are envisioned as the most active districts in the region and in any community. Activity-generating uses are limited to the following use types: retail shops, restaurants, theaters, art galleries, personal services, business services, and entertainment uses (referred to as retail for the rest of this chapter). With the exception of special events, there would be little street life or vitality in a Center if all retail uses were removed.

Many employers show a preference for locations with retail and services. The 2040 Framework Plan envisions that Centers will become major employment hubs.

These objectives make retail the most precious resource in the planning and development of Centers. Retail uses bring activity, strengthens the location's draw for employers, and creates demand for prospective residents who prefer a walkable urban environment. Retail instigates the development of housing types available primarily in the Portland Central City. The combination of retail, office, and housing draws people to the area throughout the day and evening, creating a vibrant heart of the community and the perfect location for a transit station.

The Portland region cannot support unlimited retail. *In cases where market demand cannot support continuous ground floor retail in Centers and along existing commercial Corridors, Centers must have the first priority in a community's allotment of market share of activity-generating retail types suited to a pedestrian environment.* Without such ground-level activating uses, there is no Center.

In general, the following preliminary list of uses should be prioritized for location in Centers (to be refined based on results of the Phase II case study):

- Retail
    - Highest priority: uses up to 10,000 square feet. All uses except drive-up or drive-in services
    - Anchor retail: uses exceeding 10,000 square feet with a proven track record of making smaller scale retail viable. These uses include specialty home improvement anchors, specialty supermarkets, drug stores and, where appropriate, discount retailers specializing in fashion apparel
- Eating and drinking establishments
- Performing arts and movie theaters and auditoriums
- Personal services
- Business services

- Banks and financial institutions

- Civic uses, particularly city hall, libraries, post offices, senior centers, community centers.

To meet the development intensity requirements of the 2040 Framework Plan, buildings should be required to be a minimum of two or more stories, with mixed use featuring ground-level activity-generating uses required.

Buildings in Centers should be required to have main entrances facing public streets, with maximum setbacks specified to keep entrances well connected to the primary pedestrian sidewalks, and other public spaces. Primary activity frontages should be identified where parking should not be allowed at the frontage.

If large-scale anchor tenants locate in Centers, they must be required to provide a main entrance facing primary pedestrian street frontages, must provide parking along frontages not planned as part of the primary pedestrian network, and be encouraged to inset storefront entrances into frontages along primary pedestrian routes.

For all of the reasons stated above, the following uses should not be allowed to locate in Centers:

- Any drive-in or drive-up use

- Warehouse and distribution uses

- Indoor wholesale and commercial sales and service uses, characterized by a small number of employees per square foot and/or very low pedestrian traffic generation, e.g. photographic processing and wholesale supply, printing, engraving, lithography and publishing; tool and equipment rental, sales and service; restaurant and janitorial supply

- Uses featuring outdoor storage as a primary aspect of their operation

- Workplace buildings housing uses with very low number of employees per square foot, e.g. telephone switching stations, various forms of industrial use no matter how clean environmentally

- Signage in Centers should be exclusively building-mounted. Pole-mounted and free-standing monument signs should not be permitted

LAND USE AND DEVELOPMENT ALONG CORRIDORS

At this point in the study, and pending market analysis, we would conjecture that in order to meet the goals of the 2040 Framework Plan for a healthy coexistence of Centers and Corridors, *the amount of land intended for retail development along Corridors needs to be reduced* (we use the word "intended" here, because we are not discussing means, we are discussing

ends; the issue as to whether zoning entitlements need to be changed or effective incentives put in place necessarily follows the development of a clear vision of the type of change desired by a community).

Corridor segments–particularly residential parkway segments–not currently developed with commercial uses should be prevented from transformation to retail use. This assumes that not all Portland Metro regions are overzoned for commercial. This has or threatens to stretch market demand for retail too thin, creating significant barriers to the creation of the envisioned Centers, and possibly even resulting in the creation of significant pockets of disinvestment, both in Centers *and* along extended Corridor segments.

The devastating results of past mistakes evident in cities throughout the country, as well the existing conditions of the three case studies illustrated in Chapter 3, are a powerful indication of what is probably the most important lesson to be learned from Corridor work in the USA to date: Corridor planning cannot be carried out by focusing on the Corridor as if it were an isolated piece of city or region. Corridors *must* be studied and planned in relation to the envisioned pattern of retail for the city and larger metropolitan region. All Corridor case studies illustrate the need for land use and development policies and/or incentives to reduce the retail along the corridor, *to promote the healthy coexistence of Centers and Corridors in a pattern supportable by market demand.*

As recommended in the preceding section on Centers, in order to ensure that Corridors are supportive of Centers (i.e. do not siphon the retail market *from* Centers), the amount of retail that is designated for Corridors must be a function of this regional view. Professional market studies that look at the potential for growth and consider the region as a whole must be used to quantify the likely maximum amount of retail development that can be supported now and in the future.

Even without the mandate to support the development and densification of successful Centers, such research will likely lead to the conclusion that Corridor segments intended for retail development will need to be significantly shortened from the end-to-end retail entitlements available along the region's commercial corridors today.

The pattern of linear single-use retail development along corridors is not only insupportable, but it has gone out of favor in the development marketplace. The need to restructure commercial strips not only corresponds to the objective of supporting Centers, it is also the preference of contemporary retail investors. Just as historic downtown cores were drained of their vitality by the mid-century advent of commercial strips, now those same commercial corridors are being diminished by the accelerated concentration of retail at major arterial intersections and freeway off-ramps over the past decade.

The case of residential is typically the opposite of retail: Centers cannot possibly come close to accommodating housing demand for the next 15 – 20 years. Furthermore, Centers cannot provide all forms of housing desired by the existing and prospective residents of the Portland Metropolitan Region. This principle fits hand-in-glove with the predicament involving property owner expectations to profit from their properties: once economic studies show that market demand cannot come close to satisfying the hopes of all possessors of retail entitlements in centers and corridors, it may be possible to show that residential development offers a realistic and viable trade-off for retail.

The essential clustering of retail in Centers, the poor viability of retail along long segments of Corridor, the market preference to concentrate retail at major intersections, and the viability of residential development (albeit in different development types) in both Centers and Corridors all fit perfectly with the need to enhance the vehicular capacity of commercial arterials. Retail, restaurant, entertainment, and service uses generate the most amount of vehicle trips. Major intersections are locations along Corridors where traffic must stop and where many turning movements must be concentrated. Major intersections are therefore logical locations for retail & services, restaurant, and entertainment uses which thrive on the visibility and which require the stopping and turning movements provided there. This leaves the long segments between major intersections for residential as well as compatible office and lodging development, which generate far fewer turning movements and conflicts, and allow much freer traffic flow and greater vehicular capacities.

In view of these issues, the following uses should be promoted for development *along the long segments of corridors in between centers* and other concentrations of retail at major intersections:

- Multi-family residential buildings featuring a minimum of two stories in height, and minimum 12 units per acre.
- Professional offices
- Medical offices
- Lodging
- Indoor wholesale and commercial sales and services, including the following (the following list selected based on the idea that these are uses that do not generate or require pedestrian activity, and typically require large scale, single story boxes on land that costs less than land in Centers):
    - Commercial recreation e.g. bowling alley, roller-skating rink, indoor golfing, etc.
    - Photographic processing and wholesale supply, printing, engraving, lithography and publishing

- Tool and equipment rental, sales, and service
- Restaurant and janitorial supply
- Health and exercise clubs (also good in centers, but perhaps should not be prioritized for centers because they are also beneficial in helping to stimulate residential development)
- Recreational equipment sales and service
- Furniture showrooms and sales outlets

In segments envisioned as residential or mixed use boulevards, development should be required to face the arterial with minimum green setbacks to the front and side, and with parking screened from view from the corridor frontage (preferably by inhabited buildings).

With regard to building design: all uses along such segments should conform to guidelines that required them to be designed as potentially compatible neighbors to a prospective (if not existing) residential development both behind and adjacent to the use. In the case of office development, this would dictate manipulating building mass, roof line and window design, for example to somewhat mimic the varied roofline, massing and inset/trimmed windows of residential development. Perhaps the use of somewhat softer materials might also be required. In the case of indoor wholesale and commercial sales and service "boxes" significant and very leafy landscaping would be essential. Free standing pole mounted signs should be prohibited, in favor of monument signs on a base that are compatible with the character of the residential boulevard.

In summary, the question of what uses should be directed to Centers and Corridors is useful, but cannot be considered in isolation. Particularly where Corridors are concerned, what uses are appropriate follows where on the Corridor they contribute to the creation of a healthy urban form. As we have tried to demonstrate, retail in one part of the Corridor might be appropriate, whereas in other segments might be entirely detrimental to Metro's objectives.

Appendix A

Literature Review

This appendix reviews academic and professional articles from published and on-line sources and focuses on corridor redevelopment and the relationship between corridors and centers. Our review first explores North American reports and publications that provide a general overview of corridors. We then review documents specific to Oregon and the Portland metropolitan area developed for the Transportation Growth Management Program, Metro, the Oregon Department of Transportation, and other organizations.

GENERAL OVERVIEW

Very few publications provide a general overview or general policy analysis of corridor redevelopment or the relationship between corridors and centers; the vast majority of available information is related to specific efforts in specific jurisdictions. Because North American case studies are discussed in other appendices, this appendix does not explore that "literature" in detail. Among published sources, some books and articles deal with corridors and centers in some way—for example, within a general context of economic development, neighborhood revitalization, or transportation improvements more generally—but few seem to focus on centers or corridors exclusively.

This appendix therefore summarizes key themes arising from a preliminary review of various jurisdictions' experiences with these issues. It then focuses on the few items in the literature that focus specifically on corridors and centers within a broader geographic context.

KEY THEMES FROM INTERNET RESEARCH

CORRIDOR DEFINITIONS

- **Corridor-related information is readily available but seldom defines corridors by transportation aspects.** A great deal of information focuses on redevelopment corridors, land use corridors, industrial corridors, transit corridors, or neighborhood/community development corridors.

- **Transportation corridors are defined differently in different jurisdictions.** In some places (such as "Corridor H" in West Virginia), corridors are 4-lane, cross-state highways. In other places, they are a wider precinct or rectangular district that is not tightly focused on one arterial street. Still other locations define corridors more narrowly as an arterial street and adjacent lots.

CORRIDOR REDEVELOPMENT

- **Many jurisdictions are attempting to redevelop and revitalize corridors** and often use urban renewal plans under the authority of local redevelopment agencies.

- **Some jurisdictions are concerned about the effects of competition from corridors on the traditional "main-street" downtowns.**

- **Few jurisdictions try to improve corridors and protect downtowns or centers from competition.** Efforts to revitalize or improve corridors generally do not balance that improved vitality with the vitality of centers. In many cases, jurisdictions attempt to make corridors more similar to centers.

- **Corridor revitalization is largely based on an economic—as opposed to an urban design—rationale.** For example, the Sacramento government proposed an automobile sales mall as a "tax increment engine" for an economically stagnant section of Northgate Boulevard.[1] In many cases, transportation and urban design improvements suggested for corridors are intended to enhance economic vitality. In very few cases, jurisdictions focus on urban design characteristics (such as improved pedestrian friendliness) without explicit consideration of economic issues.

- **Corridor revitalization and redevelopment often focuses on key vacant or redevelopable parcels** rather than on corridor segments or the corridor as a whole.

RELATIONSHIP BETWEEN CORRIDORS AND CENTERS

- **Several American jurisdictions have adopted a framework of "Centers and Corridors" to guide development.** These include Spokane, Charlotte/Mecklenburg County, Albuquerque, Colorado Springs, Monroe County PA, Prince George's County MD, and undoubtedly many more.

- **Some jurisdictions treat centers and corridors similarly.** For example, Spokane's centers and corridors both focus on pedestrian-related improvements, auto accommodation, provision of street trees, and screening of parking.[2] Prince George's County designates both centers and corridors for compact, higher-intensity, mixed-use areas.[3]

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[1] www.natomasjournal.com/Northgate.html

[2] www.spokaneplanning.org/Documents/Centers_and_Corridors_land_use_standards_7-20-03.pdf

[3] www.mncppc.org/cpd/developingtier.htm

- **Other jurisdictions see corridors as distinct from centers.** Albuquerque recognizes that corridors have "nodes" but views them separately from centers.[4] A discussion of the Memphis region claims "corridors are the region's connecting systems, while centers are the hubs of various activities."[5] Monroe County, Pennsylvania, claims that centers should be pedestrian- and bike-friendly, while corridors should be characterized by consolidated business parks and good landscaping.[6] Sheridan, Colorado plans for large retail businesses on most of the South Santa Fe Drive Corridor while a gateway area at a major intersection will have more mixed uses and higher densities.[7]

- **One jurisdiction expressed corridors as virtually the antithesis to centers.** Colorado Springs describes "new/developing commercial corridors" as those with "major retail uses, services, and strip centers accessible exclusively by automobile and characterized by large dominating parking lots." Alternatively, "mature/redevelopment corridors" are those with "retail uses and auto-oriented services developed in a typical strip commercial pattern with multiple curb cuts, individual parking lots, cluttered signage, and small lots." Activity centers, by comparison, "are intended to be mixed use, pedestrian-oriented areas that establish good connections and transitions to surrounding areas." The Comprehensive Plan builds on traditional corridor characteristics with strategies to locate corridor development in existing centers or to form new centers.[8]

- **Some jurisdictions' focus on corridors and centers is part of an overriding effort to encourage transit and general multi-modal transportation.** Adopted in 1994, The Delaware Valley Regional Planning Commission's Land Use and Transportation Plan focuses growth in centers and corridors to support intermodal transportation options.[9] The City of Charlotte and Mecklenburg County adopted a centers and corridors plan in 1994 that seeks to increase transit along five main corridors extending from downtown Charlotte.[10]

GENERAL ARTICLES ON CORRIDORS AND CENTERS

The following items from the literature discuss corridors and/or centers without focusing on any specific jurisdiction.

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[4] www.cabq.gov/cip/planning/cipmaps.html

[5] www.memphisregion.com/pdf/Mem06_Metro.pdf

[6] www.monroe2020.org/IC.pdf

[7] www.ci.sheridan.co.us/renewal/plan.pdf

[8] www.springsgov.com; see Chapter 1 of Comprehensive Plan.

[9] http://ntl.bts.gov/DOCS/RPC.html

[10] www.charmeck.org and www.asu.edu/caed/proceedings99/AVIN/PAPER1.HTM

TEN PRINCIPLES FOR REINVENTING AMERICA'S SUBURBAN STRIPS[11]

This report recognizes typical suburban strips as "one-dimensional forms of development that lack a distinct sense of place or community and that increasingly are plagued by problems to do with fragmentation, congestion, inconvenience, inefficiency, deterioration, and visual blight. Created in a generally laissez-faire environment well suited to the first generation, low-density scale of postwar suburbia, they are no longer suited to the denser, more complex urban context of metropolitan America."

Teams from the Urban Land Institute looked at three different strips in the Washington, D.C., metropolitan area, including a "booming, mature strip plagued by legendary traffic congestion…an older deteriorating strip bypassed by the market, and…an emerging exurban strip facing first-generation development pressures." These case studies offered the following ten suggestions:

- **Ignite leadership and nurture partnership.** Partnerships between local government and the business community need to be formed to assume "ownership" of a strip and to manage its future.

- **Anticipate evolution.** Developers and local governments need to be ready to respond to changing consumer preferences, to adapt the strip to emerging lifestyles, and to provide amenities like parks, entertainment, and cultural activities.

- **Know the market.** What works for one type of strip may not be possible for another. A strip's trade area, market forces, and role in the overall retail continuum need to be identified.

- **Prune back retail-zoned land.** Every major parcel along every arterial need not be zoned for commercial or retail use. Retail-zoned land should be scaled to reflect the size, strength, and character of the market. Some of the remainder should be reserved for housing, civic uses, recreational facilities, and open space.

- **Establish pulse nodes of development.** To avoid an elongated, one-dimensional environment, peak nodes of high-intensity, mixed-use residential and commercial development should be interspersed with stretches of low-intensity land uses or open space. Pulse nodes should be located at key intersections or major transit stops using higher-density zoning and strategic public investment.

- **Tame the traffic.** Both through-traffic and destination traffic should be accommodated. An access management strategy—such as limited curb cuts—is often necessary, and shared or structured parking is preferable.

[11] Michael D. Beyard and Michael Pawlukiewicz; ULI-the Urban Land Institute, 2001.

- **Create the place.** Use a variety of design techniques to create an effective, well-lit, and secure pedestrian environment; also promote a mixed-use, live/work, around-the-clock activity zone.

- **Diversify the character.** A mixed-use environment should be created with different types of districts along the strip.

- **Eradicate the ugliness.** Emphasize architectural excellence, design guidelines, landscaping, underground utility lines, and screened parking lots.

- **Put your money (and regulations) where your policy is.** Integrate public facilities into the strip's redevelopment strategy, develop an aggressive nuisance abatement program, and coordinate public services and actions by several public agencies.

REDESIGNING COMMERCIAL CORRIDORS[12]

While many view suburban strips as the product of market forces, this report claims the developments actually reflect "…a zoning concept derived from an outmoded model adopted long ago by most local governments." With postwar suburban development, planners applied commercial zoning patterns originally designed for central main streets and streetcar routes to the areas along highways and major thoroughfares. Where these designs may have served fifties-era uses, they pose new challenges in a time of traffic congestion and shopping malls.

As urban traffic increases, a fundamental design flaw emerges in many strip developments. Intended to facilitate high volume, high speed travel between destinations, highways flanked by commercial strips frequently experience congestion when business access conflicts with thru traffic. Efforts to ease traffic flow—while beneficial for highway-users—can in turn injure adjacent businesses to the extent that road widening and turning restrictions limit customer access. These conflicting functions and objectives—taken with a revival of shopping malls, town centers, historic downtowns, and other retail destinations—have made many strip developments the victims of considerable neglect. In response, this report describes several strategies to revitalize suburban strips; specifically, the report suggests that planners amend zoning standards and consider

- **Future uses**. Determine a reasonable estimate of future commercial development for the corridor and compare to the area potential or already zoned for commercial use.

- **Traffic patterns/highway design**. Concentrate development at major intersections and within particular quadrants. Zone other areas for uses that don't require immediate highway access.

[12] FTB: What is the reference information?

- **Development density**. Group similar-density developments together in locations that best manage highway access. Consider mass transit to serve higher-density developments.

Overall, the report suggests new designs for suburban strips that better accommodate future uses and market trends.

OTHER MATERIAL FROM THE LITERATURE

NEW JERSEY BILL ON CORRIDOR REDEVELOPMENT[13]

The 2000 New Jersey Legislature considered a bill that allowed one or more municipalities to join together and create a Highway Corridor Redevelopment Zone and a Highway Corridor Redevelopment Zone Commission. Policy included a 50% tax exemption for retail sales under the "Sales and Use Tax Act" in those zones to stimulate economic activity. Further, the bill sought to establish a new highway corridor redevelopment assistance fund to serve as a state repository for funds equal to a zone's retail tax revenues; the assistance funds would be used for a zone's public improvements and upgrades for eligible municipal services.

"Highway corridor" refers to a continuous public roadway that passes through two or more municipalities, has generally unlimited access, and consists of the public rights in that roadway or any part thereof and the publicly or privately owned property abutting any part of that roadway.

MINNESOTA "CORNERS"[14]

The Cities of Roseville and Robbinsdale have implemented policies that focus on corners as sites for redevelopment. Corners provide special opportunities to define streetscapes and act as gateways into different areas of the community. They are highly visible, draw investment into adjacent parcels, and serve as an ideal catalyst for mixed-use development.

GOALS FOR PHILADELPHIA'S LANCASTER AVE. CORRIDOR REVITALIZATION[15]

- Corridor beautification---create a more visually attractive corridor.
- Encourage and establish proper stewardship and maintenance of property.
- Promote a more unified appearance for the corridor.

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[13] www.njleg.state.nj.us/2002/Bills/A1000/803_I1.HTM

[14] www.npcr.org/copc/reports/copc18/copc18.html

[15] www.philaplanning.org/plans/lancave/lancaster.html.

- Generate a strong identity for the corridor, in part by fostering an awareness of the rich history of Lancaster Avenue.

- Promote commercial development and expand retail services.

- Enhance the corridor's "sociability," make it compatible with the neighborhood and its culture, and ensure that local residents see the Avenue as part of their community.

- Eliminate the obsolete buildings and ownership patterns that place this area at a disadvantage.

COLORADO SPRINGS COMPREHENSIVE PLAN[16]

This plan incorporates several types of Centers and two types of Corridors, both defined negatively in terms of aesthetics, urban form, and auto domination.

Activity Centers

"Activity Center." A general term for a mixed-use center that integrates a range of uses and activities that complement and support each other.

Typically, an activity center fosters a predominant use—such as retail or employment—that a mix of one or more other residential, civic, or institutional uses then support. The predominant use generally determines the type of center, and the centers vary in size, intensity, scale, and their mix of supportive uses depending on their purpose, location, and context. Designed to establish good connections and transitions to surrounding areas, activity centers are also intended for mixed, pedestrian-oriented uses. The Comprehensive Plan includes the following types of activity centers:

- Neighborhood Centers: Small, low impact, limited use centers that fit into the neighborhood and benefit neighborhood residents.

- Community Activity Centers: Activity centers that serve the day-to-day needs of the surrounding neighborhoods and residential area. These areas are typically anchored by a grocery store and include such supporting establishments as drug and hardware stores, medical offices, beauty shops, and restaurants.

- Commercial Centers: Activity centers that accommodate large retail establishments and serve a number of residential areas over a significant portion of the city. They include a mix of supporting uses such as higher density residential, office, service, medical, and civic uses.

[16] www.springsgov.com; Chapter 1 of Comprehensive Plan.

- Employment Centers: Activity centers with major concentrations of employment supported by a mix of uses that meet the needs of employees and visitors; supporting establishments include restaurants, lodging, child care, higher density residential, and educational facilities.

- Regional Centers: Large, intensive activity centers that combine the uses of commercial centers and employment centers and serve the city and region as a whole. They often include regional malls or corporate headquarters.

Corridors

Corridors are the commercial and employment areas that line major arterial streets. They include those areas that have historically developed as commercial strips and those currently in the process of doing so. The Comprehensive Plan includes two types of corridors:

- New/Developing Commercial Corridors: Recently developed or currently developing corridors with major retail uses, services, and strip centers accessible exclusively by automobile. Characterized by large parking lots.

- Mature/Redevelopment Corridors: Corridors that line older arterial streets and state highways with retail uses and auto-oriented services. Developed in a typical strip commercial pattern with multiple curb cuts, individual parking lots, cluttered signage, and small lots. These corridors also include significant infill and redevelopment opportunities.

Because Corridors are defined in this negative way, the City's Comprehensive Plan encourages new corridor development to locate in new or existing Activity Centers:

"Strategy LU 701f: Encourage New Commercial Development in New and Developing Corridors to Form Activity Centers: Encourage new commercial development in new and developing corridors to take place in activity centers that incorporate a mix of uses and avoid large, single-use buildings and dominating parking areas."

"Strategy LU 702b: Redevelop and Infill Commercial Uses in Mature/Development Corridors to Form Activity Centers: Redevelop and infill commercial uses in mature/redevelopment corridors to support the formation and evolution of new activity centers. Coordinate the formation of new activity centers with the redevelopment of the entire corridor."

SUBURBS HOPE TO REVITALIZE AILING BUSINESS CORRIDORS[17]

Tax breaks and zoning incentives have prompted a number of Maryland communities to revitalize rundown commercial and manufacturing thoroughfares before they become blighted with crumbling buildings and rampant vacancies. Planners have focused on the U.S. 40 and U.S. 1 corridors; both have suffered since the interstates sliced through them. Local and state leaders contend that the two corridors have unrealized economic potential that surpasses redevelopment costs. New developments include Rouse Co.'s Stone Lake gated community and townhomes in Howard County off of Rt. 1. The Rt. 40 project has also seen its share of successes, most notably the Water's Edge business park and residential community on the site of a former Bata Shoe factory. Harford County changed its zoning laws in 2000 to facilitate residential and commercial redevelopment along the highway. Baltimore County, meanwhile, has placed a two-mile stretch of U.S. 40 in Catonsville on its extensive roster of commercial revitalization districts.

COUNTY CONTENT WITH RT. 1 UPGRADES[18]

The Urban Land Institute (ULI) recently studied the Route 1 corridor in Fairfax County, Va. and two additional suburban Washington thoroughfares flanked by big-box retailers and chain restaurants. The Institute hoped to determine what makes a successful commercial strip and concluded that local governments should create more incentives for redevelopment through zoning. Other recommendations include a reduction in the amount of retail-zoned land, the creation of high-density nodes separated by open space, and the renovation of older commercial strips with lighting and landscaping improvements. Fairfax officials have employed these and other strategies along the seven-mile stretch of Route 1 once characterized by crime and "no-tell" motels. The county has done everything from demolishing buildings to re-planning parts of the corridor for densities similar to nearby Tyson's Corner. Now, County Executive Anthony H. Griffin is attempting to garner support for a tax hike on properties along the highway to raise money for more suggested improvements. The state highway administration will soon begin considering plans to widen that part of Route 1 to alleviate traffic congestion.

The ULI also examined the bustling commercial area along Route 301 in Charles County, Md., and the booming Rockville Pike commercial strip in Montgomery County.

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[17] Hopkins, Jamie Smith. *Baltimore Sun Online*. 25 July 2003.

[18] *Fairfax Journal Online*. 31 July 2000.

PLANNING CHANGES APPROVED FOR ROUTE 1[19]

In Virginia, the Fairfax County Board of Supervisors has approved newly amended planning documents that aim to redevelop and revitalize the bustling Route 1 corridor. The corridor, located in the southeastern part of the county, has an inordinate number of older strip shopping centers, fast-food eateries, automobile dealerships, and aging commercial buildings. Working with a citizen task force, legislators have changed dozens of regulations to help property owners upgrade their sites and even redevelop their land.

OREGON SPECIFIC STUDIES AND POLICIES

TRANSPORTATION GROWTH MANAGEMENT

This section examines revitalization and redevelopment plans for corridors in the greater Portland area and more general literature discussing streetscape and street design concepts.

OVERVIEW

Generally, development plans for Portland-area corridors seek to implement relevant street design and land use standards from the Metro Region 2040 Growth Concept and Metro's Regional Transportation Plan. Some corridors need mostly streetscape improvements to satisfy the relevant Metro designation, but others require more exhaustive street design, land use, and transit modifications. Overall, the corridor plans seek to increase pedestrian access and safety while maintaining functional roadways. To this end, the plans frequently recommend the following:

- Improved pedestrian access to transit facilities and improved amenities at transit stations and stops
- Added pedestrian crossings and consistent curbs, sidewalks, and bikeways
- Realigned intersections and improved access to adjacent neighborhoods and business districts
- Modified on-street parking standards
- Improved landscape and streetscape design

Where necessary, individual plans also recommend changes in land use standards that reinforce a particular vision for a corridor's unique environment.

[19] *Washington Post*. Article No. B3. 8 June 1999.

BARBUR BOULEVARD STREETSCAPE PLAN[20]

As the longest—and one of the most heavily traveled—major streets in Southwest Portland, Barbur Boulevard is a State Highway for most of its length and connects Tigard and southwest neighborhoods to the central City. The Boulevard varies in width from 4 to 7 travel lanes and observes daily traffic volumes ranging from 16,000 to 38,000 vehicles. According to Metro Region 2040 designations, part of Barbur is a Regional Boulevard, a road that should provide broad right-of-way, on-street parking, bike lanes, wide sidewalks, and landscaped medians. As a designated Regional Street, the remaining portion of the Boulevard should provide similar amenities but remain somewhat more oriented towards vehicle travel. The study region also encompasses a 336-acre region—at the intersection of Barbur and Capitol Highway—designated as a West Portland Town Center, or a concentration of local retail and employment. While densely-wooded areas flank short sections of the Boulevard, apartments, motels, and businesses line most of its length; the wooded areas are zoned residential and the remaining borderlands are zoned commercial and multi-family residential.

Ultimately, the Boulevard falls decidedly short of relevant Metro designations. The roadway's general design and minimal streetscape encourage fast-moving traffic, make bike and foot travel dangerous and difficult, and limit the amenities and convenience of transit stops. Further, multiple driveways, poorly aligned intersections, and lack of crossing facilities limit safe access to businesses and surrounding neighborhoods. In response, the Barbur Streetscape Plan recommends design changes that will maintain the Boulevard's vital highway functions but enhance pedestrian and vehicle safety and access. Developed for a State Transportation Growth Management (TGM) grant ultimately awarded in 1998, the plan recommends additional sidewalks and refuge islands, improved transit station amenities, realigned intersections, and consolidated driveways for street side businesses. Further plan recommendations include additional connecting streets between the Boulevard and local neighborhoods, reduced on-street parking, and improved landscaping and storm water drainage systems.

Ultimately, the Barbur Community Advisory Committee (CAC) submitted the plan as a means to maintain a functional roadway for motorists *and* a comfortable and safe environment for pedestrians, cyclists, and transit riders. The Committee also hoped that more connections between Barbur and local street networks would increase neighborhood-oriented business throughout the corridor and offered landscaping recommendations to "soften" the Boulevard's current image. The final Barbur Streetscape plan was released for public review in June 1999 and submitted to the Portland City Council later that summer.

[20] City of Portland, Office of Transportation Engineering and Development. June 1999.

RECOMMENDED ST. JOHNS/LOMBARD PLAN[21]

The St. Johns/Lombard Plan describes a 20-year strategy to increase the livability and economic viability of the St. Johns Town Center and the North Lombard main street areas. Both have Metro Region 2040 mixed-used designations: St. Johns is a designated Town Center, or mixed residential and commercial area, and Lombard—a District Collector—is also a designated Main Street. The final plan represents a two-year joint effort by local community members and the City of Portland and offers several recommendations intended to create a more vibrant and livable environment on the so-called "peninsula."

First, the plan proposes adjusted zoning standards that will improve the area's overall design quality and maintain its small-town appeal. Generally, the plan recommends three land use zones: a full main street zoned for urban commercial activity, a partial main street zoned for auto-accommodating uses, and a residential area zoned for housing and neighborhood-scaled business and retail. Given the area's relatively heavy freight traffic, the plan describes additional transportation-related improvements designed to ease traffic flow and generally increase pedestrian safety. The plan also reserves land for industrial and other business purposes and encourages continued evaluation of potential resources available near the Willamette River.

Given their close proximity to Portland, St. Johns residents place particular emphasis on their city's independent identity and sense of community. Plan developers therefore approached the process with a sensitivity towards—and desire to foster—a small-town atmosphere. Planners sought community input through nine major public outreach events including workshops, business open houses, neighborhood walks, student events, and public activities specifically targeting the area's two largest ethnic groups, the Latino and Hmong communities. Additionally, planners received frequent input from a citizen working group and cooperated with four neighborhood and two business associations active in the area.

Ultimately, the St. Johns/Lombard Plan was designed for consistency with the City of Portland Plan that, in turn, complies with the Metro Regional Plan and, finally, the Oregon Statewide development plan. Within this hierarchy, the St. Johns planners recognized three planning standards with particular application to the St. Johns process: the Community Involvement Rule, the Metro Housing Rule, and the Transportation Planning Rule. Specifically, these rules facilitate public participation in the overall planning process and require sufficient supply of multi-family housing and public transportation in urban areas, respectively.

[21] City of Portland, Bureau of Planning. February 2004.

MCLOUGHLIN CORRIDOR LAND USE AND TRANSPORTATION STUDY[22]

The McLoughlin Final Report generally recommends that planners and developers retain Clackamas County's existing transportation and land use policies for McLoughlin Boulevard and the surrounding area. By this approach, McLoughlin—a designated State Highway—remains a designated Boulevard in the County's Comprehensive Plan and a Regional Street in the Metro Plan. Generally, these designations imply pedestrian-oriented and environmentally sensitive designs that include landscaped medians and right-of-way edges, street-side trees, aesthetically-designed signals and signs, and bus turn-outs and other transit and pedestrian-supportive features. Given these design parameters, the Final Report offers several suggestions for corridor improvements.

While the State owns 120 feet of right-of-way over the entire length of the corridor, street design varies widely throughout. In response, the plan recommends six different cross-sections—two for arterial sections of the roadway and four for various intersections—that will allow for more design consistency in the future. In response to the Boulevard's high traffic volume, the plan also recommends additional advanced warning signage and suggests that planners eliminate on-street parking. Other recommendations include improved street lighting, further evaluation of an Urban Business Area Overlay to facilitate access management, and continuous bike and walkways along both sides of the Boulevard. To further improve the area's pedestrian environment, the report suggests general improvements for transit facilities as well as improved Tri-Met bus service for the SE Metro Area and improved east-west access—possibly via a neighborhood shuttle service—within the study area. Despite these exhaustive recommendations for area transportation and transit systems, the plan leaves most existing street classifications—and herein County transportation policy—unchanged.

Similarly, the corridor plan maintains the area's existing land use standards. Provided Metro employment targets for the study area and an anticipated employment deficit, planners concluded that the existing zoning standard—General Commercial for the area immediately surrounding the Boulevard—had very little influence on the area's ability to create new jobs. Rather, they suggested that local market dynamics and a shortage of vacant land would prove the greatest limiting factors in the area's economic development and concluded that amended zoning standards could even retard growth. Ultimately, the plan recommends that current land use standards be maintained and suggests continued implementation of transit-oriented use guidelines.

[22] County of Clackamas. June 1999.

POWELL BOULEVARD/FOSTER ROAD CORRIDOR TRANSPORTATION PLAN[23]

A joint effort by Metro and David Evans and Associates, Inc., the Powell Boulevard/Foster Road Plan evaluates multiple improvement alternatives on behalf of the Oregon Department of Transportation. The first alternative recommended a roadway, bicycle, and pedestrian "base network" comprised of priority improvements from the 2020 Regional Transportation Plan and the Pleasant Valley Concept Plan. In addition, Metro, the technical advisory committee, and the project consultant developed three other improvement alternatives: Roadway, Bicycle, and Pedestrian "No. 1" (the base plan with an expanded north/south network); Roadway, Bicycle, and Pedestrian "No. 2" (the base plan with an expanded east/west network); and Roadway, Bicycle, and Pedestrian "No. 3" (3 travel lanes with bicycle and pedestrian accommodations and north/south local street improvements.) Beyond the roadway improvement sets, Metro and Tri-Met collectively designed two alternative transit improvements. The Baseline Transit Plan—essentially the 2020 Regional Transportation Financially Constrained Network—allowed for an incremental increase in regional transit services based on annual revenue gains. The second alternative—referred to as "Transit A"—extended the transportation service area included in the Baseline Plan, improved headways, and allowed for faster travel times with three new "rapid" bus lines.

Given the four roadway and two transit improvement alternatives, the planning team assembled eight combinations of roadway/transit programs and later selected five to test with a travel forecasting model. Each of the five alternatives was applied individually to six roadway segments within the corridor and evaluated based on its cost-effectiveness, safety, neighborhood and environmental impact, preservation of through-movement, and access management. While specific evaluations of each alternative differed by road segment, modeling results generally suggested the need for streetscape improvements, interchange reconstruction, higher capacity (in some areas), improved turn lanes and sidewalks, and additional pedestrian and transit amenities. Evaluations of the transit alternatives yielded a somewhat different result: given that the 2020 Regional Transportation Financially Constrained Network already represented a measurable increase in service and route coverage from the existing network, the transit improvement alternatives offered very little additional benefit.

Beyond traffic speed, planners must also confront design issues that impact both pedestrian and vehicle traffic flow. On-street parking—though an essential feature of a main street—presents considerable safety and congestion issues when not properly managed. Planners must also consider pedestrian comfort and mobility when determining sidewalk widths and designing street furniture and public facilities. Finally—and most importantly—planners must develop a main street/highway design

[23] Prepared for Oregon Department of Transportation by David Evans and Associates, Inc. and Metro. September 2003.

commensurate with the funding they can obtain through special grants, loans, and local revenue sources.

HOLLYWOOD AND SANDY PLAN[24]

The Hollywood District and Sandy Boulevard have long served as a community center for east Portland neighborhoods and a transportation link to downtown, respectively. While these functions have remained consistent—and have perhaps even increased—over time, the area has recently experienced declining community investment. In response, community members and City officials developed a plan to revitalize the study area and increase its long-term viability as a community asset. Ultimately, the plan seeks to implement both local vision and three applicable designations—Town Center, Station Community, and Main Street—from the Metro Region 2040 Growth Plan.

Generally, plan recommendations for Sandy Boulevard recognize and seek to preserve its multi-modal function. According to Metro RTP classifications and the *Portland Comprehensive Plan*, the Boulevard serves as a Major Arterial, a Major City Transit Street, a City Bikeway, a City Walkway, a Major Truck Street, and a frequent bus route. Given its proximity to I-84, the study region observes a considerable amount of highway-related traffic volume. Traffic flow—and access to the Hollywood commercial district—suffer considerably as many major intersections along the Boulevard prohibit left turns. Ultimately, the plan's transportation recommendations seek to ease congestion and improve pedestrian and vehicle access; changes include modifications of and alternatives to on-street parking, provisions for left-turns, intersection realignment, and pedestrian crossings.

The plan's zoning recommendations similarly recognize and support mixed uses. Most areas along the study corridor are zoned for urban and general commercial uses, and outlying areas are zoned for moderate-density residential use. While the study area itself contains several residential parcels, some have suggested its commercial-designated land generally outweighs supporting residential property. In response, the plan maintains urban commercial and commercial storefront zoning codes for Hollywood's commercial core but includes provisions for businesses that incorporate a minimum number of residential units in new or retrofit developments. For the portion of the Hollywood district designated as a Station Community, the plan places particular emphasis on housing and, understandably, public transit. The plan again requires each new building or building expansion to include a certain amount of residential capacity and prohibits auto-oriented businesses (gas stations, oil change facilities, etc.) Finally, the plan provides for development of "urban plazas," effectively open-space areas for residents located near the transit center.

[24] City of Portland, Bureau of Planning. April 2000.

SANDY BOULEVARD CORRIDOR REFINEMENT PLAN[25]

Jointly developed by DKS Associates and Parsons Brinkerhoff, this plan recommends improvements to the capacity, function, and appearance of Sandy Boulevard. Specifically, the study addresses the portion of the Boulevard that lies within the cities of Fairview and Wood Village and the adjacent area between Interstate 84 and the Union Pacific Railroad.

The Refinement Plan for the most part maintains the study area's current zoning standards but allows for a more distinct grouping of similar land uses. Using the intersection of Sandy and NE 223rd Avenue as a dividing line, the plan splits the study region into an eastern and western zone. West of the intersection, the plan recommends primarily residential land uses with some neighborhood commercial and light industrial zones throughout. To the east, the plan recommends mostly low-intensity, non-polluting industrial uses with commercial activity concentrated at intersections. The plan also outlines standards for lighting and landscaping that complement the neighborhood orientation of the western side and the more institutional uses intended for the eastern side.

Plan recommendations for street design complement the land use breakdown along NE 223rd Avenue. Given the neighborhood orientation of the western portion, street design recommendations generally allow for improved pedestrian and bicycle access. Recommendations for the eastern side emphasize truck access and traffic flow to better serve commercial and industrial purposes but nonetheless provide safe pedestrian access where necessary. Throughout the entire study area, the plan generally recommends a three-lane design with parallel circulation, separate right and left turn lanes at various locations, new traffic control equipment, and pedestrian crosswalks at all major intersections. In addition to standard crosswalks, the plan also calls for several mid-block, raised-median crossings at several locations along the Boulevard. Additional plan recommendations for street design will require some degree of legislative effort; Multnomah County currently owns and maintains Sandy Boulevard and designates the roadway as a Major Collector. Both Fairview and Wood Village, however, consider the Boulevard a Minor Arterial, a roadway eligible for tighter access control and higher regional funding priority. Provided the County agrees to a reclassification of the Boulevard within the study area, plan recommendations allow for access control standards consistent with the Minor Arterial standard.

MAIN STREET HANDBOOK. WHEN A HIGHWAY RUNS THROUGH IT: A HANDBOOK FOR OREGON COMMUNITIES.[26]

As the focal point of smaller towns and cities, main streets are traditionally pedestrian-friendly business districts with an emphasis on

[25] DKS Associates and Parsons Brinckerhoff.

[26] Funded by the Transportation Growth Management Program. November 1999.

community life and heritage. In short, the main street focus on accessibility creates a concentrated town center. Despite their small-town appeal, however, many main streets also serve as state highways and herein must balance access and aesthetics with function and mobility. Where main streets also serve as highways, community members frequently voice similar concerns; many claim the highway "identity" threatens safety—of motorists, cyclists, and pedestrians alike—and reduces the security and general comfort of the downtown area. Further concerns include excessive vehicle speeds and traffic congestion; insufficient parking and disabled access; and crossing signs, signals, and walkways generally appropriate for a main street that nonetheless prove unsafe and inadequate for a main street/highway. While the main street and highway identities appear fundamentally opposed, local planners and developers can take certain steps to serve both purposes better.

First, planners can slow traffic considerably with designs that visually reduce road width. While fewer and smaller travel lanes obviously slow traffic most effectively, planners in many cases must maintain the existing road system and therefore can only alter a motorist's *perceived* road dimensions. For example, colored or uniquely paved road shoulders and landscaped medians make a motorist perceive a more narrow driving space. Special pavers and road markings can also increase a motorist's awareness of crosswalks and in turn increase pedestrian safety. Where possible, planners may also manipulate the street system design itself to diffuse and divert traffic. If secondary (parallel) and bypass routes are both financially and technically feasible, planners should further evaluate the traffic mix to ensure that the types of vehicles contributing most to congestion will indeed use the alternate route.

OTHER METRO AND STATE DOCUMENTS

REGIONAL FRAMEWORK PLAN[27]

As directed by the 1992 Metro Charter, The Regional Framework Plan (RFP) incorporates policies and objectives established in other Metro documents including *Regional Urban Growth Goals and Objectives* (RUGGOs), the *Greenspaces Master Plan*, the *2040 Growth Concept*, and the *Regional Transportation Plan*. Adopted in December 1997, the RFP addressed issues that include transit, parks and open spaces, housing density and development patterns, water sources, and management of the Urban Growth Boundary.

The RFP claims corridors, "…provide a place for densities that are somewhat higher than today and feature a high-quality pedestrian environment and convenient access to transit. Typical new developments

[27] Metro. December 1997.

would include rowhouses, duplexes and one- to three-story office and retail buildings, and average about 25 persons per acre."

The Plan also states that, *"Transportation improvements in corridors will focus on nodes of activity – often at major street intersections – where transit and pedestrian improvements are especially important. Corridors can include auto-oriented land uses between nodes of activity, but such uses are carefully planned to preserve the pedestrian orientation and scale of the overall corridor design."*

The target for non-single-occupancy-vehicle (SOV) trips—including shared ride, bike, walk, and transit trips—within Corridors and Centers is 45-55%. This target is slightly higher than the 40-45% non-SOV share for neighborhoods, industrial areas, and employment areas but significantly lower than the 60-70% target for the Central City.[28]

For Main Streets—many of which were built in the early decades of the 20th century—the plan envisions density growth from 1990 levels of 36 people per acre to about 39 people per acre. Ideally, Main Streets will form neighborhood centers and together may form a dispersed town center (e.g. Belmont, Hawthorne and Division in inner Southeast Portland).

URBAN GROWTH MANAGEMENT FUNCTIONAL PLAN[29]

This plan comprises Section 3 of the 2003 revised *Metro Code* and incorporates planning objectives established in *Regional Urban Growth Goals and Objectives* (RUGGOs), the *Metro 2040 Growth Concept*, and the *Regional Framework Plan*. The Plan includes twelve titles with provisions for appropriate levels of housing and employment, regional parking policy, water quality and wildlife conservation, industrial use, cooperation with neighboring cities, and affordable housing, among others.

Section 3.07.170 recommends population and employment density of 25 persons per acre in Corridors. Suggested densities in Regional Centers are 60 persons per acre, and recommended densities for Town Centers are 40 persons per acre. (These are higher than the 1990 Regional Framework Plan densities of 24 persons per acre in Regional Centers and 23 persons per acre in Town Centers). For Main Streets, the plan recommends a 39 person per acre density.

In section 3.07.610 of the Urban Growth Management Functional Plan, Metro intends to "*enhance Centers by encouraging development in these Centers that will improve the critical roles they play in the region and by discouraging development outside Centers that will detract from those roles."*

[28] From Table 2.1 in Regional Framework Plan, Dec. 1997.

[29] *Metro Code*. January 2003.

2040 CENTERS[30]

Metro's web site describes Centers as "compact, mixed-use neighborhoods of high-density housing, employment and retail that are pedestrian-oriented and well served by public transportation and roads. Centers are defined as the central city, regional centers, town centers, station communities and main streets."

Metro has designated one Central City (the Portland CBD), seven Regional Centers (the downtown areas of Hillsboro, Beaverton, Oregon City and Gresham, as well as the Clackamas Town Center, Washington Square and Gateway shopping areas), and 30 Town Centers.

Regional Centers complement the Central City and serve large markets outside Portland. They are the most accessible areas in the region by auto and high-quality transit, highways and pedestrian-oriented streets.[31]

Town Centers, Station Communities and Main Streets are the smaller components of the 2040 Growth Concept. These are significant areas of urban activity connected to the Regional Centers by transit and key arterial streets. They provide local shopping and employment opportunities.[32]

Metro proposes the following objectives for all Centers[33]:

- Promote more intensive mixed-use development
- Promote greater efficiency in the use of land
- Provide infrastructure to support more intensive development
- Provide roads for effective local and regional connections that provide access to, and circulation within, the center for all modes of travel, including freight
- Promote shared parking and driveways between developments
- Provide a pleasant, healthy, safe and convenient bike and pedestrian environment
- Promote walking, bicycling and public transit use
- Provide a distinct identification for each center through signs, street design and marketing, etc.

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[30] http://www.metro-region.org/article.cfm?articleID=6547, viewed 2 June 2004.

[31] ibid.

[32] ibid.

[33] http://www.metro-region.org/article.cfm?articleID=6547, viewed 2 June 2004.

- Provide public spaces, such as town squares
- Incorporate "green" practices in developing buildings and infrastructure, particularly for stormwater runoff
- Recognize the natural environment (streams, wetlands) as a desired amenity
- Promote public/private partnerships to achieve center goals.

METRO CENTERS PROGRAM

Phase One: Periodic Review Task 1.6 – Evaluate Mixed-Use Areas and Corridors for Additional Capacity

This report was completed by Metro planning staff in April 2001 and summarized jurisdictions' capacity for infill, redevelopment, and new development within their mixed-use areas (including Centers) and Corridors.

Phase Two: *Metro Urban Centers: An Evaluation of the Density of Development*[34]

This report was completed by ECONorthwest and Johnson Gardner in July 2001. The report concluded that the primary reason Centers are not densifying as expected is because the zoning is ahead of the market. In terms of the competition from non-Centers, the report stated:

"Regulations that restrict development within the UGB outside of Urban Centers do not guarantee that development will occur within Urban Centers. The businesses that currently use suburban land may not find it profitable to do business in Urban Centers. The result could be that this section of the economy, rather than re-locating in a denser environment in Urban Centers, will simply disappear or re-locate outside the region. To the extent that the economy of Urban Centers depends on the existence of these other segments of the economy, the economy of Urban Centers could be weakened rather than strengthened by these regulations."

Phase Three: *Ten Principles for Achieving 2040 Centers*[35]

This report was completed by Leland Consulting Group and Parsons Brinckerhoff in 2002. It listed the ten principles as follows:

1. All Centers are not created equal
2. Understanding market impact

[34] Prepared by ECONorthwest with Johnson Gardner. July 2001.

[35] Prepared by Leland Consulting Groups with Parsons Brinckerhoff. July 2002.

3. Private investment follows public commitment

4. Reward leadership

5. Building communities, not projects

6. Remove barriers (including rezoning outside of Centers to prune back the allowable retail and employment in some Corridors)

7. Metro as coach

8. Balance the automobile

9. Celebrate success

10. Take the long view

As important gateways to Center, Corridors should not be neglected. Corridor competition with business parks, regional shopping centers, and "power centers" should also be analyzed.

URBAN GROWTH REPORT[36]

These two studies were reviewed to determine the need for residential and commercial land within the Portland Metro UGB.

State law requires that the Portland-Vancouver metropolitan area maintain a minimum 20-year stock of vacant, buildable land to accommodate the region's future growth. Consistent with this policy, Metro evaluates residential and business growth and capacity within the Urban Growth Boundary (UGB) every five years. According to Metro's most recent report, Portland-area population will grow at a moderate pace—1.6 percent annually—over the next 20 years. Assuming a five percent residential vacancy rate and 68 percent "capture" of regional population growth within the UGB, the report anticipates a future need for 222,800 dwelling units. Given its available capacity over the same time period—179,200 residential units—the UGB will experience a 43,600-unit residential deficit in the coming decades. Metro suggests that incentives developed to encourage refill of existing properties could reduce the anticipated deficit to 38,700 residential dwellings, but the remaining shortage will compel policymakers to either increase capacity within the existing boundary or, alternatively, expand the growth boundary itself.

As its population grows, the Portland-Vancouver area will add close to one-half million jobs from 2002 to 2022. Assuming the Metro UGB will

[36] *2002-2022 Urban Growth Report: An Employment Land Need Analysis.* Metro. August 2002.
2002-2022 Urban Growth Report: A Residential Land Need Analysis. Metro. August 2002.

capture 75 percent of regional job growth, Metro anticipates total Portland-area employment growth of approximately 350,000 jobs by 2022. Given these employment projections, the report suggests the Metro UGB can already accommodate at least a portion of the resulting job growth through reuse and redevelopment of existing properties. Specifically, 50 percent and 35 percent of commercial and industrial land needs, respectively, can be met through refill. As previously discussed, policymakers must address the remaining needs for new capacity by expanding the UGB or, alternatively, implementing policies to increase capacity within the existing boundary. Specifically, the report anticipates a significant shortfall—up to 5,700 acres—of industrial land and a negligible surplus—800 acres—of commercial land over the next 20 years. These figures assume that an increasing trend in cross-development—commercial development of former industrial property—goes unchecked. While cross-development can yield positive economic outcomes in some areas, policymakers should evaluate its potential to distort the market for industrial land as the trend persists.

Corridor Case Studies

Orientation

The purpose of the Corridor Case Studies is to provide information on implemented corridor projects in the United States that might be useful to our exploration of planning and design strategies for the Portland Metro Corridors project. To satisfy that purpose, we have selected case studies that address the efficiency of land use, walkability, and form of corridors to create a more healthy, reciprocal relationship with city centers, while maintaining a vibrant economic and physical environment on the corridors themselves. These case studies also provide an exploration of the strategic use of land use & development policies and focused capital improvement projects to deliberately and dramatically restructure the form of commercial corridors.

Some Perspectives on Our Current Predicament

No Precendent. Planning for the restructuring of corridors in the United States is relatively recent (in comparison with downtown revitalization and infill master planning, for example). As such, there is very little to see in the way of corridor restructuring projects implemented long enough ago to monitor results.

Dominant Urban Planning Concepts and Paradigms Are What Got Us Into the Problem. With regard to wide, high vehicular capacity thoroughfares in the United States: the first fifty years of the 20th Century built on earlier patterns and brought us "The Townless Highway," which made both city and countryside better. The second fifty years of the century flipped that paradigm upside down, by bringing the highway *into the city* – that is, allowing the city to be built along the highway. This ruined the countryside by erasing the Arcadian virtues of suburban and exurban environments, and ruined the city by draining centers of their vitality. So the question for the Corridors Project would appear to be: How do we envision the next 50 years?

> ". . . conventional practice is "to allow inhospitable, high speed arterials to ream out town centers, destroying their potential as public realm and having recourse only to strip shopping centers along the frontages" (Andres Duany; *New Urban Post*)

Dominant Traffic Planning Concepts and Paradigms Are What Got Us Into the Problem.

- *Arterials* are designed – i.e. are a classification of street type whose purpose is – to move large numbers of vehicles long distances. So arterial designers are motivated to minimize interruptions, like intersections with collectors. Thus, design standards for arterials, such as the mandatory 800-foot minimum intersection spacing, results in the creation of superblocks. This creates a development pattern that is difficult to move around and discourages pedestrian activity, and neighborhoods that are not accessible or permeable.

- The official classification of roadway types into *arterial, collector* and *local street*, is entirely traffic-centric. Exploring the range of potential options for the future of corridors will require us to develop a classification system that reflects the necessarily mutually supportive relationship between street type and development type, that is, between the configuration of the thoroughfare and the form of enfronting development. The current traffic-centric classification terminology, exasperated by the typical complete separation between Planning and Public Works departments in cities and counties, is probably a root cause of the limitations in our thinking and language that prevent us from envisioning solutions. The official classification system that provides our current means of classifying corridors is much

too simplistic to envision or accommodate the wide variety of types that should exist in a healthy urban structure. A better classification system would provide a wider vocabulary of roadway types that speak to the relationship between a street's role in the circulation network as well as to the development type that it serves. A beginning for this improved system for might include classifications that relate to the whole *corridor* portion (and perhaps its sidewalks and primary furniture) rather than just the vehicular thoroughfare, like: Freeway/highway; Boulevard; Parkway; Avenue; Main Street; Neighborhood street; Roadway; Lane; Path.

Thoughts On Current Opportunities

Commercial corridors appear to have transitioned into the second phase of their evolution. During the first phase, the economic power of downtown centers "poured" out onto the new arterials, supporting an entirely linear arrangement of low intensity retail and surface parking. Economically, these businesses were independent islands, each with their own parking lot, sign and marketing program. Physically, the buildings were almost irrelevant - the signs were much more visible than the buildings.

In this second, current phase, retail power concentrates increasingly at freeway interchanges and major intersections in the form of power center, big-box and superstore anchored centers, and a number of hybrid types. These intersection centers are robbing the market demand from properties located along the very long segments in-between the new concentrations of retail. *The resulting instability along the in-between segments, combined with the problem of congestion, provides the first widespread opportunity since the advent of the strip to reinvent the corridor's form* to meet market demand as well as other community and regional objectives (such as reducing congestion, enhancement of air quality, and creating meaningful, vital cities and towns). In many metropolitan areas, the weakening of demand for retail in between major intersections, combined with an overbuilt retail market and pent up demand for housing provides the ingredients necessary to loosen retail's exclusive grip on properties enfronting our primary wide streets.

General Goals

We have noticed that early serious efforts to restructure corridors – as evidenced by the case studies presented as well as other significant corridor projects that we are aware of (not that there are many!) - share a number of common, or general, goals, as follows:

1. Transform the high-volume arterial network that carried the traffic vital to retail centers into a pedestrian-friendly environment. In other words, prove that Americans are wrong about wide roads – they can be made to be very comfortable places to walk, work and live.

2. Facilitate the clustering of retail uses, in a walkable-scaled environment with shared parking, transit access (or at least set up to be a great future transit access point) and in close proximity to homes, and workplaces.

3. Encourage the transformation of the long in-between segments flanked by such clusters towards housing, office, lodging and uses that are not competitive with the pedestrian oriented clusters of retail/entertainment/services.

4. Create better edges to the neighborhoods behind the arterials.

5. Provide a pattern of land use that supports primary centers, rather than drains them. This goal is complicated by the fact that some corridors need to be planned to include centers (see case studies attached, particularly Cathedral City and Colombia Pike), and others need to be planned to stop draining pre-existing centers not located on corridors.

6. Facilitate the transition of separated uses and low intensity everywhere to the development of a *multi-nucleated development pattern* that provides a good pedestrian realm, vital street life at centers, and transit access while also providing a large section of the population with the kind of single-family detached neighborhoods that many people crave. Transitioning corridors from linear, all-the-same development patterns to nodal development patterns are central to this goal.

Corridor Typology/Classification Issue.

The purpose of the Portland Metro Corridors project, as we understand it, is to make recommendations to Portland Metro as to how to plan/effect development of corridors so that they support, rather than drain or destroy, primary regional and city/town centers, in a way that insures that corridors are healthy pieces of a well-structured metro area. So the end product of Phase I will need to make recommendations as to what land uses, development types and right-of-way configurations should be featured along corridors rather than in centers, which of those things should be discouraged along corridors as opposed to centers; and what site/design/scale characteristics are needed to support the desired patterns of development along corridors so as to co-exist in a mutually supportive pattern of metropolitan development with centers.

Assuming that the same land uses/development patterns/right-of-way configurations will not appropriate along <u>all</u> corridors – *or all segments of all corridors* – we need to develop some system of classification to match land use/development/right-of-way configuration recommendations with appropriate types of conditions.

Based on our corridor planning and restructuring work to date, and, as demonstrated in the case studies, we have thus far concluded that corridor patterns can be usefully classified by segment type. Although we feel certain that a segment type classification system has yet to be refined, we have worked backwards from our own project recommendations to recommend the following preliminary segment classification typology *for existing conditions*:

I. Corridor Centers (smaller/other than "regional centers" or "town centers" as defined in 2040 Growth Concept)
    A. Main Streets (narrowed segments):
        1) running along corridor
        2) running perpendicular
    B. Intersections – all four quadrants or some of the quadrants, typically at a major crossroads
    C. Segments lined with retail – arterial right-of-way treatment; parking behind and/or to side (may have on-street parking)
II. Strip Development – low density commercial with parking in front
III. Specialty Segments – segments dominated by a primary use
        1) Employment segments
        2) Auto-Sales & Service segments

3) Civic segments
4) Medium box segments
5) Residential segments

Perhaps the most important point to note about classifying existing conditions is that commercial corridors are very similar in form and use and that they pose similar problems in their relationship to centers. The characteristic lack of variety between and along commercial corridors is really a symptom of the problem. So classification of existing types will certainly prove that we need a much richer and more varied classification of potential future types, and that is where the real work in planning the corridors of the future will lie.

The Case Studies

Three case studies were selected for review in this memorandum – Palm Canyon Drive in Cathedral City, California; Whittier Boulevard in Whittier, California, and Columbia Pike in Arlington, Virginia. The case studies were selected as particularly useful for the purposes of the project for the following reasons:

1. *Integration of Street Design and Development Planning.* All three case studies demonstrate an approach to planning growth and development along corridors that integrate modifications to street design with the types of development envisioned for each corridor segment.
2. *Commercial Strip Redevelopment Opportunities.* All of the case study projects started as strip development. All of them are largely built out. All of the communities they were located in wanted something other than a strip.
3. *Palm Canyon Drive Case Study.* This case study was selected because it involved the restructuring of a typical commercial strip into a boulevard with a downtown center (for a city that was without a downtown). On this case study, the new center occupies only one side of the arterial. It demonstrates the use of capital improvements and policy to effect dramatic transformation of the form, character, development intensity and mixture of uses along a primary arterial corridor. Also, this case study demonstrates redevelopment of a blighted corridor.
4. *Whittier Boulevard Case Study.* This case study demonstrates an approach to a seven-mile corridor that appeared to be one long strip. The project is the best demonstration that we know of the effectiveness of "pruning back the retail zoning", and refocusing development into segments with their own market focus, dominant uses and character. In contract to the Palm Canyon Drive Case Study, this one demonstrates planning for the reconstruction of a corridor with very little short term vulnerability to change.
5. *Colombia Pike Case Study.* This project demonstrates the restructuring of a corridor to create a series of centers. In this case each center is located directly on both sides of the new "Main Street" thoroughfare at major intersections. This case study also differs with the first two in that it emphasizes incentives to induce change along the corridor, rather than using policy to require the restructuring.

Definitions

To avoid confusion over the terminology used in this memorandum, we offer the following clarifications regarding the intended meanings of the following terms:

Boulevard. Corridor type featuring buildings oriented toward the street – main entrances facing the street, primary mass running parallel to the corridor, and a comfortable and gracious pedestrian environment featuring sidewalks buffered from through lane traffic, decorative street lights, comfortable seating.

Corridor. The combination of the contents of the public right of way and the enfronting properties. The thoroughfare and the development along it combine to form a single integrated "piece of the city."

Development Standards. Those aspects of a city's development policies, adopted as part of the zoning code, that are non-negotiable requirements that address those aspects of site development and building design that are essential to achieve the goals of the Plan. They are specifications for features of development such as permitted uses, building height, setbacks and parking.

Design Guidelines. Strongly recommended, yet discretionary, policies that provide guidance in terms of more subjective considerations, such as district character, design details, or architectural style. They serve as criteria for design review by City Staff, an architectural review board, the Planning Commission and, if need be, the City Council.

Enfronting/Fronting [Properties] or [Development]. Properties or buildings and associated site improvements arranged parallel and contiguous to the public right-of-way.

Main Street. Corridor type associated with traditional downtowns. Buildings on main streets feature front doors facing the primary street with doors and display windows opening toward the public sidewalk. Parking is located behind the buildings, and buildings are located directly at the sidewalk, with no front setbacks and no side yards. The supporting street type features curbside parking, slow moving traffic, and no more than two or three travel lanes. The overall building-to-building width is typically no more than twice the height of the enfronting building facades.

Parkway. Corridor type featuring buildings oriented away from or visually buffered from the street, with a visual character dominated by attractive landscaping. Its heavily landscaped or "beautified" street environment typically includes buffered pedestrian walkways and decorative lighting, but does not include much in the way of views of buildings. No curbside parking.

Right-of-Way. That portion of the corridor under public ownership, typically containing the thoroughfare, and all or a portion of the public sidewalks.

Thoroughfare. The portion of the street used by moving vehicles; the portion containing the traffic lanes; sometimes referred to as the *cartway.*

Case Study: Palm Canyon Drive Corridor
Cathedral City, California

Existing Conditions

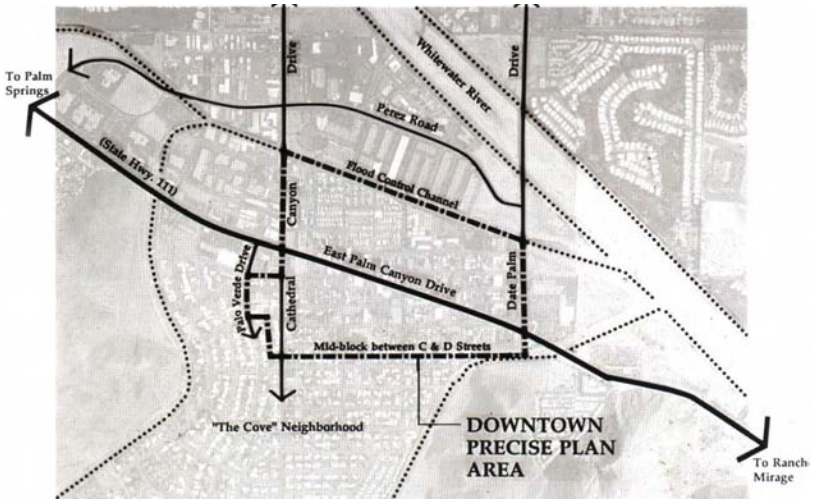
Study Area Location:

Palm Canyon Drive (PCD) - California State Route 111, extending from Cathedral Canyon Drive intersection to Date Palm Drive intersection.

Length: 2,800 linear ft.

Corridor Type(s):

Commercial Strip



Aerial map showing the Downtown Precise Plan area

Relationship to Center:

Formerly contained city's downtown district; currently contains blighted remnants of that historic center.

Role in Circulation Network:

Arterial; PCD functions as the primary vehicular connection between the major cities of the Coachella Valley region.

Street Design:

Thoroughfare Configuration - Five lane cross-section: two through lanes in each direction with the center lane broken into a series of dedicated left turn lanes for access into streets and driveways.

Pedestrian Realm - Monolithic curb, gutter and sidewalk. Average sidewalk width 7 ft. Furnished with "cobra head" street lights and little else.

Transit lanes - Bus "duck-ins"at bus stop locations.

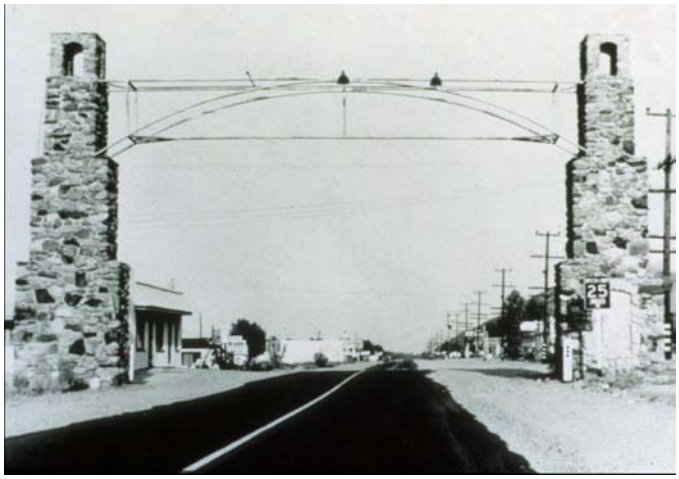
Pre-existing conditions along Palm Canyon Drive

Transit Service and Amenities:

Local bus service. Single bench or no amenities at bus stops.

Development Type(s)

Like most of the cities in the Coachella Valley, Palm Canyon Drive – originally a two-lane roadway, was the center of the city's downtown district and functioned as the city's Main Street. As the roadway was widened over time, eventually including the removal of most curbside parking, the street design became increasingly at odds with the main street development type enfronting the street, ultimately causing severe disinvestment and gradual replacement of main street types with strip development.



The original gateway into Cathedral City

At the time of the project, the overall impression was that of a hodge-podge of auto-oriented strip development. Looking closer, one noticed that private development along both sides and covering the entire study area was composed of mixture of remnants of historic downtown "fabric" intermixed with newer strip development types:

- *Remnants of Historic Downtown* – disinvesting traditional main street building types facing the roadway.

Cathedral City's historic downtown

- *Newer strip development* (replacing the older vestiges of the downtown) – low, single-story buildings positioned in back of, or in the center of surface parking lots; front doors oriented to parking lots, buffered from roadway; low site coverage.

Recent strip development along Palm Canyon Drive

Vulnerability to Change:

Plenty of blighted portions, especially remnants of old downtown district. Strip development appears relatively stable.

Blight along Palm Canyon Drive

Pre-Existing Development Policies:

Degree of Specificity - Permitted land uses, height restrictions, minimum parking requirements, minimal landscaping requirements.

Key Controls/Specifications - Virtually all forms of commercial development permitted, with the exception of industrial uses. Minimum parking requirements for private parking facilities; no provision for shared parking. No provisions for mixed use development. No residential uses permitted on parcels fronting the corridor.

Restructuring Plan

Community Objectives:

1. Rebuild the city's downtown (Palm Canyon Drive was historically the city's Main Street – see above). Create an attractive and economically viable downtown style district somewhere along this portion of the corridor that will be both the heart of the community as well as welcoming to visitors.
2. Create a pedestrian friendly environment all along the corridor.

3. Remove the blight.
4. Transform the lackluster performance of the properties within this segment and put the high quality of the community on display to the region.
5. Enhance vehicular capacity (more of a regional objective than a clear community priority): this segment of Palm Canyon Drive had been a bottleneck in the region's primary circulation arterial. Improve operations sufficient to relieve the bottleneck.

The Planning Process:

Phase I. Project began as site selection for city hall. Consultants and staff developed list of candidate sites. Consultants worked with Project Steering Committee to evaluate sites. Presentation of site selection and evaluation to City Council in Study Session. Both Project Steering Committee and City Council agreed with Consultant recommendation that City Hall should be located at the center of the Heart of the City, and that the City Hall site selection should be broadened to become the site selection for the city's downtown. City Council chose site of historic downtown on Palm Canyon Drive in order to deal with the blighted strip development.

Phase II - Corridor Revitalization Program. Concept development program organized around a series of publicly held Downtown Steering Committee meetings. This phase resulted in the preparation of a corridor revitalization strategy, a development master plan for the downtown core, a design concept for Palm Canyon Drive, and a strategic action plan to implement the program. These concepts were presented to and approved by the City Council.

Phase III – Implementation. 1) Preparation Downtown land use and development policy document to replace pre-existing zoning controls; 2) construction documents for the reconstruction of Palm Canyon Drive 3) design competition for the new city hall; 4) design and construction of the new town green as part of the downtown district 5) selection of investors for new anchor uses; selection of master developer for downtown node; marketing key opportunity sites for residential development.

Envisioned Corridor Type(s):

Mixed-Use Boulevard (see definitions in first section) with downtown center planned on one quadrant at major intersection.

Planned Relationship of Corridor to Center.

The central concept of the corridor plan is to restructure the corridor to feature a downtown center along one side of one segment, and to restructure development in all surrounding segments to function as a mixed-use neighborhood oriented to the new center.

Planned Role in Circulation Network:

Unchanged. Palm Canyon Drive to continue to function as the primary regional arterial, connecting most of the cities in Coachella Valley. Maintaining (and in the case of this segment, enhancing) high vehicular capacities is central to the economics of Cathedral City and the cities developed along Route 111.

Envisioned Development Type(s):

Envisioned as single segment oriented to a new node – the planned downtown center. Entire segment envisioned as more "urban" in form (taller buildings permitted, built closer to and oriented toward the right-of-way) and envisioned as being more intensely developed than other segments of the corridor in Cathedral City. In terms of overall city form, the development concept is to make this segment of the corridor stand out as the center of the city, with the downtown node functioning as "the center of the center." More specifically:

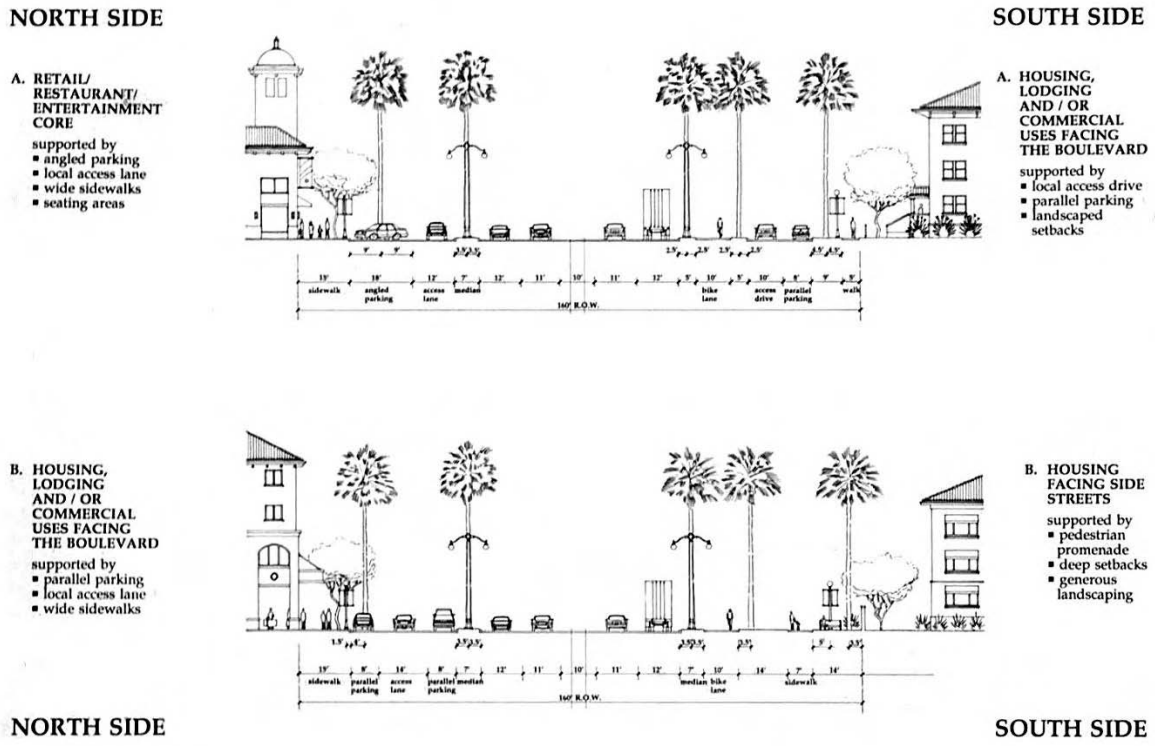
Downtown Segment – Ground-level shops (retail/restaurant/entertainment uses) fronting the corridor – one side of the corridor only. Gateway to the center of downtown positioned on, and drawing attention to main street type development running perpendicular to the corridor, and leading to Town Square – the center of the downtown core. Housing, office, lodging, education and support services above ground-level retail and on flanking blocks in the small new district.

The Downtown along PCD, leading to Town Square and City Hall

Mixed-Use Boulevard Segments. Along all frontages other than downtown district frontage: housing, office, lodging, larger-scale retail incompatible and not competitive with downtown, designed to be compatible with potential residential development on adjacent parcels.

Street Design.

Thoroughfare and Pedestrian Realm Configuration - Boulevard Street Type: Rapidly moving traffic in center lanes, designed to maximize through traffic capacity to/thru Cathedral City; through lanes divides off from the rest of the roadway by tree-lined curbed islands. The old hodge-podge of unsignalized left turn pockets replaced by left turns only allowed at signalized intersections. Two signalized intersections were created in between the two far ends of the study area. Paralleling the through-traffic areas on both sides of the roadway: one-way service lanes buffer flanking development from fast-traffic environment in the center of the roadway, and deliver customers to uses and curbside parking and/or drop-off lanes. The configuration of the parallel service lane enfronments are designed to attract desired forms of investment and then match the needs of those forms of investment. More specifically:



Adaptable Boulevard Design Concept for PCD

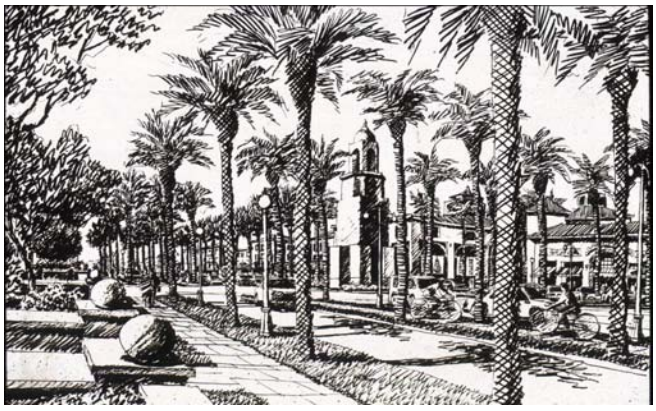
- *Service Lane Configuration – Downtown Segment*: This portion (along with the entire center section) was constructed immediately by the City. If featured single lane, curbside angle parking enfronting ground-level shops. Trees planted within parking area to further buffer pedestrian environment from through-traffic lane area. Shade trees back of curb (this is the desert, after all), decorative street lights, pedestrian seating & amenities.
- *Service lane configuration – Mixed-Use Boulevard Segment on same side of corridor as downtown frontage:* This and the next segments were to be constructed by private developers as development occurred along the corridor. The design configuration was the same as for downtown, except angle parking replaced by parallel parking and drop-off.
- *Service lane configuration – Mixed-Use Boulevard Segment; opposite side of corridor from downtown frontage:* two-way bicycle lane running the full length of this side of the corridor, immediately behind the trees lining the through-lanes. Between the two-way bike lanes and

the edge of new private development, real estate developers could choose from a planted setback to a service lane arrangement designed with parallel parking and/or drop-off.

Before…

After

Before…



After

Envisioned Transit Service:

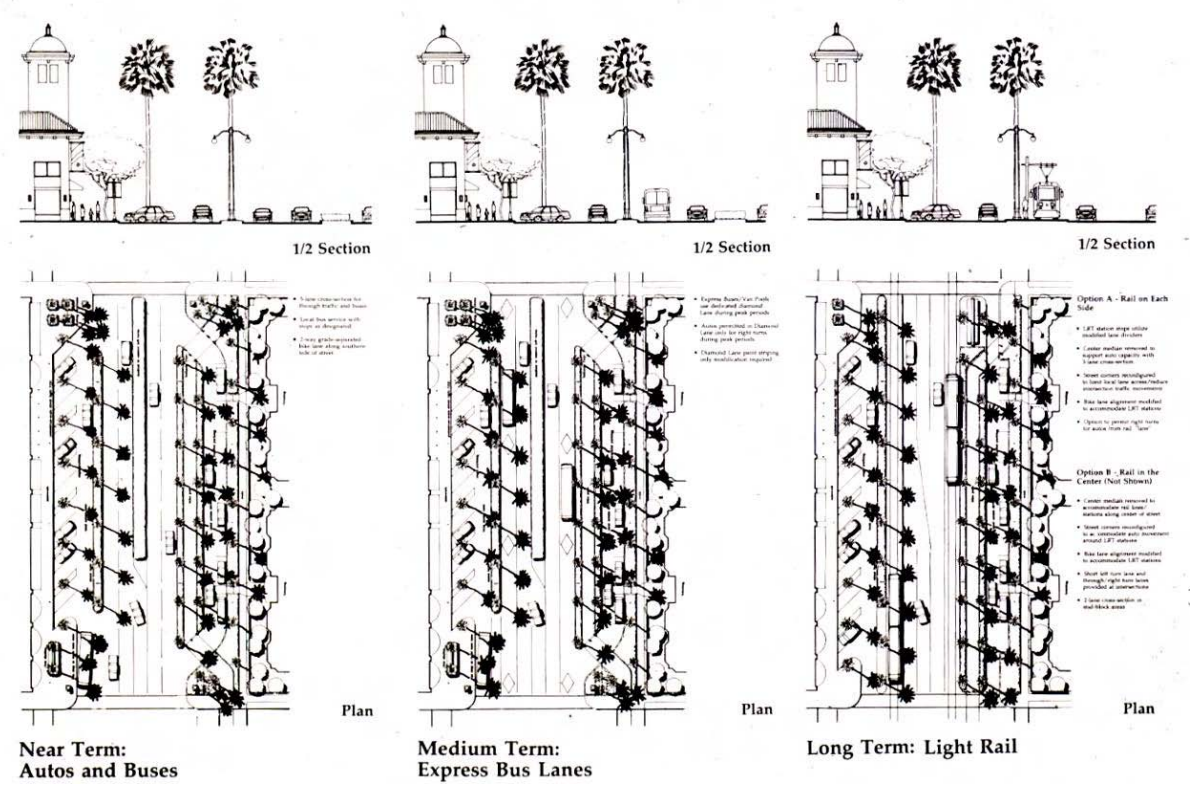
Although Cathedral City and the region that it is a part of were completely oriented to single passenger vehicle circulation at the time of the plan (and there was little to no interest in planning for, let alone seeking funding sources for enhanced transit facilities), the plan includes a strategy for the corridor to transition from automobile-dominant with local bus service to express bus service, to express bus preferred, to light rail facilities, as the city and region intensify. The primary concept is to plan now for the gradual commitment to enhanced and evolving transit within the corridor, so that decisions made today do not inadvertently prevent (or make more costly) the transit to enhanced transit commitment. The phasing in of transit is planned to evolve as follows (see Transit System Adaptability diagram):

* *Near Term - Autos and Buses.* At the time of plan adoption, local commitment to bus ridership was virtually non-existent. The near term scenario accommodates existing local bus service with significantly upgraded bus stop visibility and amenities. Local bus stops are out of the way of the center through traffic lanes.

* *Medium Term - Express Bus Lanes.* As the city and region experienced increasing levels of congestion and eventually become more committed to transit services, the right of way

use changes to accommodate express buses within the center through-traffic section. One precious lane in each direction is dedicated to express bus use and right turns only. Local buses continue to use service lanes and local bus stops remain out of the center through-traffic zone.

* *Long Term - Light Rail.* In the long term, Palm Canyon Drive is the obvious location for a light rail line connecting all of the primary cities of the Coachella Valley. The plan envisions a three lane section (two through lanes and one shared turn lane) for through-traffic, and two lanes dedicated to light rail. This will require the removal of the center median, but will not effect any of the primary features of the streetscape.



Transit System Adaptability: Phasing of transit along PCD

Strategy:

1. Reorganize the pattern of retail/restaurant/entertainment development from the diffuse pattern of the strip to cluster. Establish a retail/services/entertainment core – that is a Downtown Core - that is highly visible the substantial numbers of motorists along Palm Canyon Drive (virtually all development in the Coachella Valley considered of high quality is in the form of compounds set back from any frontage on a wide road. Demonstrate that development can open out toward, and "enfront" a wide road without loosing quality.) Make the Downtown Core the central focus of this portion of the city and corridor.
2. Reorganize retail entitlements to instigate the concentration of retail, restaurant and entertainment uses in the downtown center segment.
3. Promote the development of a "captive market" by encouraging housing construction on large underutilized areas along the south side with PCD, and flanking the new Downtown Core area. Identify opportunity sites for infill. Assist with parcel assembly for a model "ice

breaker" project. Replace retail entitlements with entitlements for high density residential development along all properties enfronting the corridor outside of the downtown segment, and for upper stories within the downtown segment and throughout the upper stories in the downtown center.

4. The City becomes the first investor: Remove barriers to investment caused by negative image of Palm Canyon Drive corridor in Cathedral City by transforming the visual character of Palm Canyon Drive between Cathedral Canyon Drive and Date Palm Drive intersections - invest in the redesign and reconstruction of Palm Canyon Drive as priority number one.
5. Install design improvements to transform the overall identity of the corridor when viewed by passing motorists, and to kick of the redevelopment of the segment designated as the downtown center.
6. Use development policies to complete the frontage improvements – service lane and landscaping areas in portions other than at the downtown section's frontage.
7. Combine the redevelopment of the downtown in combination with the redesign and reconstruction of Palm Canyon Drive to stimulate investment in housing, lodging and office development. The image to market is that of an attractive residential neighborhood with the Downtown Core as its central focus.
8. Use funding available for the Highway 111 widening as a catalyst for change. Rather than continuing to resist the widening project, accept minimum operations thresholds in return for design freedom. Rather than implementing a seven-lane section, concentrate vehicular capacity improvements at the two primary intersections, while removing unsignalized left turn access.
9. Ensure the creation of an attractive and economically viable downtown center by adoption a development master plan that is to the mutual benefit of the separate property owners, and that communicates an appealing and singular intent to outside investors.
10. Provide opportunities for development at any scale.

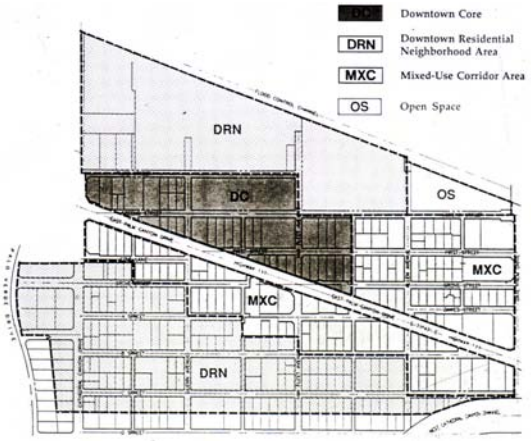
Implementation:

Plan Type - *"Precise Plan"*, modeled, for the most part, after a *Specific Plan* as specified under Section 65451 of the Government Code of the State of California (see City of Whittier, California, Case Study, for a detailed description of the minimum statutory requirements for a Specific Plan). In the State of California, charter cities have a very wide latitude in determining the planning tools used by the municipality to control growth and change. The Precise Plan originated in the City of Mountain View, California, to provide the city with a planning tool that would specify land use and development regulations in great detail, without having to specify a number of items required for "Specific Plans" that did not have much relevance to the planning areas for which the Precise Plan was substituted.

Development Policies – Completely new land use and development standards replaced existing City policies for the plan area.

Degree of Specificity –In addition to setting forth revised standards for permitted land uses, height restrictions, minimum parking requirements and minimal landscaping requirements, the new standards also governed intensity, building orientation, block size, location of driveways, required open space, landscaping, signage, improvements to the public realm in front of private property, and character and quality of building design.

Key Controls/Specifications – More specific land use and development standards to guide the form of new development (changes in land use or significant building additions trigger the new policy; tenant changes within an existing use would not trigger new policy requirements) into the envisioned framework, by segment, as follows (see Planning Areas diagram):



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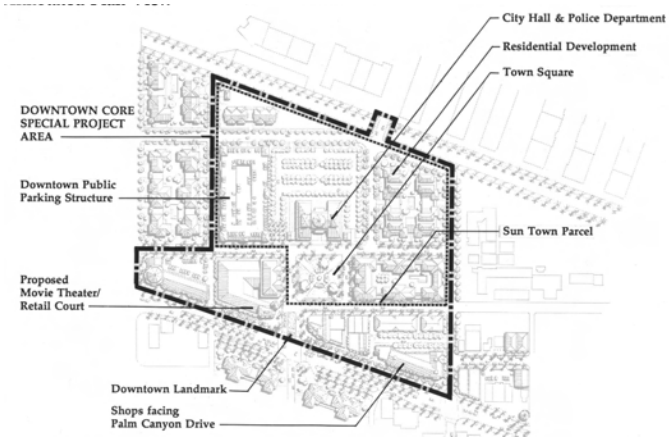
hedral City Planning Areas

Downtown Core Segment

1. *Land Use.* Ground-level retail, restaurant, services required along Palm Canyon Drive and around Town Square frontages; upper level housing, office, lodging uses permitted along PCD and throughout the Downtown Core Plan Area.

2. *Building Orientation.* Buildings required to face Palm Canyon Drive and key street frontages within Downtown Core Plan Area. Primary mass of buildings must parallel Palm Canyon Drive alignment.



Key uses proposed in the Downtown Core.

3. *Building Height and Setbacks.* Maximum building height: four floors and 55 ft.; a fifth floor may be added to create special architectural feature; minimum building height of 2 floors and

35 ft. Setbacks: buildings must be built to back of sidewalk; maximum side setback of 15 ft. permitted.

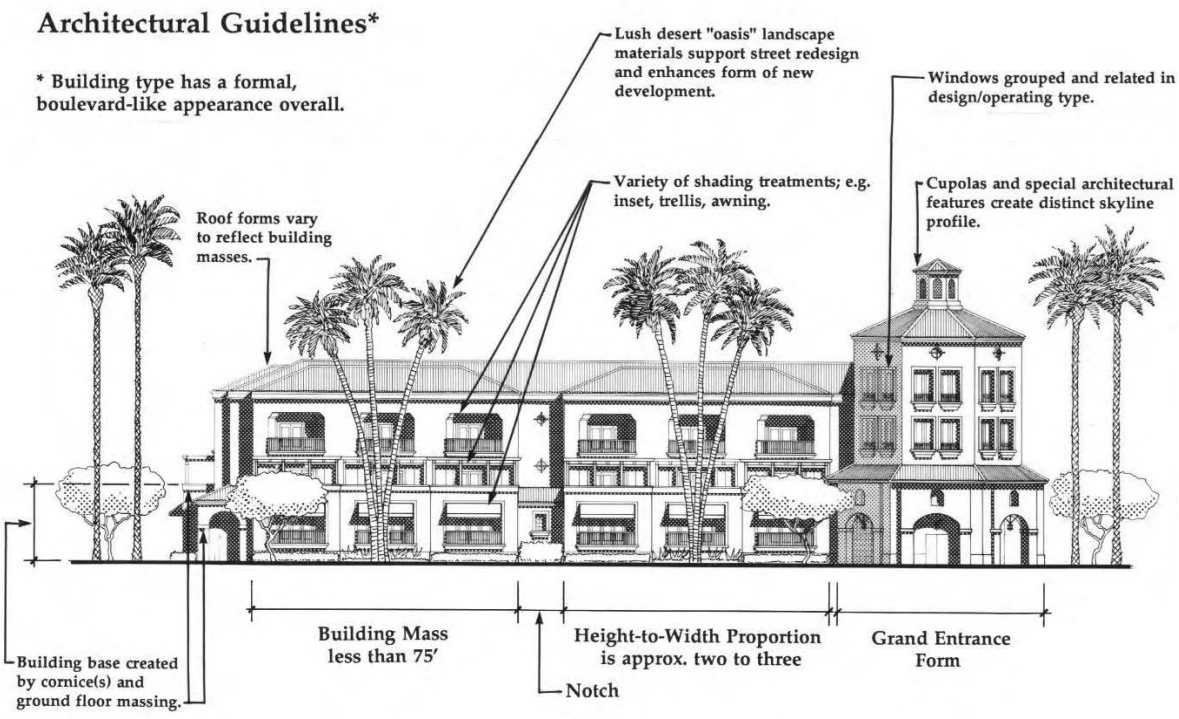
4. *Maximum block size.* 650 ft. All de4vleopmenet required to be configured into a pattern of rectilinear blocks with new streets and access drives linking to surrounding city streets. New city streets must be constructed according to plan standards.

5. *Parking Requirements.* Shared parking promoted by plan. Minimum and maximum parking requirements specified.

6. *Design Guidelines.* Guidelines for the design of buildings, site improvements and signage included to insure the creation of "desert townscape" character building on architectural and landscape heritage as desired by community.

Mixed Use Corridor Areas

1. *Land Use.* Residential, office, lodging, as well as indoor wholesale and commercial sales and services permitted.
2. *Building Orientation.* Buildings required to face Palm Canyon Drive and key street frontages within Downtown Core Plan Area. Primary mass of buildings must parallel Palm Canyon Drive alignment.

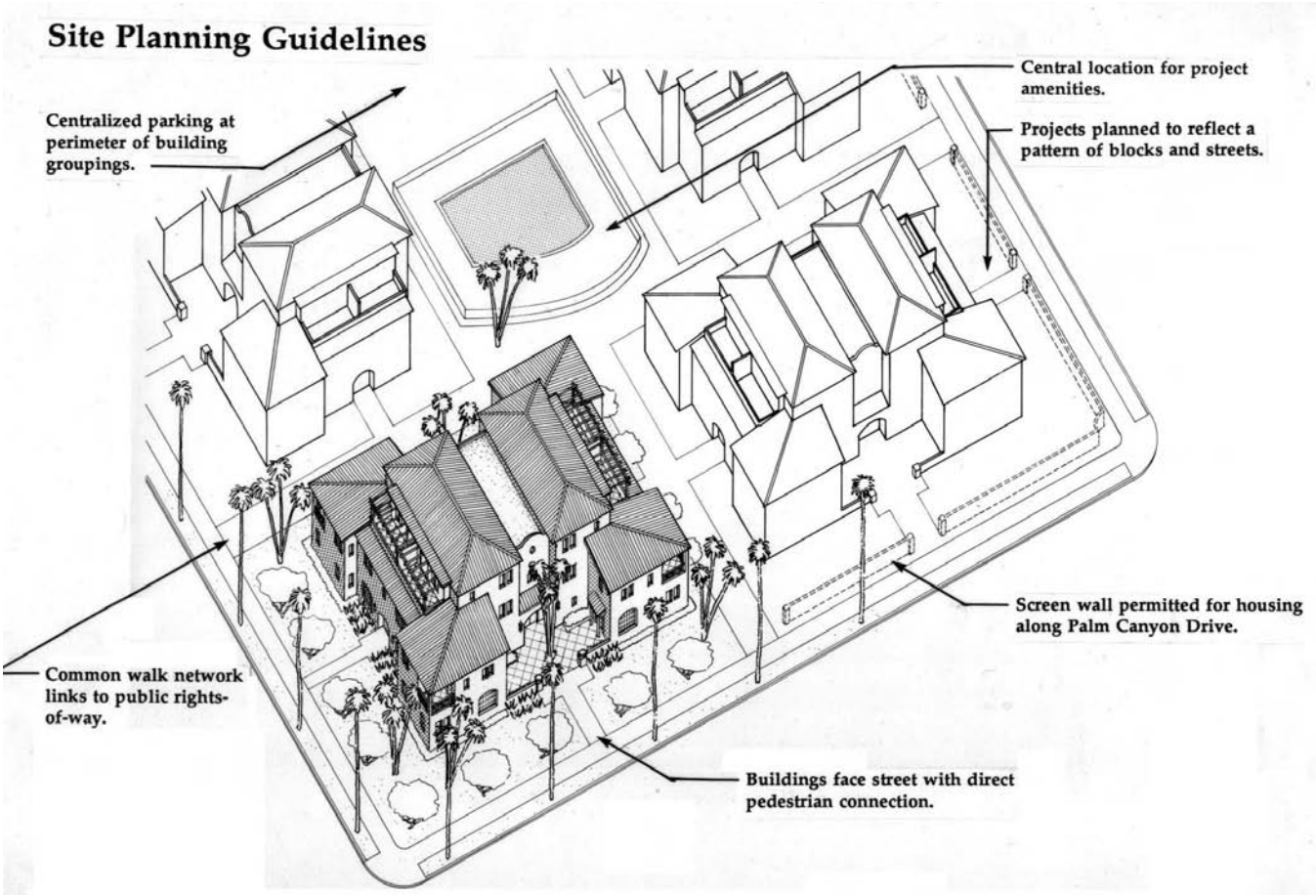


Prototype Illustration: Mixed-Use Buildings in the Downtown Core

3. *Building Height and Setbacks.* Maximum building height: three floors and 42 ft.; minimum building height of 2 floors and 35 ft. Setbacks: A dedication is required to accommodate landscaping, bike lanes, and a frontage access drive per the PCD Plan Concept; Minimum

front setback for buildings of 20 ft.; Minimum 15 ft. setback to side property lines and between buildings.

4. *Maximum block size.* 650 ft. All development required to be configured into a pattern of rectilinear blocks with new streets and access drives linking to surrounding city streets. New city streets must be constructed according to plan standards.
5. *Parking Requirements.* Minimum and maximum parking requirements specified.
6. *Design Guidelines.* Guidelines for the design of buildings, site improvements and signage included to insure the creation of "desert townscape" character building on architectural and landscape heritage as desired by community.



Prototype Illustration: Site Planning Guidelines for a Downtown Residential Neighborhood Area

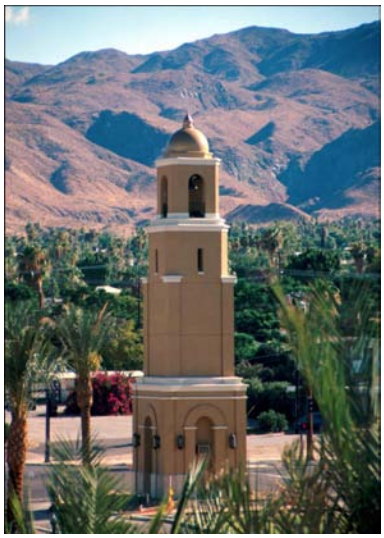
Capital Improvements/Street Design - Improvements to PCD will be implemented in part by the City, through a capital improvement program, and in part by private developers, as redevelopment occurs.

1. Installed as part of Cathedral City capital improvement program:

    - Street Design for entire center through-traffic section, including median and buffering islands (with palm trees and decorative street lights), new sidewalks and curbside furniture

    - Entire frontage treatment up to face-of-curb for Downtown Core segment, including downtown landmark bell tower, service lanes, angle parking, trees in parking zone.

Downtown service lanes



Downtown bell tower

    - Internal to Downtown Core Plan Area: Town Square and internal local streets; new City Hall.

2. Required in Precise Plan to be installed as part of private development:

    - Downtown Core segment: 15 ft. sidewalk and pedestrian amenities along Palm Canyon Drive, in keeping with concept plan adopted as part of Precise Plan policy document.

The City Hall

    - Mixed Use Corridor segments: frontage "outboard" of palm-lined curbed areas flanking center through-lane segment.

      1) Widened right-of way to accommodate boulevard section with five lanes in the center.

      2) Design of frontages to attract desired forms of investment:

Transit Facilities Planning -

Short Term. Local bus stops moved to more convenient locations; bus stops provided with enhanced amenities.

Long Term. Concept plan described in "Envisioned Transit Service" section, above, adopted as part of plan without funding or schedule commitments.

* All photographs courtesy of Freedman Tung & Bottomley.

Case Study: Columbia Pike Corridor
Arlington, Virginia

Existing Conditions

Study Area Location:

Arlington Virginia just west of Washington DC, stretching from the Pentagon to the Fairfax/Arlington County line near Bailey's Crossroads. The project area extends from Jefferson Street to Courthouse Road near the entrance to I-395.

Study Area Length: 3.5 miles

Corridor Type(s):

Commercial strip with a mix of retail, office and residential uses. Typical conditions find a seven story office building located next to a single story strip mall, or a gas station next to a complex of four-story apartment buildings.

Existing conditions along Columbia Pike (Photo courtesy of the City of Arlington)

Role of Corridor in City Structure/Relationship to Center:

Historically, the Columbia Pike served as a "Main Street" for Arlington County, but the development of the Washington Metro system generated other centers near transit that have superceded the Pike's former role. Also leads directly into Washington DC, the regional center.

Role in Circulation Network:

Regionally, Columbia Pike leads directly to I-395 and into Washington DC. Locally, it is an arterial that provides circulation through the county, and acts as the community's central collector. Cars move along the roadway at up to 50 miles an hour, but traffic slows considerably with heavy traffic at commuter hours.

Street Design:

The roadway ranges in width across the project area.

Thoroughfare Configuration - Two to three lanes in each direction, with the outermost lane dedicated to transit. Most on-street parking has been removed over time to provide additional capacity.

Pedestrian Realm - Sidewalks along most of the Pike are in the 5-6' width, but vary from 4'6" to as wide as 17' in segments.

Traffic lanes along Columbia Pike (Photo courtesy of the City of Arlington)

Sidewalk conditions along one portion of Columbia Pike (Photo courtesy of the City of Arlington)

Development Type(s):

Lined with commercial strip development, fast food restaurants and apartment complexes, most fronted by excessive amounts of asphalt and large parking lots. Drive-up convenience stores, drive-throughs, and other auto-oriented establishments are common. Most developments give little consideration to the pedestrian – buildings turn blank walls to the street and sidewalk spaces, and building entrances are located from internal parking lots, not from the street.

Existing Transit Service:

Bus lines run by the Washington Metropolitan Area Transit Authority (WMATA) along the Pike provide a direct connection from Columbia Pike to downtown Washington. Buses operate as frequently as every three to five minutes during rush hours along the Columbia Pike, and are the most used bus lines in the state of Virginia. The buses operate within a shared transit lane along the outside of the cartway in either direction.

Transit service along the Pike (Photo courtesy of the City of Arlington)

Vulnerability to Change:

Development on the Columbia Pike had been stagnant since the 1970's, with the construction of Metro along the Rosslyn/Ballston route leading to disinvestment along the Pike. No major

construction had occurred on the corridor in the past forty years. While retail occupancy was high, sales levels were not. Because of the Pike's proximity to the major center of Washington D.C., residential occupancy was high as well, but the area was not a desirable place to live, and the older housing stock was beginning to deteriorate.

Pre-Existing Development Policies:

The properties along the Columbia Pike are controlled by the City's Zoning Code.

Degree of Specificity - The Zoning Code contains specifications for permitted uses as well as height, density/FAR, and parking.

Key Controls/Specifications – Commercial zoning along parts of the corridor permits all types of retail, office, and other commercial development. Residential uses are restricted to Apartment Dwelling Districts at a range of densities, and to mixed-use buildings permitted only within a "Special Revitalization District". Permitted heights range from 3.5 stories/35 feet all the way up to 10 stories/95 feet.

Restructuring Plan

Specific Planning Objectives:

Initial objective was to stem the tide of minimal investment and/or disinvestment in the Columbia Pike Corridor and to be proactive in its revitalization. Specific objectives that arose from the community were to:

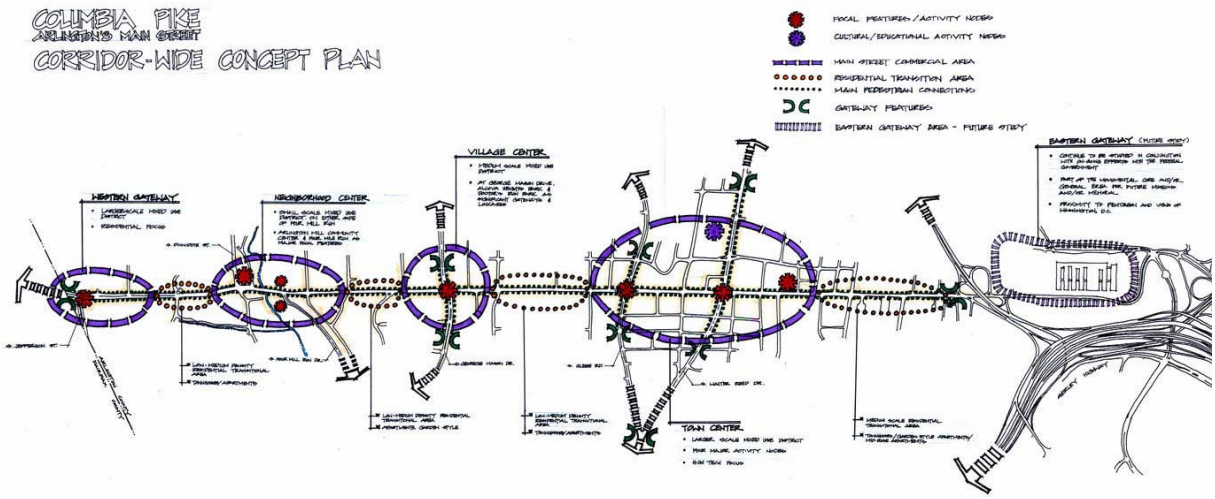
1. Bring back the corridor's original role as a traditional "Main Street" for the community.
2. Preserve the historic character-defining elements existing along the corridor
3. Expand the amount and quality of open space along the corridor
4. Develop a focused housing initiative for the corridor
5. Enhance public transit along the Columbia Pike corridor.

Planning Process:

Began in 2000 with the *Columbia Pike Initiative: A Revitalization Plan*, through a series of community meetings which developed a long-range vision for a vibrant corridor with a better physical form. In September 2002 the community began developing a Form-Based Code to direct new development along the corridor, starting with a week-long charrette to develop community specifications for design, and concluding with detailed rules and regulating plan to govern new development. The Arlington County Board approved the Form-Based Code in February 2003, and subsequently appointed a Columbia Pike Street Space Planning Task Force to give recommendations regarding the overall width of the Columbia Pike street space in March 2003. In February 2004, the County approved street designs for the length of the corridor.

Envisioned Corridor Type:

Main Street, organized into four specific mixed-use development districts. All districts have ground-floor retail fronting the corridor.



Concept plan for the revitalization of Columbia Pike (Photo courtesy of Dover Kohl)

1. *Town Center* - Comprised of two mixed-use activity nodes containing destination retail at major intersections, connected to a cultural node containing art, education and recreation. These activity nodes are built to the greatest intensities and heights along the corridor, tapering down towards adjacent neighborhoods
2. *Village Center* - A neighborhood-serving retail center with medium scale development (4 to 7 stories) at the Pike's intersection with George Mason Drive. It includes a linear "parkway" treatment along the sidewalk to connect the two public parks to the north and south of the center.
3. *Neighborhood Center* - Provides neighborhood serving retail at a smaller scale, seamlessly connected to a community center and other public uses sited at the adjacent regional park (Four Mile Run).
4. *Western Gateway* – Marks the entrance to the corridor with high intensity development and an activity node located at the gateway intersection.

Planned Relationship of Corridor to Center:

The Columbia Pike is restored as a center for the community of Arlington County.

Planned Role in Circulation Network:

Unchanged. The Pike will continue to serve as a major connection to Washington DC and as an arterial for the County.

Street Design:

Thoroughfare Configuration - Pedestrian-oriented "Main Street". The redesigned thoroughfare will de-emphasize the existing high-speed vehicle movement, and instead provide for a variety of traffic movements, including public transit, bicycles, and on-street parking. Specific treatments will vary along the street segment in each of the mixed use development districts – the Town Center, the Village Center, the Neighborhood Center, and the Western Gateway – and alternate treatments are proposed for the corridor spaces in between these districts

Pedestrian Realm - Widened sidewalks lined with attractive street trees, new amenities to create pleasant waiting areas for transit, and safe crosswalks with minimized crossing distances for pedestrians.

Rendering of proposed improvements to the streetscape along Columbia Pike (Photo courtesy of Dover Kohl)

Envisioned Development Type(s):

Dense, "Main Street" type mixed-use buildings housing retail or other active uses on the ground floor and office or residential uses above. New buildings will be located at the back of sidewalks and orient to Columbia Pike, sited close together to form a continuous "street wall" characteristic of an urban environment. Parking will be located underground or to the rear of buildings.

Simulation of new development constructed according to the FBC (Photo courtesy of Dover Kohl)

Envisioned Transit Service:

Enhanced bus stops and shelters and improvements to transit service including expansion of bus service along the corridor and introduction of new neighborhood loop bus routes. In the long term, high-capacity transit is being considered for Columbia Pike.

Strategy:

1. Create a series of active centers focused on major intersections, each with its own identity and purpose.

2. Direct the development of buildings that create a strong street wall, and contribute to an active and interesting pedestrian experience.
3. Create a positive streetspace that encourages and facilitates pedestrian activity, provides opportunities for transit and offers a network of connected open spaces along the length of the corridor.

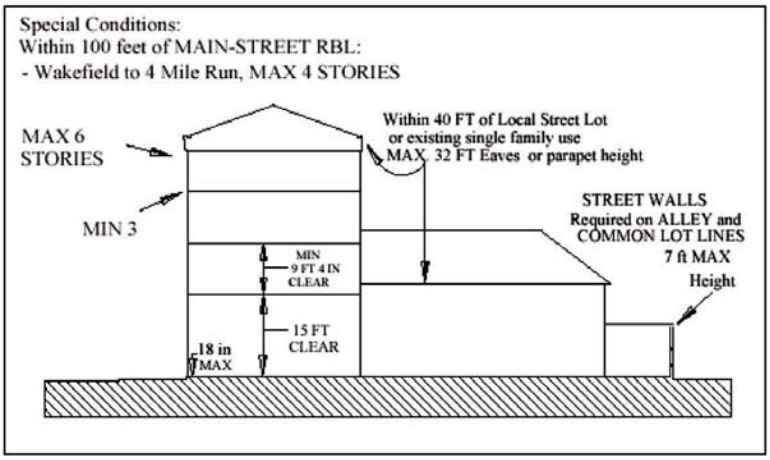
Implementation:

Plan Type – A Form-Based Code, which is an optional set of regulations and development process that may be selected by the developer. that serves as an alternative to the underlying zoning.

Policies - The policies of the Columbia Pike Form-Based Code (CPFBC) are provided as an alternative to the underlying zoning policies. The CPFBC does not replace, but exists in addition to, the existing zoning.

Degree of Specificity – The CPFBC covers street type frontage and design, setbacks, building envelope; and governs form-based elements such as required amount of street façade, buildable lot area and required setbacks and the amount of façade fenestration (by story), *in addition to* permitted use, height and density. It also specifies the permitted configurations and materials for architecture, signs, lighting and mechanical equipment. Reduced parking requirements (both minimum and maximum) are included as a part of a shared parking strategy for each district. The CPFBC includes:

- The Regulating Plan, which provides the general rules for new development and describes the type of street frontage a property is located on (i.e. Main Street, Avenue, Local or Neighborhood).
- Building Envelope Standards, according to the type of street frontage designated for each parcel by the Regulating Plan.



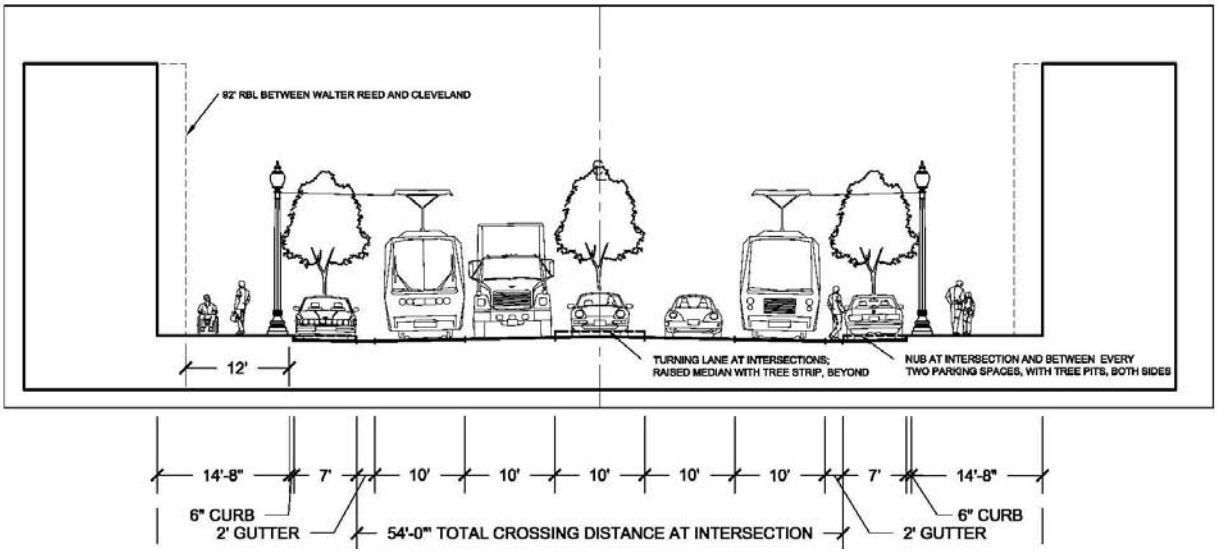
Building Envelope Standards for Main Street sites
(Photo courtesy of the City of Arlington)

- Streetscape Standards, which establish minimum standards for street tree type and placement, turf and groundcover specifications, to ensure the coherence of all of the streets within a district. They also prescribe the design, planting and maintenance of open space.
- Architectural Standards, which provide general principles for the design of buildings. The standards do not provide specific guidance towards architectural style in order to encourage creativity along the corridor and provide designers with the maximum amount of freedom.

Key Controls/Specifications – Along Main Street frontages, ground floor retail is required, and upper floors are used for office or residential purposes. A building's street façade must be

built to not less than 75 percent of the overall required building line. The ground story of Main Street buildings are required to be between 60 percent and 90 percent fenestration, and upper stories must have between 30 percent and 70 percent fenestration. Parking must be provided away from the street and to the rear of buildings.

Capital Improvements/Street Design - The cross-sections for Columbia Pike include wider sidewalks with planting strips and street trees along both sides of the sidewalk, pedestrian-oriented street lights, a parallel-parking lane and more frequent bus stops. Between the curbs, Columbia Pike is proposed for two travel lanes in each direction, plus a lane for left-turn stoppage storage at all locations where left turns are permitted. In places, a raised landscaped center median is included. A special feature, in the form of a traffic circle or gateway feature, is proposed for the Western Gateway.



Proposed streetscape for one section of Columbia Pike (Photo courtesy of the City of Arlington)

In order to implement these improvements, the County is studying transit possibilities for the Pike, and will seek funding from state and federal agencies based on the result of these transit studies. In addition, developers will be required to make improvements in accordance with the streetscape standards for their property frontage, in many cases moving the curb two feet inward as well as providing required sidewalks, planting strips and pedestrian amenities.

Transit Facilities Planning - The plan specifies immediate improvements to the thoroughfare such as improved bus stops, shelters, and implementation of signal priority measures; as well as short- and mid-term improvements to bus service, including loop routes through the neighborhoods along Columbia Pike, better crosstown bus service, and connections to Metrorail Stations and other activity centers in the County. It also contains long-term recommendations for a transitway along the corridor, providing a separate lane for light rail, rubber-tired tram, or express bus system that would run at street level. This transitway would connect with one or more Metrorail stations on the eastern end and extend west beyond Arlington to Fairfax County.

Incentives – Developers who opt for the CPFBC receive an expedited approval process. Smaller projects may undergo administrative review by staff, with no mandated public hearings. Larger projects require a 55-day Special Exception/Use Permit Option that involves public hearings before the County Planning Commission and the County Board. Also, development under the CPFBC is eligible for County investment to bridge feasibility gaps through an Economic Incentives program. In addition, developers may be eligible for County Tax Increment Public Infrastructure Fund assistance in order to defray parking and other "public" infrastructure costs.

Case Study: Whittier Boulevard
Whittier, California

Existing Conditions

Study Area Location:

Extends through the City of Whittier from the I-605 Freeway to the Whittier/La Habra city limit. Project area is defined as the parcels fronting Whittier Boulevard between Broadway Avenue to Valley Home Road.

Study Area Length: Seven miles.

Corridor Type(s):

Primarily a commercial strip dominated by disparate, low-density commercial development. Also contains segments dominated by a single use: a one-mile length of workplace uses including industrial and manufacturing; a cluster of automobile dealerships; a few short fragments along the Boulevard are lined with pockets of residential uses.

Existing conditions along Whittier Boulevard

Relationship to Center:

Whittier's city center, a historic neighborhood called Uptown, is located about three-quarters of a mile to the northeast of Whittier Boulevard. Access to Uptown, and most of the neighborhoods of Whittier, is provided from Whittier Boulevard along arterials and secondary streets.

Role in Circulation Network:

Regionally, Whittier Boulevard acts as a major thoroughfare as state highway Route 72. Locally, Whittier Boulevard is the only major east-west arterial in the City, providing access to the 605

Freeway and acting as the primary distributor to the neighborhoods of City. Traffic is constant throughout the day, to the tune of approximately 42,000 vehicles per day.

Street Design:

The right-of-way along Whittier Boulevard is generally 100 feet wide.

Thoroughfare Configuration - Typical curb-to-curb width of 86 feet. Two traffic lanes in each direction and an occasional left turn lane, with intermittent curbside parking on both sides of the street. A special streetscape treatment occurs at the Five Points Intersection, a major intersection where City's major roadways converge, where the road has been improved with a wide tree-lined median and a grove of palm trees at the crossroads center.

Pedestrian Realm - The pedestrian realm is limited to a constant twelve-foot wide concrete sidewalk lined with infrequent cobra-head streetlights and very little landscaping or pedestrian amenity.

Sidewalk conditions along Whittier Boulevard

Transit Service:

No local bus service; regional bus routes provided by the Los Angeles MTA connect Whittier to the rest of Los Angeles County. Parts of Whittier Boulevard, including its primary workplace, are not covered by transit at all. Two nearby cities provide Metrolink stops that connect to the LA light rail system, but there are currently no transit connections to these stops from Whittier.

Development Type(s):

Whittier Boulevard's predominant development type is auto-oriented commercial development, ranging from locally-oriented shops and services like liquor stores, convenience marts and video rental establishments, to medium-box retail stores and two regionally-oriented shopping centers, the Whittier Quad, and the enclosed Whittwood Mall. Most of its buildings are one-story, low-rise box-like structures set back from the road behind a field of parking. Many of these buildings

are older and starting to show signs of deterioration, with poorly maintained facades and outdated signage.

Vulnerability to Change:

Mostly built-out, with very few vacant parcels. None of the commercial development along its edges is highly successful, but most establishments are generating just enough sales to stay in business, leaving little opportunity for redevelopment. However, sales data examined by Keyser Marston Associates (KMA) indicated that the existing commercial and retail tenants on the Corridor were generating relatively weak sales and rents. KMA stated that the City had an over-supply of retail and noted that much of the older retail and commercial development along the corridor was, or soon would be, functionally obsolete.

Pre-Existing Development Policies:

Degree of Specificity - Properties are controlled by the City's Zoning Code., which contains specifications for permitted uses and limited development standards governing yard area, height, and parking.

Key Controls/Specifications – Almost all types of retail and office development permitted. Manufacturing permitted along a limited segment. No residential along the corridor including at upper stories, except for the few pockets designated for residential use.

Restructuring Plan

Community Objectives:

Community's primary objective was to create a proper "front door" to the community that puts the best of Whittier on display:

1. Transform the low-quality strip appearance of the corridor into a "grand boulevard."
2. Make the identity of Whittier – a good place to live with beautiful homes, lush vegetation and dramatic hillsides – visible along the Boulevard.
3. Improve the economic performance of the Corridor.

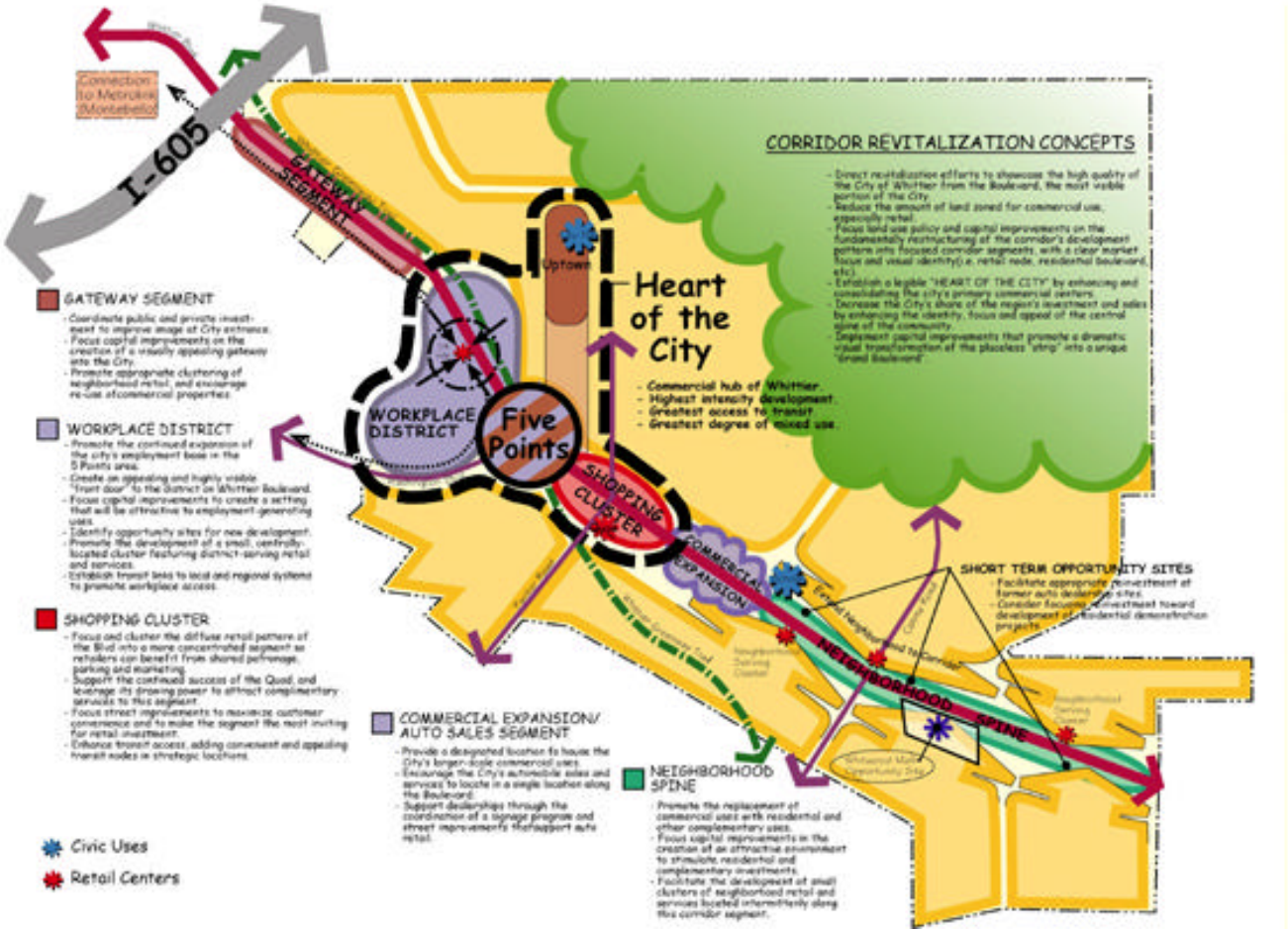
The Planning Process:

The planning process began with a "Back to the Boulevard" presentation intended to solicit ideas about what Whittier Boulevard should be. This presentation was followed by a series of community workshops, which generated the primary plan concepts. The City Council and Planning Commission, reviewed and approved the plan concepts at study sessions in January and December 2002, and a Specific Plan was developed to implement these concepts. The traffic and environmental analysis required for adoption is currently underway.

Envisioned Corridor Type(s):

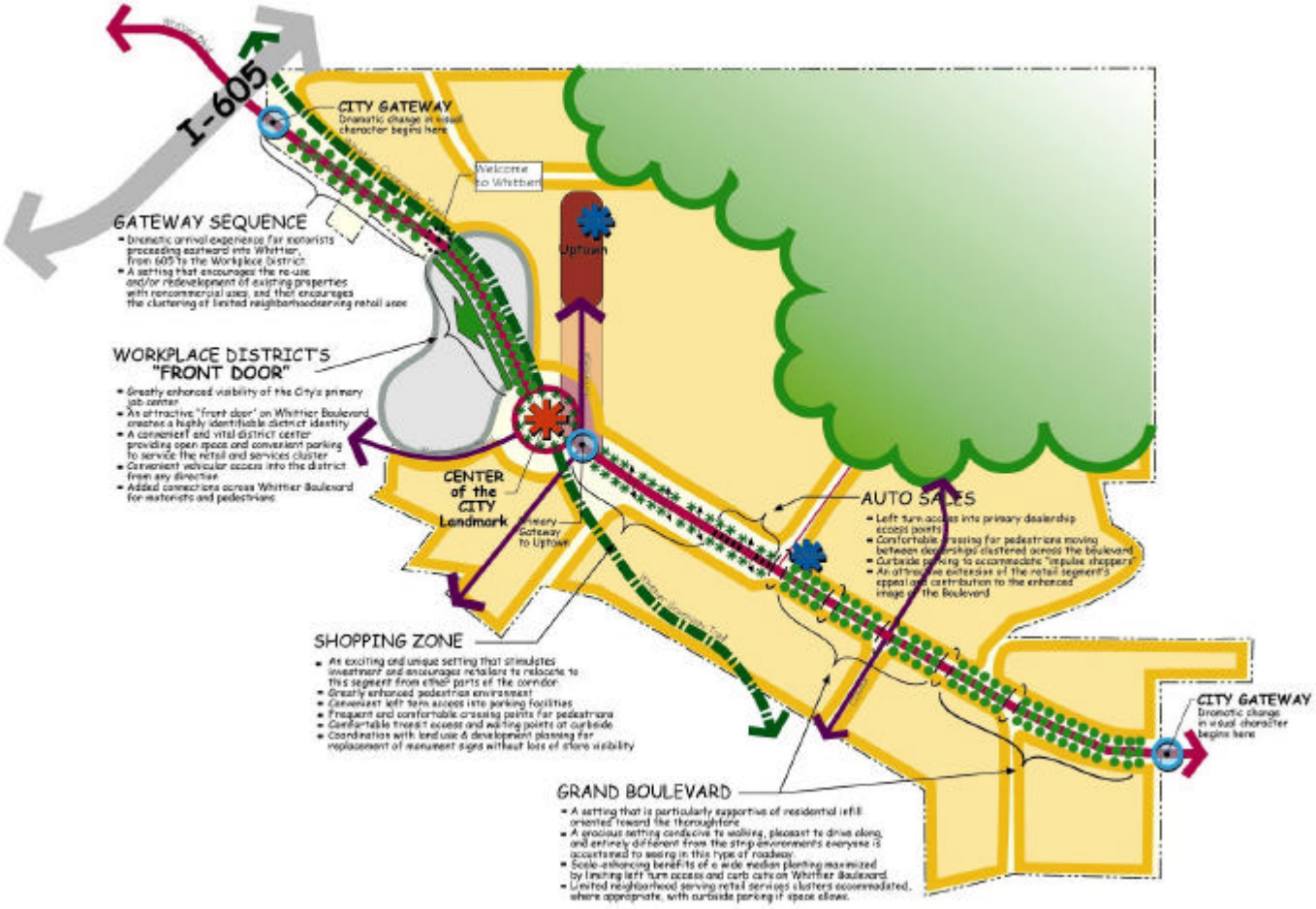
Boulevard (see definitions in first section), separated into five distinct segments.

1. *Gateway Segment* – A grand entrance corridor lined with residential use, office and limited retail uses defines the northwestern entrance to the City.
2. *Workplace District* - A highly visible job center for the City that is a part of a high-intensity "Heart of the City" centered on the Five Points Intersection.
3. *Shopping Cluster* - A concentrated cluster of retail development that is also a part of the "Heart of the City". Regionally-focused uses and a "hybrid" development type will ensure a different type of shopping experience than is offered in Uptown.
4. *Commercial Expansion/ Auto Sales Segment* - Provides expansion space directly adjacent to the Shopping Cluster for support commercial uses, with a special focus on the City's auto dealerships.
4. *Mixed Use Neighborhood Spine* – A grand residential boulevard lined with townhouses and majestic homes.



The five segments along Whittier Boulevard

Each segment will have a different boulevard treatment to match the desired development type for that segment, in order to provide an attractive and supportive environment for the envisioned uses and building types along that segment.



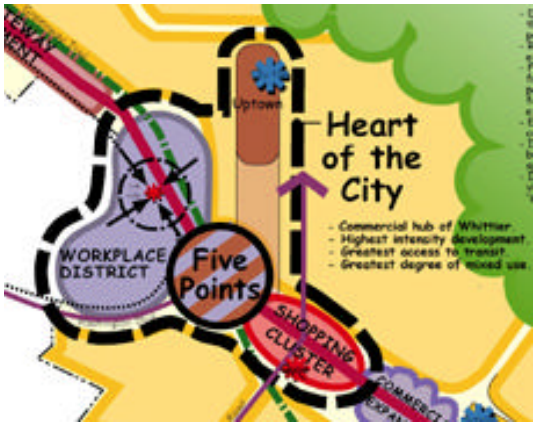
Streetscape treatments for the five segments along Whittier Boulevard

Planned Relationship of Corridor to Center:

Primary plan concept is centered on the creation of a high-intensity "Heart of the City" that encompasses the most urban districts of the City. Incorporates Uptown, the Boulevard's Workplace District and its Shopping Cluster, anchored at the high-visibility intersection of Five Points.

Planned Role in Circulation Network:

Expanded. Whittier Boulevard will continue to act as a major thoroughfare through the City, and will also become a destination in its own right.



The "Heart of the City" concept

Envisioned Development Type(s):

1. *Gateway Segment* – Mid-density. A mix of housing, office and lodging uses, with limited pockets of neighborhood-serving residential.

2. *Workplace District* – Part of the "Heart of the City", containing development that is taller and higher in intensity than the rest of Whittier (especially fronting the Five-Points Intersection). Office and other employment uses. Buildings fronting the street with visible entrances; parking located in structures or at block interiors.

3. *Shopping Cluster* - Part of the "Heart of the City", containing development that is taller and higher in intensity than the rest of Whittier. "Hybrid" development type with ground floor retail that opens onto the street and is oriented to the pedestrian, but still accessible to and visible from the automobile, with parking lots to the side of buildings.

"Hybrid" development in the Shopping Cluster

4. *Commercial Expansion/ Auto Sales Segment* – Medium box support commercial uses and auto-oriented uses. Auto dealerships will be built close to the street, behind a single bay used for automobile display or common customer parking.

5. *Mixed Use Neighborhood Spine* – Mid-density. Residential uses with masses and architectural features (i.e. towers) that are scaled for a "grand boulevard."

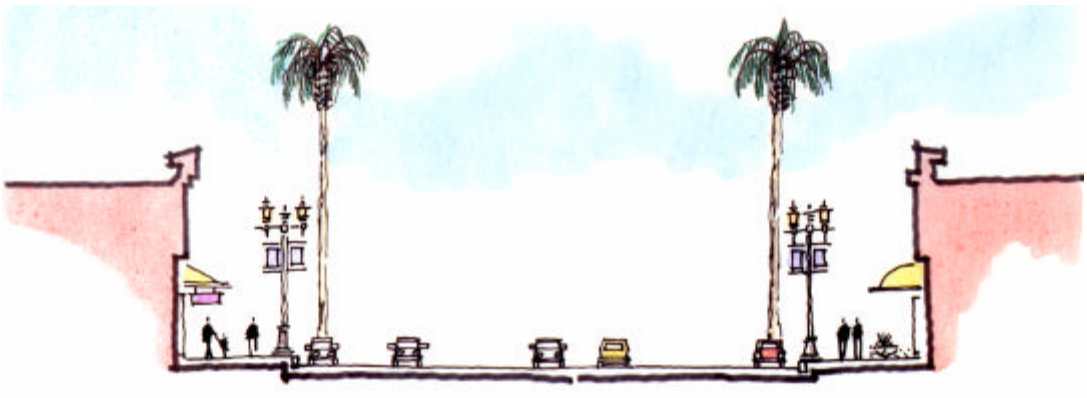
Street Design:

Thoroughfare Configuration –

1. *Gateway Segment* – Two travel lanes in each direction with a center median planted with palm trees. On-street parking in front of offices uses and retail clusters, a landscaped buffer in front of residential uses.

2. *Workplace District* – Two travel lanes in each direction, a wide landscaped green space on its south side and a side road with angled parking to provide access to the District.

3. *Shopping Cluster* – Two travel lanes in each direction, a planted median, and a dedicated parking lane on both sides of the street with palm trees planted in the parking zone.



4. *Commercial Expansion/ Auto Sales Segment* – Same as above, with special treatment at auto dealership frontage, including consistent design elements, coordinated signage and common parking areas.
5. *Mixed Use Neighborhood Spine* – Two travel lanes in each direction divided by a wide planted median and lined by leafy shade trees.

Pedestrian Realm – The pedestrian realm along all segments will be improved to include wider sidewalks, bulb-outs to reduce crossing distances at major intersections, new street trees to provide shade and buffer from traffic, and pedestrian-scaled streetlights. In front of residential uses, sidewalks shall be separated from the curb by a planting strip.

Envisioned Transit Service:

Improvements to the frequency and extent of bus service along the Corridor to provide connections to the region's light rail and rapid bus systems. New stops at activity nodes in the "Heart of the City" within the Shopping Cluster and Workplace District. Development of the Whittier Greenway Trail, a regional multi-use trail which runs along Whittier Boulevard for part of its length, to provide an alternate way of raveling up and down the corridor.

Strategy:

The revitalization strategy was strongly rooted in the economic analysis, which confirmed that Whittier has an oversupply of retail, showed the greatest market demand in the residential sector, and found a market niche related to medical office development due to the concentration of medical office development, as well as hospitals, in Whittier.

1. Restructure the Corridor into a series of distinct segments, each with a clear market focus, compatible land uses, and individual identity.
2. Design and implement the appropriate streetscape for each of these segments, in order to support the envisioned development and land uses for that portion of the corridor. Reinforce this "sense of place" within each segment with focused Development and Design Standards for each portion of the corridor,
3. Reduce the amount of land zoned for retail, to stimulate stronger performance at a single designated retail area.

4. Create a "Heart of the City" area that brings together the primary civic, workplace and retail activities of the City, focusing the highest intensity of uses at the key intersections of Five Points area and tying the most active parts of the Boulevard to the City's Uptown district.
5. Increase housing opportunities along Whittier Boulevard.

Implementation:

Plan Type - *"Specific Plan"* as specified under Section 65451 of the Government Code of the State of California. In order to be legally adequate, a specific plan must meet the minimum statutory requirements, as follows:

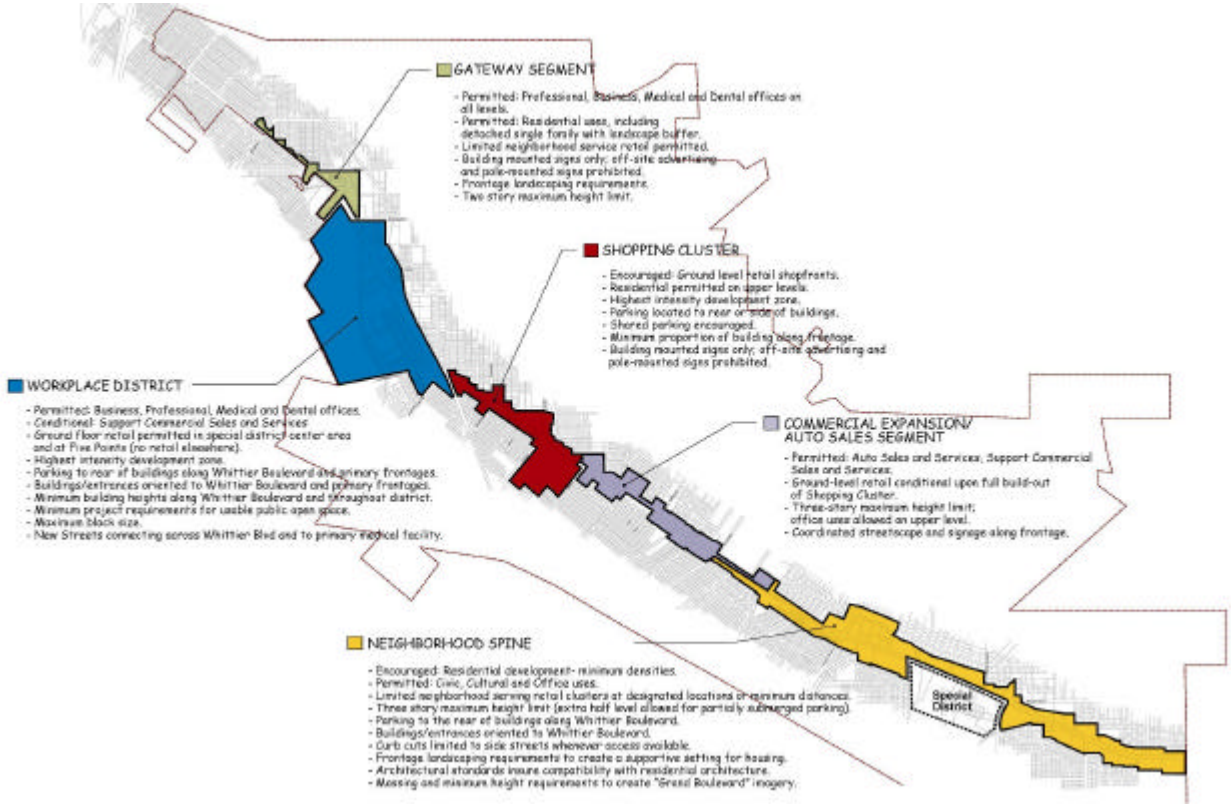
> Section 65451 of the Government Code mandates that a specific plan be structured as follows:
> (a) A specific plan shall include a text and a diagram or diagrams which specify all of the following in detail:
> (1) The distribution, location, and extent of the uses of land, including open space, within the area covered by the plan.
> (2) The proposed distribution, location, and extent and intensity of major components of public and private transportation, sewage, water, drainage, solid waste disposal, energy, and other essential facilities proposed to be located within the area covered by the plan and needed to support the land uses described in the plan.
> (3) Standards and criteria by which development will proceed, and standards for the conservation, development, and utilization of natural resources, where applicable.
> (4) A program of implementation measures including regulations, programs, public works projects, and financing measures necessary to carry out paragraphs (1), (2), and (3).
> (b) The specific plan shall include a statement of the relationship of the specific plan to the general plan. (The entire specific plan statute is included in Appendix B of this report for reference.) The statutes apply to all counties and general law cities. They do not apply to charter cities unless incorporated by local charter or code. However, charter cities are required to comply with the Subdivision Map Act's findings requirements pertaining to a subdivision's consistency with an adopted specific plan pursuant to §65455.

Development Policies – Land use and development regulations will replace the existing zoning along the Corridor.

Degree of Specificity – New Development Standards that direct site development and building design; and new Design Guidelines which serve as criteria for design review. New policies specify not only use, yard area, height, and parking; but also development intensity, building orientation, block size, location of driveways, required open space, landscaping, signage, improvements to the public realm in front of private property, and character and quality of building design.

Key Controls/Specifications – The standards and guidelines are organized by segment to insure that new development contributes to a coherent identity for each segment, as noted below:

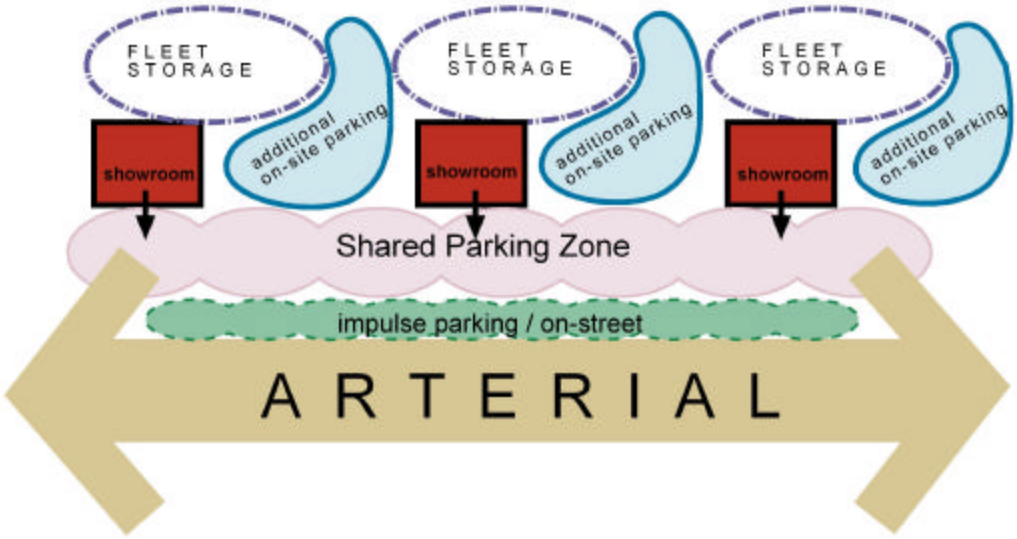
1. *Gateway Segment* – Residential and office uses, including detached single family with landscape buffer permitted. Retail NOT permitted except for limited neighborhood serving retail. Two story maximum height limit.
2. *Workplace District* – Highest intensity development zone. Business, professional, medical and dental offices permitted. Retail NOT permitted except ground floor retail at special district center area and at Five Points. Minimum building heights along Whittier Boulevard and throughout district; buildings/entrances oriented to Whittier Boulevard and primary frontages. Maximum block size, new streets required, and minimum project requirements for usable public open space.
3. *Shopping Cluster* – Highest intensity development zone. Ground level retail storefronts required with a minimum building façade to be built to the sidewalk along Whittier Boulevard. Residential permitted on upper levels. Shared parking encouraged, lots located to rear or side of buildings. Building mounted signs only; pole-mounted signs prohibited.
4. *Commercial Expansion/ Auto Sales Segment* – Auto sales and services, support commercial sales and services permitted; office uses allowed on upper level. Ground-level retail conditional ONLY upon full build-out of Shopping Cluster. Coordinated streetscape and signage along auto sales frontage.
5. *Mixed Use Neighborhood Spine* – Residential development encouraged (minimum densities required). Civic, Cultural and Office uses also permitted. Retail NOT permitted except limited neighborhood serving clusters at designated locations. Massing and minimum height requirements to create "Grand Boulevard" imagery; buildings/entrances fronting and oriented to Whittier Boulevard. Frontage landscaping requirements to create a supportive setting for housing.



Primary policies for each boulevard segment

Capital Improvements/Street Design – All streetscape improvements contained in the plan are required to be provided by each developer along his property frontage as development occurs. However, the City may advance street improvements in key segments in order to instigate redevelopment. These public improvements are phased in order to strategically focus public funds where they are most needed to stimulate future private investment, as follows:

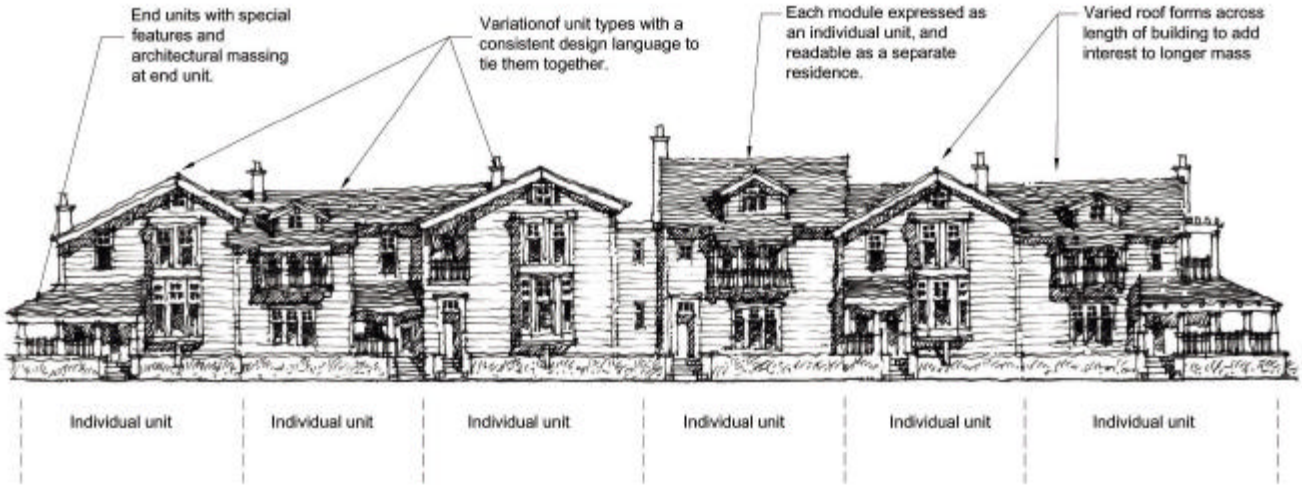
1. Streetscape improvements along the Neighborhood Spine, to create an attractive environment that will lure residential investment and capitalize on the market demand for housing.
2. Streetscape improvements in the Shopping Cluster, to create a visible center on the Boulevard provided with visible parking and a pleasant pedestrian realm (as shown on the attached diagram).
3. The creation of a grand open space fronting the Workplace District with associated streetscape improvements, to generate an attractive, employment-friendly image.
4. Creation of an Auto Sales Center. Steps include identifying and acquiring sites for auto dealerships to cluster in a single location; encouraging and assisting businesses in relocation to these sites; and making streetscape improvements to create a cohesive "auto" identity for the center.



Proposed concept for shared parking in the Auto Sales Center

Transit Facilities Planning – The plan locates new connections to the Whittier Greenway Trail in order to provide a viable commuter route to the new Workplace District and to other job centers in and outside of the City. In the long-term, the plan envisions a multi-modal transit station at the Five Points intersection and/or the Whittier Boulevard/Painter intersection, to coordinate access between regional services offered by the various transit providers.

Incentives – Offers developers a measure of certainty that does not exist under the current review and approval system. Through Development Standards and Design Guidelines that describe how buildings should be sited and designed, and through design prototypes that illustrate what new development should look like, the Plan provides clear direction to the developer. If projects are planned and designed according to the specifications contained within the plan, developers can be assured to move quickly through the planning process.



Design Guideline Illustration: Townhouse

* All photographs courtesy of Freedman Tung & Bottomley.

Conclusion

The problems faced by corridors today are part of a larger systematic change in urban patterns in the United States since the advent of the automobile. Just as historic downtown cores were drained of their vitality by the mid-century advent of commercial strips, now those same commercial corridors are being diminished by the accelerated concentration of retail at major arterial intersections and freeway off-ramps over the past decade. In some cases such as Cathedral City, disinvestment had become quite advanced. In other cases, such as Whittier and Columbia Pike, disinvestment creeps slowly over time, beginning with stagnation as anchors move to locations that are more favorable.

The purpose of this case study review has been to examine some of the ways the problems of the commercial corridor has been addressed in the United States, in order to provide us with a beginning set of planning and design concepts that might be useful in our deliberations as to the most effective means for achieving Portland Metro's objectives for the region's corridors. The three case studies demonstrate different models of how to effectively plan for restructuring the commercial strip. The case studies are potentially useful to us on two levels: First, each of the case studies illustrate ideas for the revitalization and restructuring of commercial strips in different circumstances and with different desired end results. They provide the beginnings of a range of options for thinking about the transformation of commercial strip corridors. Second, and perhaps even more usefully, the commonalities observable among these case studies provide us with some initial findings with regard to what type of changes probably need to be considered in the case of most commercial strips in order to meet the twin goals of enhancing walkability/livability while also improving vehicular capacity. The shared problems faced by the corridors in all three case studies, and the similarities in the way these problems were addressed, provide us with a strategy framework for similar if not identical challenges posed by the commercial strip corridors in the Portland Metro region. While the success of these strategies is still largely unproven – widespread corridor disinvestment and resulting consultant project case studies are thus far relatively few and relatively recent - these lessons provide some significant thoughts towards how regions and municipalities might address the key issues faced by today's corridors.

Lessons Learned

1. *The amount of land zoned for retail development needs to be reduced.* Everywhere we looked, both along corridors and throughout the rest of most suburban cities, land appears to be significantly over-zoned for commercial development – especially retail development. This appears to have almost universally stretched the market demand for retail too thin, resulting in the creation of significant pockets of disinvestments, both in centers *and* along extended corridor segments. The devastating results of past mistakes evident in cities throughout the country, as well the existing conditions of the three case studies illustrated in this report, are a powerful indication of what is probably the most important lesson: Corridor planning cannot be carried out by focusing on the corridor as if it were an isolated piece of city or region. They *must* be studied and planned in relation to the envisioned pattern of retail for the city and larger metropolitan region. All corridor case studies illustrate the use of land use and development policies and/or incentives to reduce the retail along the corridor, *to promote the healthy coexistence of centers and corridors in a pattern supportable by market demand.*

In order to ensure that corridors are supportive of centers (i.e. do not steal retail market *from* centers), the amount of retail that is designated for corridors must be a function of this regional view. Professional market studies that look at the potential for growth and consider the region as a whole can be used to predict the amount of retail development that will support that growth in the future, and assist communities in determining how much of this retail should be located on the corridor. In each of the case studies, the project undertook to restructure this pattern by concentrating retail and services at key intersections, rather than along its entire length, in confined amounts that do not overwhelm market demand. The case study on Whittier Boulevard demonstrates this principle: based on the economic data and market studies for the Boulevard's retail potential in the future, retail zoning was shrunk from the full seven mile stretch to a single mile along one segment (the Shopping Cluster).

2. *We need to stop separating the process of street right-of-way design from the process of land use and development planning – the corridor must be designed as an integrated piece of the City, where its street (or segment of street) is designed to match its enfronting development*. Simply changing the zoning along a corridor is not likely to bring about change all by itself. The street must be designed to attract, and then support, the type of development envisioned along the corridor. Furthermore, the street design should support not only the land uses along the corridor, but also the functions of those uses, including the amount and type of traffic associated with them: Commercial areas should be supplied with on-street parking, better access to properties and more left turn lanes; high intensity areas should provide for transit access; residential stretches should be protected from high traffic volumes and noise, etc.

   All three projects reviewed in the case studies demonstrated a clear connection between street design and land use planning. At Cathedral City, the overall boulevard treatment was designed to maximize through traffic capacity to and through Cathedral City; however, service lanes were provided along the boulevard to support its enfronting development. Retail and entertainment areas were supported by angled parking and wide sidewalks with outdoor eating areas; housing and lodging areas were supported by parallel parking and generous landscaped setbacks. Along Whittier Boulevard, a separate streetscape treatment was proposed for each of the five corridor segments, based on each specific segment's proposed uses and functions. And in the case of Columbia Pike, site specific recommendations were developed for the part of street in front of each of the mixed use development districts – the Town Center, the Village Center, the Neighborhood Center, and the Western Gateway – as well as for the corridor spaces in between these nodes.

3. *Retail must be clustered at key intersections*. The economic success of retail along the corridor appears to be dependent upon the clustering of retail uses. Stores that are located in close proximity to each other generate a fulcrum of activity, making the retail more visible and more accessible, enabling nearby businesses to share customers, and reducing traffic congestion by enabling those customers to "park once". However, typical strip development patterns string retail for miles along the corridor, allowing no synergy between the businesses and no sharing of customers.

   Jonathan Barnett points out that two major forces, traffic and market demand, work against retail that is not clustered, in his chapter on "Redesigning Commercial Corridors" in *Redesigning Cities*. Barnett (2003, 152) cites the conflict between the role of the corridor to connect places with the role of the highway as a location for individual stores and businesses as the cause of most traffic issues along these corridors. The more people making left turns into businesses along the strip, the more congested the traffic on the corridor becomes. He also points to the current direction of the retail market, which is providing people with more

and more ways to shop. The recent revival of traditional downtown retail, and the great success of simulated downtown experiences such as the in newer "park once" developments and lifestyle centers laid out along internal streets or a pedestrian network. By comparison, retail on the strip has little to offer.

In each of the case studies, the project undertook to restructure this pattern by concentrating retail and services at key intersections, rather than along its entire length, in confined amounts that do not overwhelm market demand. In Cathedral City, retail was focused on one side of the corridor to create a defined Downtown Core enfronting and running perpendicular to the corridor. At Whittier Boulevard, retail was confined to a single segment (the Shopping Cluster) sized to meet the market demand existing along the corridor. Along the Columbia Pike, four distinct retail nodes, each with a different market focus and orientation, were created, while the areas in between these nodes were directed towards other uses. All indications are that organizing the retail clusters in a way that is visible to passing motorists, and that results in a compact and walkable node with shared parking and an engaging public realm will help the success of the center.

4. *The pattern of the retail clusters should be compact, walkable, and (where possible) mixed use*. While traffic and market demand are the drivers behind the concept of clustering retail, the pattern and form of these retail clusters are the result of other forces entirely. One of these forces is the farsighted vision of city and community planners to create places that can be well served by transit, and to set up development patterns for the future that can be promote and sustain transit ridership. (It is important to note that the newest forms of retail on the strip, the large concentrations of retail at major intersections and freeway off-ramps, are clustered at intersections, they are not composed of walkable retail with the kind of compactness and mixture of uses that makes transit work so well). The other is the accumulated desire of people to live in and visit places that *feel* like a community. This desire has burgeoned with people's disenchantment with auto-oriented environments. People today are seeking places to meet, gather and recreate, places that can provide the experience of being a part of a community. This demand is evident in the revitalization of some traditional main streets and downtowns, and in the success of the new "park once" retail developments, which both provide places for interaction and community. In order to be successful, both from a market and from a social perspective, the new places that are created in cities, both along corridors and elsewhere, must respond to this desire.

5. *Uses **other than retail** – such as residential, workplace and lodging – should be promoted along the long segments of corridor between the retail clusters (the majority of the properties fronting the Boulevard!).* This appears to serves several objectives, as demonstrated by the case studies: First, it is the necessary counterpoint to significantly reducing the amount of land along the corridor to be used for retail development, as reported in the preceding item. Second, it creates long segments of corridor in which left turns and curb cuts can be few and far between, thereby increasing vehicular capacity. Third, it provides a better neighbor to the single-family neighborhoods that typically exist just behind the corridor, by introducing compatible uses that are less intrusive than retail to residential areas. Both Cathedral City and Whittier Boulevard implement this principle by removing retail entitlements between the designated retail areas. Columbia Pike, accomplishes this principle by providing mouthwatering incentives to investors that follow the envisioned development pattern.

   Since the most realistic alternative to retail investment along the corridor is typically residential investment, it is advisable to focus development standards & design guidelines on

insuring that all allowed uses – on properties in between retail clusters and centers - are designed to make good neighbors to housing.

6. *Regional planning should incorporate an intentional, defined relationship between corridor(s) and center(s).* There are several ways a corridor can relate to a center: it can connect to a center; terminate at a center; it can contain a center along its length; or, because of proximity, poor design or other issues, it can have no relationship to a center at all. While each corridor reviewed in the case studies had a different relationship to its City's centers, each project made that corridor–center relationship a fundamental aspect of their restructuring. Two of the corridor projects located centers directly on the corridors, in distinctly different ways: Cathedral City located its Downtown Core to front one side of the corridor; while the Columbia Pike project established four new city centers at key intersections on both sides of the roadway at major intersections. The third project related to its city center in a different way: Whittier encompassed Uptown into a "Heart of the City" district that came together at the crossroads of the corridor.

7. *Improved access is a crucial component of a successful corridor.* As Jonathan Barnett states, the highway's original purpose was to connect one place with another. However, if corridors are to truly become a part of the cities they serve, they need to do more than just move people from place to place; they also need to provide access to the development along their edges. Access improvements need to facilitate travel *through* the corridor, as well *to* the corridor.

   Access improvements should encompass not just changes that will assist travel by car, but also by alternative modes such as transit (both current and future), bike and most importantly, walking. All three projects prioritized pedestrian access along the corridors, by making major improvements to the sidewalk and public realm. Cathedral City made traffic capacity a priority along Palm Canyon Drive, and created one-way service lanes alongside its boulevard to facilitate access to development. The design for PCD also included a provision for express bus lanes as transit service becomes available. Whittier maintained vehicle access while improving parking facilities on-street in commercial areas, and built in provisions for transit service, including a future multi-modal transit station to be located at the "Heart of the City" along the corridor. The Columbia Pike plan makes immediate improvements to traffic signals and to the bus network to facilitate commuter movements through the corridor, and contains long-term recommendations for a transitway along the corridor within the planned right-of-way.

8. *Community education is a necessary part of beneficial change*. While it is often assumed that the commercial strip is a function of market forces, it is actually a product of zoning - most corridors are zoned as continuous commercial frontages, and in almost all cases existing zoning regulations make any other viable alternative, such as residential development, illegal. In effect, more properties are zoned for retail than could ever be actually used for retail under the region's market. As a result, all property owners along the strip hold on to an expectation of return as commercial properties, even as their properties sit vacant or remain underdeveloped due to a lack of retail market. Thus, the biggest resistance to beneficial change on the strip seems to be property owners' expectations that they will be able to continue to cash in on their retail entitlements.

   The most successful efforts for restructuring seem to depend on community buy-in, which necessitates that citizens understand the market forces at work on the corridor, and the options that they have for beneficial change. This requires a re-planning process that includes an education element allowing stakeholders to learn and understand the nature of their

predicament and the ingredients of a viable solution. The success of projects like those reviewed in the case studies, particularly in cases like Cathedral City and Whittier where retail entitlements were removed, can likely be attributed to the education aspect of their community participation process- the fact that community members and stakeholders were educated about the situation on the strip, and bought in to the idea of change.

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MEMORANDUM

Date: June 20, 2004 **Project** #: 6513

To: Terry Moore

From: Julia Kuhn, P.E., Yolanda Takesian, Elizabeth Wemple, P.E.

Project: Metro 2040 Corridors and Centers

Subject: Corridors Transportation Case Studies

INTRODUCTION

The purpose of Phase I of the Metro 2040 corridors and centers project is to develop an understanding of the transportation characteristics and land uses (form and function) that best support the goals of the identified Metro corridors and then to further identify policies and programs to begin the process of enhancing key corridors in the Metro region.

As a first step on the transportation component, Kittelson & Associates, Inc. conducted brief transportation related case studies from other areas to identify success stories and potential tools that could be used in the Portland metro area. The goal was to identify transportation related policies and programs that create and support compact, mixed use, multi-modal development.

KAI identified two corridors that have mixed land use characteristics, are vibrant areas for retail/commercial development, serve pedestrian and bicycle modes of transportation, and provide for efficient vehicular transportation as well. Through our nationwide work experience, contacts with other professionals, and personal travel experience we identified State Route 111 in Cathedral City, California and the Rosslyn-Ballston Corridor in Arlington Virginia. The Rosslyn-Ballston Corridor in Arlington is a relatively long corridor where different segments have urban and suburban characteristics.

TYPOLOGY MATRIX

The case studies have been conducted in the context of a land use typology matrix developed by the project team. Table 1 provides a summary of the matrix and identifies the broadest transportation and land use characteristics of the corridors under consideration.

Table 1 Typology Matrix

	High traffic volumes (30K-50K ADT) *OR* high congestion	**Low traffic volumes** (10K-30K ADT) *OR* low congestion
Higher-density retail/commercial ("intensification zones")		• Rosslyn/Ballston Corridor in Arlington, VA
Lower-density retail/ commercial	• State Route 111, Cathedral City, CA	• Rosslyn/Ballston Corridor in Arlington, VA
Residential (regardless of density)		
Specialty segments (large non-retail employers, institutions, parkland, etc.)		

TRANSPORTATION CONSIDERATIONS

For each of the case studies, we conducted brief conversations with planners, designers or engineers involved in the development policies and programs for the corridor. The conversation was conducted with a goal of understanding the before and after characteristics of the roadways and understanding the process for achieving the success. The characteristics considered in the conversations and research included:

- Highway design management techniques (e.g. access management and driveway consolidation policies and incentives, roadside feature (streetscape) policies and standards; parking management strategies; and roadway ownership transfer.

- Transportation characteristics of the roadway (e.g. traffic volumes, number of lanes, bike lanes, sidewalks, type of available transit, level of accessibility to other parts of community, safety, median, approximate vehicle classification, level of pedestrian activity, parking (type and utilization), type of traffic control, approximate street density, approximate driveway density, geometric characteristics)

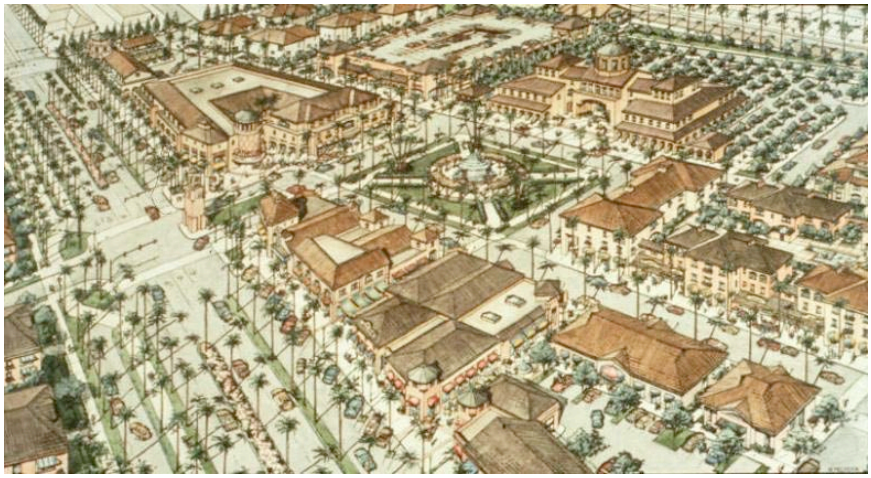
CASE STUDIES

Cathedral City

Cathedral City was originally an unincorporated part of Riverside County. Approximately 20 years ago the community incorporated into Cathedral City. State Route 111, through Cathedral City, began as a two-lane road and had been widened to a four-lane road. The roadway had typical highway development straddling both sides of the roadway. By the late 1980's there was only limited retail and commercial activity in downtown Cathedral City and very few travelers stopped in Cathedral City on the way to/from the popular resort communities of Rancho Mirage and Palm Springs.

SR111 was widened to handle increased traffic without regard to impact on surrounding

By the early 1990's the segment of Route 111 through Cathedral City had become congested, and there were many failed businesses along the roadway. The Community and the State identified that roadway improvements were necessary. However, Cathedral City staff at that time, believed that widening the roadway was not the best solution. A design team was hired to conduct a community involvement process and develop design concepts for a revitalized downtown Cathedral City.



Concept rendering showing SR 111 with new development and a Town Square.

From a transportation perspective the unique characteristics of this corridor concept include:

- A separate parking frontage road between the relatively fast moving traffic and the land uses along the roadway. These were developed to create a buffer between traffic traveling through town and the adjacent storefronts.

Newly created landscaped medians and service drives transform the image of the corridor.

- A raised landscaped median was developed that could accommodate a future tram/streetcar. Further the median in combination with the separate parking frontage roads decreased the distance for pedestrian crossings for the most difficult part of the roadway crossing (the main throughway).

- Traffic signal timing and coordination plans plus capital improvements to maximize traffic flow through the corridor. The traffic analysis identified that there was sufficient segment (link) capacity; however there was insufficient capacity at the intersections. This was

addressed through transportation system management techniques rather than by constructing new capacity.

- A transition of ownership of a segment of the road from Caltrans to Cathedral City. Some of the design concepts did not meet Caltrans design requirements. Cathedral City spent a significant amount of time working with Caltrans to modify design guidelines. Ultimately this failed, so there was additional work to turn the Cathedral City segment of the roadway to Cathedral City (legislation was required to achieve this)[1].

Reconstructed SR 111 with roadway capacity focused at intersections, landscaped boulevard with medians, service drives, for parking and bus stops.

- New right-of-way was required to implement the concepts. Funding for the roadway improvements was acquired through the Metropolitan Planning Organization for the area. A redevelopment agency was developed and funded most of the other improvements.

Rosslyn- Ballston Corridor

The Rosslyn-Ballston Corridor concept emerged in the 1960's as Arlington County contemplated the Washington area heavy rail alignment. Metro routes along I-66 and the Columbia Pike were abandoned in favor the Wilson Boulevard/Fairfax Drive corridor to revive the corridor's aging commercial centers. By the time the first Orange Line Stations opened in 1979, a wide ranging community vision embraced "a high density central spine throughout the

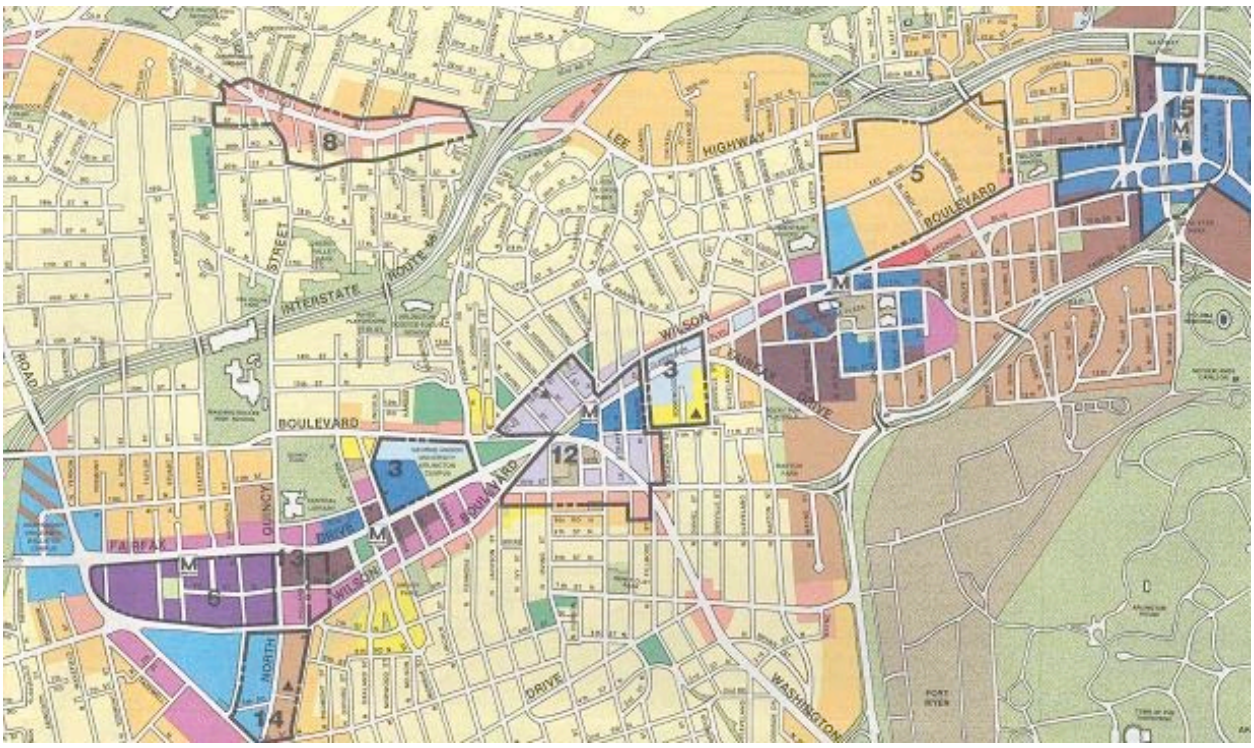
Clarendon Station's traditional Main Street scale with Courthouse's more downtown scale in the

[1] The change of ownership required special state legislation because prior to this project California State law required that in transitioning a state road to local ownership, all segments of the road be transitioned to local ownership. Neighboring communities did not want ownership of the roadway. Therefore, legislative action was required to transition only the Cathedral City segment of the road to Cathedral City ownership.

Corridor, with the most intense development centered in quarter-mile bulls-eyes around stations, tapering off to preserved, existing single family and apartment communities." The experience of earlier office redevelopment in Rosslyn, closest to the District of Columbia focused on the need for a balance of uses and residential amenities such as parks and open space that would not turn station areas into ghost towns after hours.

It has taken nearly 25 years to create the five centers envisioned in the early plans. The corridor is engaged in a true transformation particularly in the core metro areas where vibrant urban streets and successful retail centers attract daytime and evening visitors. New residential and mixed used development are steadily replacing automotive services, car dealerships and freestanding suburban style retail. Arterials are lined with on-street parking, bicycle lanes, and corner bus stops serving Arlington Regional Transit riders.

Sidewalks are widened to make way for outside dining along Wilson Boulevard in Clarendon.



Arlington County's General Land Use Plan (1996) focusing Mixed Use, Office-Apartment-Hotel, and Public and Semi-Public Districts in the Rosslyn-Ballston Corridor.

The transportation characteristics of this corridor include:

- ***Urban Sections*** **-** Wider sidewalks and specifically planned connections across the street reinforce the commercial and transit-oriented nature of the centers. Metro ridership reflects the nature of individual sector plans prepared for each station area. Weekday ridership boarding and alighting at the Rosslyn Metro Station is 30,156; Courthouse Station is 13,797; Clarendon, 6118; Virginia Square is 5955; and Ballston is 22,762. The two center stations, Clarendon and Virginia Square are designed as "urban villages", do not provide parking for metro riders, but rather are designed to attract bus and walking riders from nearby neighborhoods.

Recent medium scale development in Clarendon assembles parcels to create parking above retail shops.

- ***Urban Sections*** **-** Capacity improvements are typically not required for new development in the corridor to maintain a strong pedestrian and transit-oriented street system. The Metro Orange Line, I-66, and I-395 have been able to absorb increases in traffic from significant redevelopment in the past 10 years. County engineers anticipate _ % growth in traffic per year and accept reduced levels of service due to viable alternative modes.

Ballston's new office and residential towers.

- ***Urban and Suburban Sections*** **-** An emphasis on building a strong pedestrian system led to on-street parking in retail areas, and off-street structured parking (for all land uses) throughout the corridor. The Clarendon district is particularly complicated as the designers struggled to maintain the character found in its mix of historic buildings and elements from a 1920 to 1945 commercial center history.

Clarendon's newest development consolidated 8 parcels and eliminated 4 driveways into surface parking lots to create a continuous street edge.

- ***Suburban Sections*** **-** Vehicular access points have been reduced through consolidation of properties for redevelopment and the elimination of suburban style parking. Consolidating parking at single access points and creating new streets rather than mid-block driveways reinforce the grid network of streets.

- ***Suburban Sections*** **-** Arlington County has a well-funded neighborhood traffic calming program to reduce the incidence of cut through traffic on neighborhood streets. Early planning called for street closures on several key links in the existing urban grid. In addition to the Neighborhood Conservation Program, local planning has worked to raise community awareness of the benefits of street connectivity particularly for pedestrians and bicycles and requires new development designs that connect to the existing grid and build a redundant street network. The concern now is that traffic calming is so effective it is affecting capacity on the arterial network.

CONCLUSIONS

Key elements of transportation corridors that are multi-modal, safe and efficient and contribute to broader goals of community design have the following characteristics:

Institutional expectations are predictable and progressive

- A visionary, collaborative and detailed planning effort at the outset can establish a broad-based community vision and guide interrelated transportation and land use decisions on the corridor. At regular intervals actions should be reevaluated and plans and guidance refined to reflect lessons learned and evolving perspectives of the public, market and agency participants.

- Developers and implementing agencies anticipate the agency review expectation that project plans balance and integrate transportation environments in the corridor area. Design, parking, access management, and capacity solutions will be more easily approved when they consider and contribute to a larger community vision.

Transportation that respects the community context & values

- Recognizing function/place mismatches is part of the transportation planner's task. The transportation element of any plan must take on the broader placemaking objectives for the built environment. The tools of traffic operations, functional street design, transit planning, and pedestrian/bicycle systems design can and should help to inform the process of integrating the travel systems with surrounding land use plans.
- Parking strategies support function and place concepts by reducing surface, suburban-style parking and limiting multiple access points to and from the corridor. New parking is provided in off-street structures throughout and on-street parking is available wherever possible in mixed use/retail centers and along residential side streets.
- Transit partners are integrated in planning to ensure context understanding and facilities support where transit is a viable transportation component of the corridor.

Systems view of the transportation network

- A street hierarchy system should incorporate land use characteristics into the functional classification of the roadway (i.e. arterials characterized as boulevards, etc); address circulation opportunities off the corridor; and, focus any corridor capacity needs at intersections to maintain the quality of the road as a conveyor of regional traffic.
- Streetscape amenity (e.g. sidewalks and streetscape facilities) is provided to reinforce user activity and support pedestrian circulation. This includes along and across the corridor as well as and to/from the neighborhoods and transit facilities in the vicinity of the corridor.
- The road only gets so wide! Safe pedestrian, bicycle and transit environments require that space in the roadway for vehicular movement is limited. In addition to lane widths, this can include driveway width and spacing and intersection spacing.
- Roadway capacity is not necessarily the main improvement driver, but considered relative to the other goals for the area. When viewed in context, solutions other than road widening will be more likely to be among improvement alternatives.

Adjacent neighborhood enhancements

- Capture tax increment from business growth to reinvigorate and beautify older nearby residential neighborhoods.
- Manage and calm growth in traffic impacts that may occur from new development (i.e. increasing cut-through traffic on local streets).
- Transportation enhancements can lead major reinvestment when part of a planned strategy with targeted local funding.

Highly accessible multimodal transportation environments are a market asset

- Growing traffic congestion generally is creating a market advantage to corridors that successfully enhance links to the larger region and provide multiple mode choice. Mode choice and regional access is a key factor in household and business location decisions.
- Pedestrian safety and comfort enlivens street activity and is increasingly seen as an amenity in mixed-use, retail, and office locations.
- Design guidance to preserve and enhance community character should be integrated into the elements of the transportation system to reinforce unique characteristics of place.

We trust that this memo fully addresses the project questions at this time. We look forward to discussing this further with you. If you have any questions or comments feel free to call us at 503-228-5230.

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TECHNICAL MEMORANDUM

DATE: July 7, 2004

TO: 2040 Corridors Consultant Team

FROM: Chris Eaton, AICP
Darci Rudzinski, AICP

CC: Morgan Shook

RE: Land Uses in Selected Corridors (Task 1.2.a)

Introduction

This memorandum explores local **land use visions, policies, and regulations** for three representative corridors. These corridors where chosen from designated "Selected Corridors" from the Metro Concept and Analysis Design Types map. Background information provided in this memorandum will be used as part of the overall analysis of the relationship between centers and corridors. The three corridors that were selected for more in depth consideration are:

- Beaverton-Hillsdale in the City of Beaverton
- Powell Boulevard in the City of Gresham[1]
- McLoughlin Boulevard in Clackamas County

Only areas designated as a Metro 2040 "Corridor" were analyzed, and for simplicity we considered only the sections of the corridors that fell within the three jurisdictions.

The three corridors provide a geographic sampling, with their respective locations to the south, east and west of the central city in the Portland metropolitan area. The selected jurisdictions include two major suburban areas and a county, providing diverse perspectives on corridor development, as illustrated in the jurisdictions' policies and regulations.

In addition to the different geographic locations, the sample corridors differentiate along Metro 2040 Growth Concept design types. The Gresham section of Powell Boulevard leads from the City limits in the west into the Gresham Regional Center. The Beaverton-Hillsdale corridor connects a Town Center to Beaverton's Center. McLoughlin, wholly within Clackamas County, is the main connection between the Town Centers of Milwaukie and Gladstone.

[1] While a section of the Powell Boulevard Corridor is in the City of Portland, a review of Portland's regulations is not included in this memorandum. The City of Portland has indicated that they will not be participating in the Relationship of Centers and Corridors grant project.

Previous Corridor Studies

McLoughlin Boulevard and Powell Boulevard were the subject of previous planning studies. The *McLoughlin Corridor Land Use and Transportation Study* was conducted in 1998-1999, funded in part by a state Transportation Growth Management (TGM) grant. Through a series of workshops and public open houses, participants considered the policy framework, land uses, urban design issues, economic factors, and transportation conditions for a section of the corridor entirely within unincorporated Clackamas County. The planning process resulted in a number of recommended implementation strategies covering street design, parking (on-street restrictions, parking lot connectivity), transit improvements, street lighting, and transportation funding options. This study was incorporated into Clackamas County's Comprehensive Plan, Chapter 10, McLoughlin Corridor Design Plan (see Land Use matrix for selected policies).

The *Powel Boulevard/Foster Road Corridor Transportation Plan – Phase I* was prepared for ODOT by Metro and David Evans and Associates, Inc. in September of 2003. This Plan was published in two documents: *Initial Alternatives Evaluation and Selection Report* and *Refinement of Multi-modal Improvements Report.* The "initial alternatives evaluation" was based on a recommended roadway, bicycle, and pedestrian 2020 "base" network, as outlined in the 2020 Regional Transportation plan, and three additional roadway, bicycle and pedestrian "sets" that were developed with distinctive themes intended to address certain regional travel needs. The *Initial Alternatives Evaluation Report* contains an evaluation of transportation performance and engineering and environmental issues, as applied to individual major roadway segments within the corridor where more than one potential roadway improvement option was under consideration for the four roadway alternatives ("sets"). Transportation performance measures used to evaluate individual roadway segment included volume/capacity (V/C) ratio, PM peak average auto travel time, and lane miles of unacceptable level of service. In addition, the study employed 11 roadway engineering and environmental measures, including acres of new right-of-way required, approximate acreage of environmentally sensitive areas affected, and capital cost. The overall alternatives evaluation is organized by seven roadway segments within the Powell/Foster Corridor and provide a summary of key transportation performance findings. The *Selection and Refinement of Multi-modal Improvements Report* contains the transit, roadway, and bicycle and pedestrian recommendations for Powell Boulevard and Foster Road.

Land Uses & Development Types

The analysis of the selected corridors included a review of the envisioned (comprehensive plan map designations) and the permitted land uses and development types (zoning map and development code language). Attachment A is a matrix that includes a summary of the comprehensive plan designations, zoning districts, and permitted uses for all three corridors. A general description of the zoning districts, based on the code language of the respective jurisdiction, is also included in this matrix.

Comprehensive Plan Designations

The Comprehensive Plan (CP) designations vary for the selected corridors. Beaverton adopted "Corridor" specific CP designation and policies/objectives in its CP. Gresham did not have a "Corridor specific" CP designation along the corridor, and Clackamas County adopted a "Corridor" CP designation. Within the **Transportation System Plan (TSP)** portion of their CPs, the jurisdictions included specific policies as *briefly* summarized below:

Beaverton: Maintain livability; consider arterial noise in re/design; provide accessible ped/bikeways; design arterials to accommodate transit pads; design streets to function in Comprehensive plan; preserve functional integrity of motor vehicle system; support regional trips

Gresham: Protect existing and planned transportation corridors from conflicts with adjacent land uses; provide a street system that focuses on access; provide a street system accommodating a variety of travel options; designate pedestrian districts; and, improve traffic flows and access from west Gresham to I- 205 via the Powell Boulevard corridor (Oregon Statewide Bicycle Master Plan)

Clackamas County: Encourage circulation between businesses by requiring that adjacent parking lots be connected to each other or to a street at the side or rear of the development; enforcement of the County's sign ordinance; access standards between the curbs; apply the typical cross sections; transit improvements should include a transit shuttle; office and commercial developments shall integrate with adjacent neighborhoods by providing, at minimum, excellent pedestrian access

Zoning

A review of the zoning for the sample corridors gives insight into the three jurisdiction's approach to managing future land uses for these areas. Zoning designations for all three corridors include commercial and residential zones. Powell Boulevard also has some light industrial (LI) zoning, primarily located along a small section just east of SW Pleasant View Dr. All three corridors also employ mixed-use zones where residential, commercial and office uses are allowed. Beaverton's Office Commercial (OC) zone on Beaverton-Hillsdale allows a "mix" of medium and high density residential uses with office and "compatible commercial purposes, Powell Boulevard has a Corridor Mixed Use (CMU) zone for this purpose, and the Special High Density zone on McLoughlin Boulevard allows for "intense urban residential development in conjunction with supportive commercial and office uses." Housing is also allowed as a secondary use, in conjunction with commercial construction, in Gresham's Community Commercial (CC) zone, which is located along a section intersected by SE 182nd Ave on the Powell Boulevard Corridor.

Residential zoning varies in the type and intensity allowed in the corridors. Of the three study corridors, **Beaverton-Hillsdale Highway** is the only corridor that allows single-family, detached residential dwellings. Detached dwellings are allowed in the **City of Beaverton's** R7 zoning

(7,000 sq. ft./unit) and Commercial Services (CS) zones, both found in the Beaverton-Hillsdale corridor[2]. Overall, the Beaverton-Hillsdale Highway corridor has residential districts that allow a range of high to low densities, ~32- to 3.2-units per net acre. Medium and high density residential is allowed under the OC zone (~32- to 9-units per net acre).

For the **Powell Corridor, Gresham** has a special designation for residential uses along corridors; Powell Boulevard includes the Corridor Multi-Family (CMF) and Corridor Mixed Use zoning districts (CMU), both of which allows "moderate-density" residential. The density range is from 6.22 to 20 units per net acre.

There are four residential zones on **McLoughlin Boulevard** in **Clackamas County**: Special High Density (SHD, 60 dwelling units per net acre), High Density Residential (HDR, 25 dwelling units per net acre), Medium High Density Residential (MHDR, 18 dwelling units per net acre), and Medium Density Residential (MDR, 12 dwelling units per net acre). Despite the multiple residential zones, the McLoughlin Blvd. corridor is largely zoned commercial.

Summary

While residential units are allowed in many of the zoning districts in all of the study corridors, they are not a requirement of development in these areas. However, land costs may not encourage the low level of residential development allowed in Beaverton-Hillsdale's detached single family residential zoning. The selected study corridors include specialty districts such as Corridor Mixed Use and Special High Density, showing that planning visions and policies are perhaps ahead of the market on the corridors. The existing conditions examination, which will be conducted later in this study, should review the actual new re/development that is occurring in these specialty districts. Generally, these specialty districts are permissive, rather than prescriptive. For example, they do not require mixture of residential and retail, nor do they limit commercial development to "nodes" or intersections, with the exception of Gresham's work along Powell, which appears to cluster districts to specific properties and intersections. These policies reflect the lack of policy direction, political and regulatory forces to change the current conditions of these corridors, regardless of the planning and overarching goals attributed to them.

Transportation System Plan Designations

A summary of transportation policies, functional classifications, and street cross-sections from locally adopted transportation system plans for the sample corridors can be found in the attached Land Use matrix.

Classification

Powell Boulevard and Beaverton-Hillsdale Highway are classified as arterials in the respective jurisdictions' Transportation System Plans. McLoughlin Boulevard is classified by Clackamas

[2] Residential zones are not located directly on the highway, but are within the width of the corridor (700', 350' from centerline).

County as a Major Arterial. Gresham defines an arterial as a "moderate speed, high volume street" that accommodates the majority of regional travel through Gresham and provide access to major activity centers. Beaverton's transportation system plan states that the purpose of arterial streets is to serve to interconnect and support the principal arterial highway system. These streets "link major commercial, residential, industrial and institutional areas" and that "many of these routes connect to cities surrounding Beaverton." Major arterials in Clackamas County carry local and through traffic to and from destinations outside local communities and connects cities and rural centers. These major arterials have moderate to heavy volume and moderate to high speed.

Planned Cross-Sections

Beaverton: 4 travel lanes with 96' Right Of Way (ROW) (6' sidewalk, 7.5' pedestrian buffer, 5' bikelane, two vehicle lanes 12', 11' and 12' median/turn lane). Also called a 5 lane cross section. These facilities may include on-street parking when possible.

Gresham: Four travel lanes, 100' ROW, based on 20,000 to 40,000 vehicles per day volumes. 4 travel lanes, median, bicycle lane, parking allowed only within centers, median, left turn lane only where necessary.

Clackamas County: Six different types of road ROW for this area of McLoughlin. Generally, 4 12' travel lanes, in 120' ROW. 2 bike lanes (6'), 14' center lane/median, 2 landscaped buffers 10' each) 2 8' sidewalks, 2 utility easements (5'). There is no on-street parking.

Transportation Summary

Although the policies in the Comprehensive Plans reflect access to commercial and transit streets, the adopted ROW cross sections emphasize through traffic movement, especially McLoughlin Blvd. The adopted road cross sections for these developed areas comes into play when the road might be rebuilt by adjacent property owner or through local government transportation improvement project.

Conclusions/Summary

We studied three corridors to get a snapshot of the visions, policies, and permitted uses. The selected corridors came from around the region, including two incorporated cities and an unincorporated county roadway. All three corridors have been planned to address Metro's Corridor designation, and each includes policies and objectives that focus development to support the higher "Centers" designation in Metro's hierarchy. However, the actual zoning districts may not fully implement these visions, and/or Comprehensive Plan designations. A majority of the land in these studied corridors is zoned for General Commercial development to support the neighboring residential areas, unfortunately, there are few design standards applied to these districts.

Similarly, the ROW cross sections vary and may not allow for a variety of development/redevelopment as might be desired along these roadways. For example, on-street parking is limited in all three cases. If additional mixed use "nodes" are desired as an outcome along corridors (the "string of pearls" corridor development pattern) then regulations must be developed that will implement the desired outcomes.

Sample Corridor Review: (Metro Corridors and Centers, Task 1.2.a)

Comp Plan	Zoning Districts	General Description	Permitted Uses	TSP Policies	Functional Classification	Cross Section
Beaverton-Hillsdale Hwy (Route 10) - Beaverton						
COR (Corridor) from Beaverton Comp Plan	CS, Commercial Service	Businesses compatible with and of similar scale to existing commercial activity found principally along Beaverton-Hillsdale Highway	Retail trade; services; churches; social or fraternal organizations; parks and playgrounds; detached dwellings; attached dwellings; installation of wireless communication facilities	Maintain livability; consider arterial noise in re/design; provide accessible ped/bikeways; design arterials to accomodate transit pads; design streets to function in Comp plan; preserve functional intergrity of motor vehicle system; support regional trips	Beaverton Class: Arterial; Street Class: Regional ST/Blvd; Freight: Road Connector; Transit: frequent/major bus/stops; Ped: transit, mixed used corridor; Bike: Regional on-street bikeway	Regional St/Blvd mix significant motor traffic with transit, bike, and ped. Dense development oriented towards the street. Many street connections with some driveways. Center median serves as ped refuge and left turns. Transit oriented with primary freight routes. Typical 5 lane layout: sidewalk (6') and ped buffer (7.5'), bikelane (5'), two vehicle lanes (12', 11'), median/turn lane/ped-buffer (12'). 96' right of way. On street parking when possible
	OC, Office Commercial	Mixing of professional offices and other compatible commercial purposes with medium and high density residential uses	Providing services to the general public; detached or attached dwellings (<50% for residential uses); educational institutions; residential care facilities; accessory dwelling units; financial institutions; installation of wireless communication facilities.			
	R1, Urban High Density	R1, intended to establish sites for high density, multi-family residential developments: minimum 1,000 sq ft/dwelling unit	Detached dwelling; attached dwellings; accessory uses and structures; care facilities, accommodating not more than five non-related persons, for children or senior citizens; home Occupations; public sewer and water transmission lines and utility transmission lines; installation of wireless communication facilities			
	R7, Urban Standard Density	R7, residential home: minimum 7,000 sq ft/dwelling unit	Detached dwelling; manufactured homes; guest houses; home occupations; care facilities accommodating not more than five nonrelated persons; public sewer and water transmission lines and utility transmission lines; accessory dwelling units			
	R10, Urban Low Density	R10, residential home: minimum 10,000 sq ft/dwelling unit	Detached dwelling; manufactured homes; guest houses; home occupations; care facilities accommodating not more than five nonrelated persons; public sewer and water transmission lines and utility transmission lines; accessory dwelling units			
	IP, Industrial Park	IP, intended to provide sites for manufacturing, distribution and industrial uses	Manufacturing, fabricating, processing, packing or storage; wholesale and distributive activities; public services or utility uses, including vehicle storage and, incidental service and repair; research laboratory; public parks, parkways, recreation facilities, trails and related facilities; administrative, employee physical fitness, educational and other related activities and facilities; cold storage plants; fuel oil distributors; railroad tracks and facilities such as switching yards; surface parking lots as principal use; installation of wireless communication facilities			
Powell Boulevard (US 26) - Gresham						
	LDR, low density residential (Residential Land Use District)	Intended for single family detached and attached dwellings, manufactured homes, and two-unit attached dwellings at a maximum density of 8.71 units per net acre. For all subdivisions, and for those partitions of parent parcels greater than 20,000 square feet, a minimum density of 6.22 units per net acre is required.	Detached dwellings; manufactured homes; community services; existing grazing, agriculture or horticulture uses	Protect existing and planned transportation corridors from conflicts with adjacent land uses; provide a street system that focuses on access; provide a street system accomadating a variety of travel options; designate pedestrian districts; improve traffic flows and access from west Gresham to I- 205 via the Powell Boulevard corridor (Oregon Statewide Bicycle Master Plan)	Arterial (174th to Eastman Pwy) and boulevard (Eastman Pwy to Hogan Rd)	Volume: 20000-40000; 4 travel lanes with median; bicycle lane, parking only within centers; median, left/turn lane only where necessary; 100' right of way

Sample Corridor Review: (Metro Corridors and Centers, Task 1.2.a)

Comp Plan	Zoning Districts	General Description	Permitted Uses	TSP Policies	Functional Classification	Cross Section
	TLDR, transit low density residential (Residential Land Use District)	Applied primarily to existing low-density residential neighborhoods within close proximity of light rail and/or bus transit service and is intended for single family detached and attached dwellings, manufactured homes, and two-unit attached dwellings at a maximum density of 20 units per net acre. For all subdivisions, and for those partitions of parent parcels greater than 13,000 square feet, a minimum density of 10 units per net acre is required. Manufactured dwelling parks are allowed at a maximum net density of 14 units per acre and a minimum net density of 7 units per acre.	Detached dwellings; manufactured homes; manufactured dwelling parks; community services; existing grazing, agriculture or horticulture uses; parking or storage of not more than five motor vehicles per dwelling unit; parking or storage of not more than five motor vehicles per dwelling unit			
	CMF, corridor multi-family (Corridor District)	Applied to properties along segments of Transit Streets; primarily provides opportunities for moderate-density residential development, including attached dwellings and attached single family dwellings; new residential buildings will be oriented to public sidewalks, with parking lots behind or beside buildings; standards will require that the scale of new housing diminish as buildings approach abutting single-family residential districts.	Attached dwellings; single family attached; community services			
	CC, community commercial (Corridor District)	Applied to larger nodes of primarily commercial development clustered around the intersections of arterial streets; will accommodate a wide range of community-scale commercial uses, including retail, services, and offices; permits housing as a secondary use, with attached dwellings being developed in conjunction with commercial construction; new buildings will be pedestrian-oriented, with parking placed behind or beside buildings.	General commercial activities with exception of mini-storage uses; mixed use development; community services.			
	CMU, corridor mixed use (Corridor District)	Applied to certain clusters of properties along Transit Streets; in addition to moderate-density, multi-family residential uses, the CMU district permits small-scale commercial uses and mixed-use developments; commercial businesses operating in this district will serve primarily the day-to-day needs of residents in nearby housing developments and neighborhoods; design standards for new construction will help to ensure that new buildings become attractive additions to existing and developing neighborhoods.	General commercial activities with exception of mini-storage uses; mixed use development; community services.			

Sample Corridor Review: (Metro Corridors and Centers, Task 1.2.a)

Comp Plan	Zoning Districts	General Description	Permitted Uses	TSP Policies	Functional Classification	Cross Section
	LI, light industrial district (Industrial Land Use District)	Provide for a wide range of manufacturing uses and a limited range of uses such as office, commercial services and limited retail commercial, when included as mixed use developments.	A wide variety of uses are permitted: manufacturing, processing, lab, warehouse, etc.			
McLoughlin Boulevard - Clackamas County						
Corridor from Clackamas Comprehensive Plan	GC, General Commercial (C-3)	Provide for areas to meet residents' shopping needs for a wide range of good and services located in areas accessible by transit and automobile; provide for transit and pedestrian-oriented mixed use areas; provide for the sale of large-scale items in areas with good transportation access and minimal conflict with other uses.	Any use permitted within the Retail Commercial District; service and retail uses where there is a need for outdoor areas in order to conduct business activities; business park uses; special housing: housing facilities for senior citizens or handicapped persons; institutional uses; cultural/public use; wireless telecommunication facilities. No maximum or minimum lot size limitations	Encourage circulation between businesses by requiring that adjacent parking lots be connected to each other or to a street at the side or rear of the development; eforcement of the County's sign ordinance; access standards between the curbs; apply the typical cross sections; transit improvements should include a transit shuttle; office and commercial developments shall integrate with adjacent neighborhoods by providing, at minimum, excellent pedestrian access	Functional Classification: Major aterial - Carries local and through traffic to and from destinations outside local communities and connects cities and rural centers; moderate to heavy volume; moderate to high speed - resricted roadside parking; up to 5 lanes, bikeways, sidewalks, and landscapestrip required; also classified as a regional street (majority) and regional boulevard (small sections by Gladstone and Milwaukie)	There are 6 subtypes of arterial design for this section of Mcloughlin. Generally, 4 lanes (12'), 2 bikelanes (6'), centerlane/median (14'), 2 landscaped buffers (10'), 2 sidewalks (8'), and 2 utility easement (5'); 120' right of way. There is no on-street parking.
	SHD, Special High Density	Provide for intense urban residential development in conjunction with supportive commercial and office uses in locations well served with high quality transportation, particularly public transportation.	Low-, mid- and high-rise multifamily residential structures; condominiums; congregate housing facilities, nursing homes, wireless telecommunication facilities, utility carrier cabinets; Density: maximum 60 units per gross acre or 726 square feet per unit.			
	HDR, High Density Residential	Residential development at densities which are supportive of public service and facility capacities in locations with good access to employment, shipping areas, open space, and public transportation	Low-, mid- and high-rise multifamily residential structures; condominiums; congregate housing facilities; nursing homes; wireless telecommunication facilities; utility carrier cabinets; bed and breakfast residences or inns; Density: (12/23/98) maximum: 25 units per acre, or 1,742 square feet per unit - minimum: 90 percent of the maximum density.			
	MHDR, Medium High Density Residential (MR-2)	To provide for medium density residential development in areas with suitable services and facilities.	Low-, mid- and high-rise multifamily residential structures; condominiums; nursing homes; wireless telecommunication facilities; utility carrier cabinets; lodging, boarding, and rooming houses for any number of guests, but not primarily for transients; public parks, playgrounds, recreational and community buildings and grounds; bed and breakfast residence or inn; conditional detached residential unit; Density: (12/23/98) maximum: 18 units per acre, or 2,420 square feet per unit - minimum: 90 percent of the maximum density.			
	MDR, Medium Density Residential and are no more than 650 feet from the McLoughlin Boulevard Right-of-Way (MR-1)	To provide for medium density residential development in areas with suitable services and facilities	Low-, mid- and high-rise multifamily residential structures; condominiums; nursing homes; wireless telecommunication facilities; utility carrier cabinets; lodging, boarding, and rooming houses for any number of guests, but not primarily for transients; public parks, playgrounds, recreational and community buildings and grounds; bed and breakfast Residence or Inn; manufactured dwelling parks; density: (12/23/98) maximum 12 units per acre, or 3,630 square feet per unit - minimum: 80 percent of the maximum density.			

References

Jurisdiction	Comp Plan	Development Code	TSP	Functional Classification
Beaverton	Comprehensive Plan Vol I, http://www.ci.beaverton.or.us/departments/CDD/ComprehensivePlan/maincomp.htm, accessed June 14, 2004	Development Code Chapter 20, http://www.ci.beaverton.or.us/departments/CDD/CDD_devcode_chap20.html, accessed June 14, 2004	Comprehensive Plan Vol IV, http://www.ci.beaverton.or.us/departments/CDD/ComprehensivePlan/maincomp.htm, accessed June 14, 2004	Engineering and Design Manual; http://www.ci.beaverton.or.us/departments/engineering/eng_edm_adopted.html, accessed June 14, 2004
Gresham		Community Development Code, http://www.ci.gresham.or.us/departments/cedd/dp/code.htm, accessed June 14, 2004	Transportation System Plan, http://www.ci.gresham.or.us/departments/cedd/tp/pdfs/tsp.pdf, accessed June 14, 2004	Transportation System Plan, http://www.ci.gresham.or.us/departments/cedd/tp/pdfs/tsp.pdf, accessed June 14, 2004
Clackamas Co	Clackamas County Comprehensive Plan: Chapter 10, http://www.co.clackamas.or.us/dtd/zoning/comp/Chap10_mcl.htm, accessed June 14, 2004	Clackamas County Zoning Ordinance, http://www.co.clackamas.or.us/dtd/zoning/zdo/index.html, accessed June 14, 2004	Clackamas County Comprehensive Plan: Chapter 5 and 10, http://www.co.clackamas.or.us/dtd/zoning/comp/Chap10_mcl.htm, accessed June 14, 2004	McLoughlin Corridor Design Plan, http://www.co.clackamas.or.us/dtd/zoning/comp/images/fig_x-mc-1.pdf and http://www.co.clackamas.or.us/dtd/zoning/comp/images/fig_x-mc-2.pdf, accessed June 14, 2004

JOHNSON GARDNER

MEMORANDUM

DATE: July 15, 2004

TO: Becky Steckler
ECONORTHWEST
888 SW FIFTH STREET, SUITE 1460
PORTLAND, OR 97204

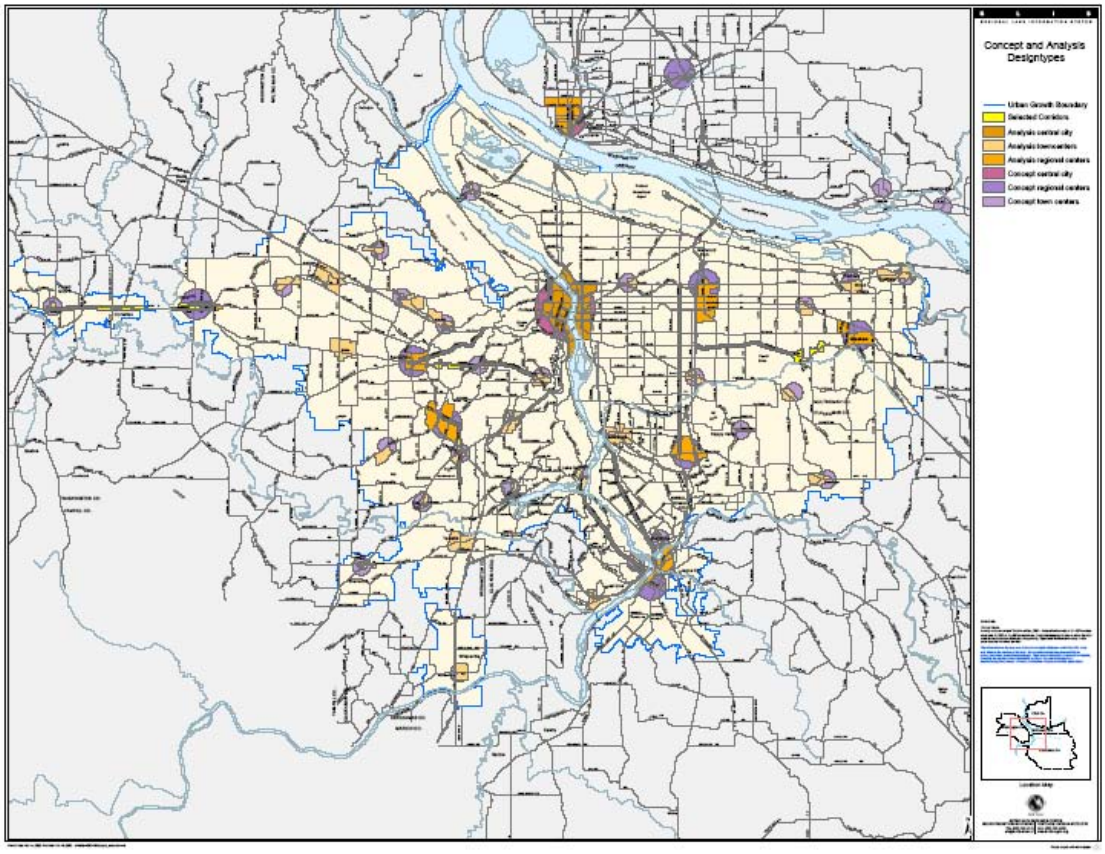
FROM: JOHNSON GARDNER

SUBJECT: Summary of Data Provided for Metro 2040 Corridors

I. METHODOLOGY

Identifying Individual Corridors

The linear boundaries along each corridor were delineated according to the specifications provided by Metro via the map presented below. For example, the 82nd Avenue Corridor was displayed to run roughly 6.5 miles from I-84 to just shy of Sunnyside Road. However, the width of each corridor was delineated by JOHNON GARDNER to include properties defined as retail/commercial use that



were located within two blocks of either side of the corridor. Thus, properties with high visibility and access from the main corridor could be included. Under this methodology, almost 750% of the properties included had addresses located directly on the main corridor.

Identifying Center Type
After all properties were identified within the previously mentioned corridor boundaries, each property was identified as being either a Town Center, Regional Center, or Open Corridor property. Under this method, conclusions can be drawn about the nature of the center types themselves.

Plotted Corridor Map
Each property and its consequent information was mapped and plotted according to its corresponding corridor. This provides the reader a visual representation of each property in regard to corridor type, center type, proximity to main corridor, and general geographical location.

II. DATA SOURCES

Information presented in this report was derived from two outside sources. Information on vacancy, rents, construction year, parking, rentable square feet, leasing activity, and absorption was discovered using Costar. Alternatively, information on land size, land values, and improvement values originated from Portlandmaps.com. Improvement value per square foot and the improvement to land ratio were simple calculations.

Data Sources

Costar	PortlandMaps.com
Vacancy	Land Size
Rents	Land Value
Year	Improvement Value
Parking info	Improvement/Sq Ft
Rentable Sq Ft	
Leasing Activity	
Net Absorption	

An element of noteworthy concern is the discrepancy in reported addresses between the previously mentioned sources. Many of the properties either had different addresses or no reported address on Portlandmaps.com. In these circumstances properties had to be visually identified via aerial photograph. Data was omitted when a definite conclusion could not be made. This explains the incomplete nature of the reported data.

III. MEANINGS OF TERMS

The following table provides definitions for specific terms used in the subsequent analysis.

TERMS	DEFINITIONS
Town Center Property	Any retail/commercial property located along a corridor within a specified Town Center boundry.
Regional Center Property	Any retail/commercial property located along a corridor within one of eight specific Regional Center boundaries.
Open Corridor Property	Any retail/commercial property located along a corridor, but not within any delineated Regional or Town Center.
Total Land Value	Represents the total land value of all retail properties reported within a specified area.
Total Improvement Value	Represents the total value of all improvements on retail/commercial properties within a specified area.
Average Land Value	The average land value of a typical retail/commercial property within a specified area.
Average Improvement Value	The average improvement value of a typical retail/commercial property within a specified area.
Average Improvement/ Sq. Ft.	The average improvement value per square foot of a typical property within a specified area.
Quoted Rents	The most recent quoted rent NNN at a specific retail/commercial property.
Leasing Activity	The aggregate absolute movement in leases over a period of time.
Net Absorption	The net change in new leasing resulting in an increase or decrease in vacant space.

IV. SUMMARY OF FINDINGS

Altogether, 146 retail/commercial properties were located and identified as existing within the specified corridor regions. Over thirteen million square feet of land and over six million square feet of rentable space were included. Complete data for land and improvement values was achievable for 125 out of 146 properties. Within this sample, the average value of a typical piece of land is $1,078,182 and the average improvement value is slightly higher at $1,653,421.

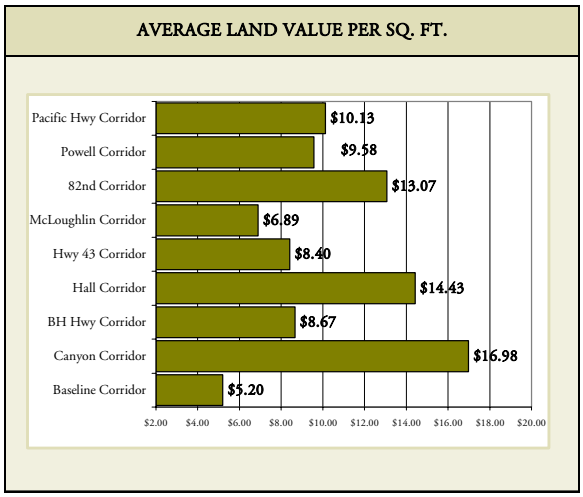
The overall vacancy rate in the region is roughly 8.2%. This puts corridor properties fairing slightly better than the overall Portland metro area vacancy rate of 8.5%. However, net absorption in the corridor regions suffered in the first quarter of 2004, losing -59,922 square feet of leased space. This is largely attributed to lackluster demand for neighborhood/community retail space in the current regional market.

Total of All Corridors		
Total Land Value	Total Improvement Value	Average Improvement/ square ft.
$134,772,755	$193,450,264	$49.93
Average Land Value	Average Improvement Value	Average Land Size
$1,078,182	$1,653,421	104,547

CORRIDOR TOTALS

Average Land Value

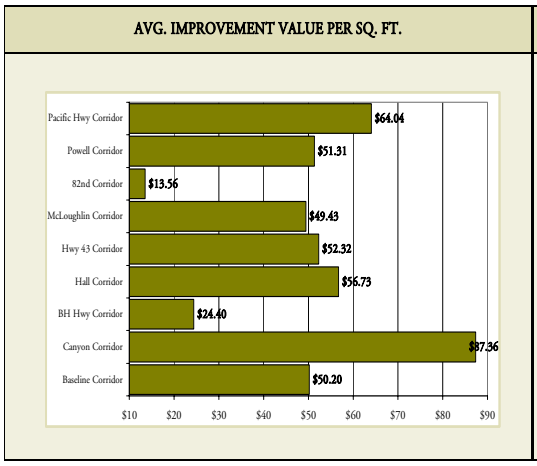
The corridor with the greatest average land value per square foot is the Canyon Road Corridor. The average retail/commercial parcel of land in this corridor is valued at roughly $16.98 per square foot, more than $2.50 higher than Hall Boulevard, the next highest corridor. The existence of several large centrally located retail centers with high land values, such as Beaverton Town Square, Canyon Place, and the West Slope Shopping Center; significantly bump up the corridor average.

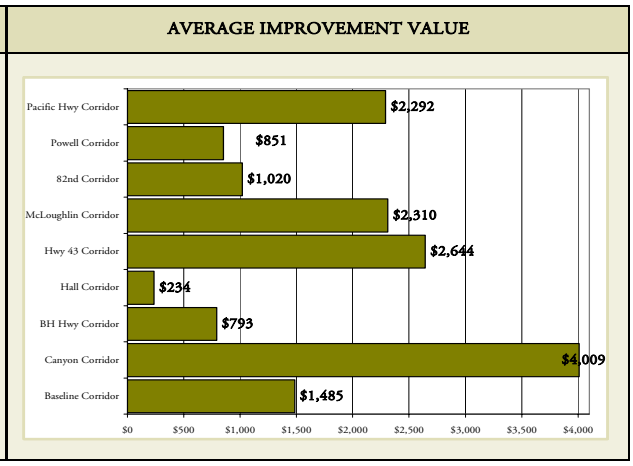


Three corridor locations displayed significantly lower average land values than the rest of the region. At only $5.20 the lowest average land value per square foot in the area was located along the Baseline Corridor. In addition, the McLoughlin Boulevard Corridor had the second lowest average land value at $6.89 per square foot.

Average Improvement Value

The area with the greatest average improvement value is the Canyon Road Corridor. Once again, the corridors average improvement value of roughly $4,000,000 is inflated significantly due to high improvement values at Beaverton Town Square, Canyon Place, and the property located at 11055 SW Canyon Road. Furthermore, the Hall Boulevard and Powell Boulevard Corridors were among the bottom two areas at $582,000 and $729,000 respectively.



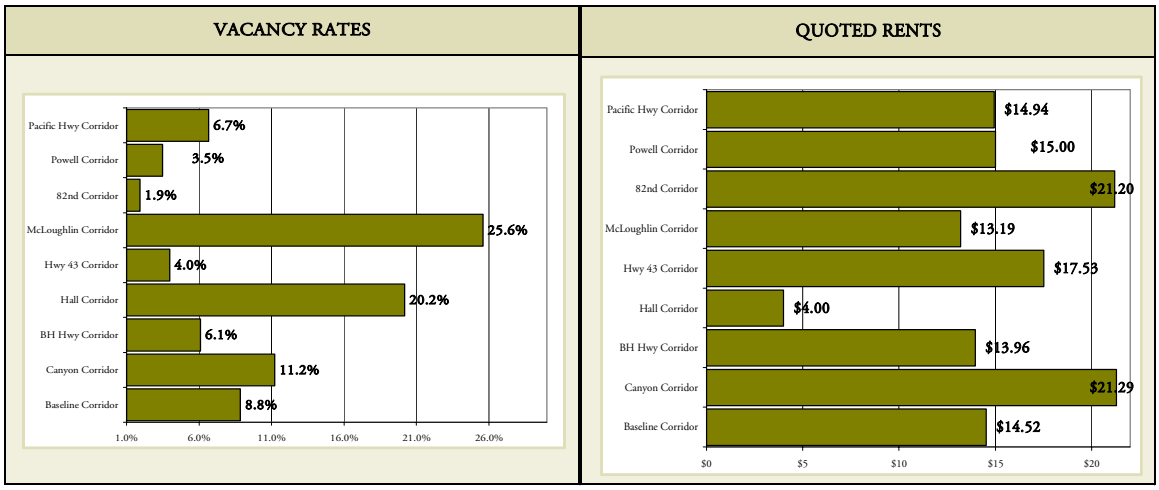


Average improvement values were calculated as weighted averages dependant on the amount of total rentable space. The results varied widely across different corridor areas. The Canyon Road corridor by and large represented the greatest average improvement value at $87.36 per square foot. The corridor posting the lowest average improvement value per square foot was 82nd Avenue at $13.56.

However, this average was brought down significantly by the relatively low averages at Clackamas Town Center and Eastport Plaza. These properties alone account for 1.7 million, or 66% of the rentable space in the corridor with an average improvement value of $0.39 per square foot and $1.26 per square foot, respectively. The average improvement value in the 82nd Avenue corridor jumps to a more average $49.91 when only the remaining properties are considered.

Rents, Vacancy, and Absorption

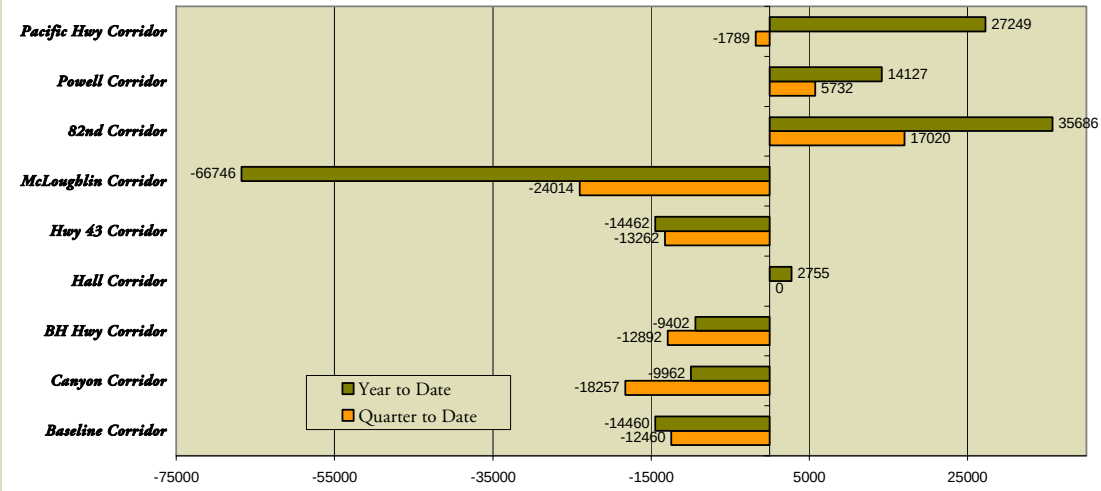
Because Costar only reports quoted rents on properties with vacant space available, rents reported here are weighted averages based only on properties with vacant space available. Average quoted rents for retail/commercial properties varied significantly across corridors. The highest rents were achieved along the Canyon Road ($21.29), and 82nd Avenue ($21.20) Corridors. With a value of only $4.00, quoted rents were relatively low along the Hall Boulevard Corridor. This report is significantly pulled down as a result of there only being one measurable rent observation, where 24,500 square feet of space is currently available at 9285 SW Greenburg Road for $4.00 NNN.



With 504,040 square feet of space directly available, the total vacancy rate across all corridors was exactly 8.2%. Unlike rent levels, vacancy varied greatly across corridor locations. The highest vacancy rate in the region was overwhelmingly located in the McLoughlin Boulevard Corridor. At 25.6%, approximately 243,565 square feet of space is directly available along the McLaughlin Corridor. However, more than 71% of the vacant space available is comprised at two locations, 92,104 at the Oregon City Shopping Center, and 80,864 at the Holly Farm Shopping Center. In terms of vacancy, the eastside locations typically faired better than the rest of the region. The lowest vacancy rates in the region were located in the northeast along the 82nd Avenue (1.9%), and Powell Boulevard (3.5%) Corridors.

As previously mentioned, overall net absorption in the corridor areas have been rather weak, losing -35,215 square feet for the year as 59,922 was lost in the most recent quarter to date. All but three corridor areas have realized zero or negative absorption in recent the quarter. As formerly mentioned above, the northeast part of the region has been relatively strong, as the 82nd Avenue (17,020 sq. ft.) and Powell Boulevard (5,732 sq. ft.) Corridors showed positive absorption in the quarter and year to date. Even more impressive given current market conditions was the absorption of 27,249 square feet along the Pacific Highway. Reflecting its exceedingly high vacancy rate, the McLoughlin Boulevard Corridor displayed an absorption loss of -66,746 square feet for the year.

NET ABSORPTION



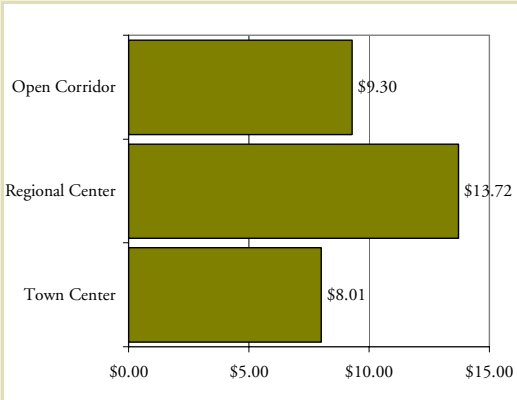
CENTER TYPE TOTALS

The properties first identified through the scope of individually delineated corridors have been organized again, here, according to their proximity to area Regional, and Town Centers. All properties are classified as a Town Center Property, Regional Center Property, or Open Corridor Property. The data has been aggregated to derive a general understanding of the corridors with respect to center type.

Average Land Value

The average land value for all the properties evaluated is roughly $10.08 per square foot. When organized by Center type, there is little difference in the average land value of properties located in Town Centers and Open Corridor Properties, whose averages range within a $1.50 of each other from $9.30 to $8.01, respectively. However, an approximate 50% premium is realized on properties located within Regional Centers. This, of course, is more or less expected as Regional Centers are typically largely built out and developable land is scarce. However, there is a locational element attributed Regional Centers as they typically benefit from greater visibility and freeway access.

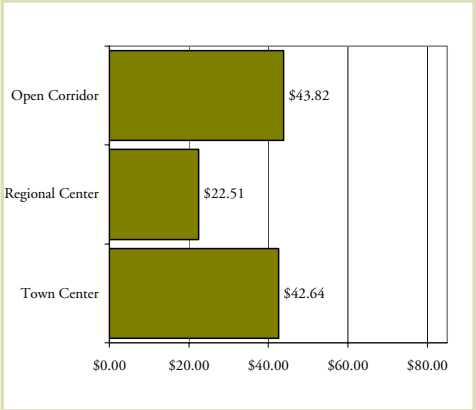
AVERAGE LAND VALUE PER SQ. FT.



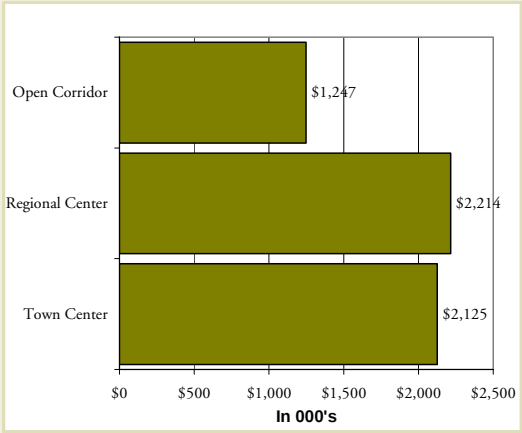
Average Improvement Value

Regional Center properties also tend to have lower average improvement values per square foot than other area. This is naturally a result of a higher concentration of big box retail centers. I absolute terms, with an average improvement value of approximately $2,214,000, improvements on Regional Center properties are worth slightly more on average than Town Center properties ($2,125,000) and almost double that of Open Corridor Properties ($1,247,000).

AVG. IMPROVEMENT VALUE PER SQ. FT.



AVERAGE IMPROVEMENT VALUE

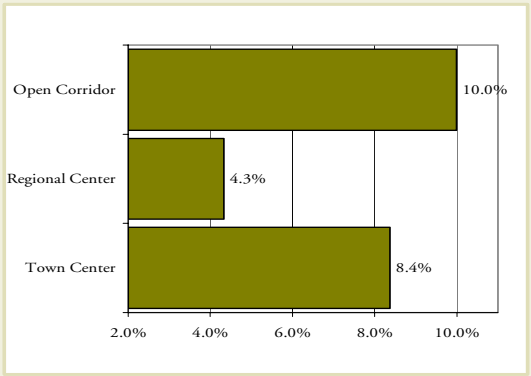


In terms of average improvement value per square foot, Open Corridor properties are significantly higher, just edging out Town Center Properties. Probable reasoning is the result of a premium being placed on newer developments located in Open Corridors vs. older developments situated in Town Center locations.

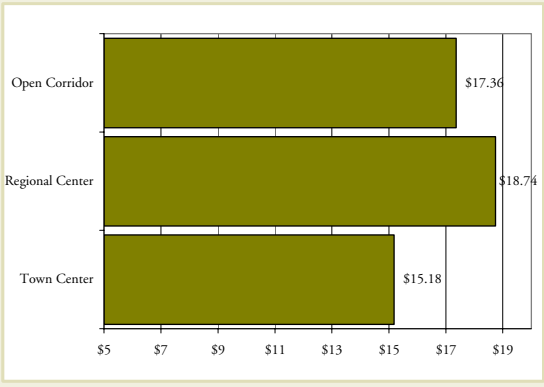
Rents, Vacancy, and Absorption

Average quoted rents on properties across center types varied little from $15.18 in Town Centers to $18.74 in Regional Centers. Actual quoted rents ranged from $7.39 to $22.81 in Town Centers, $4.00 to $28.96 in Regional Centers, and $10.93 to $24.00 in Open Corridor areas.

VACANCY RATES

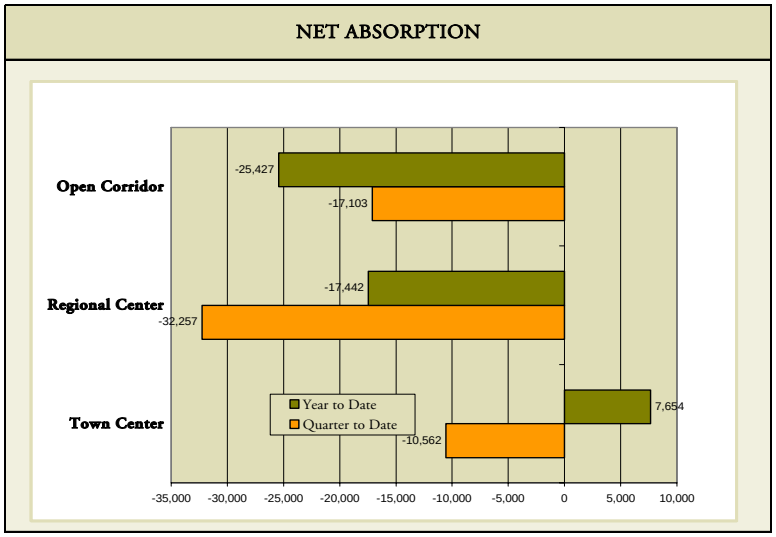


QUOTED RENTS



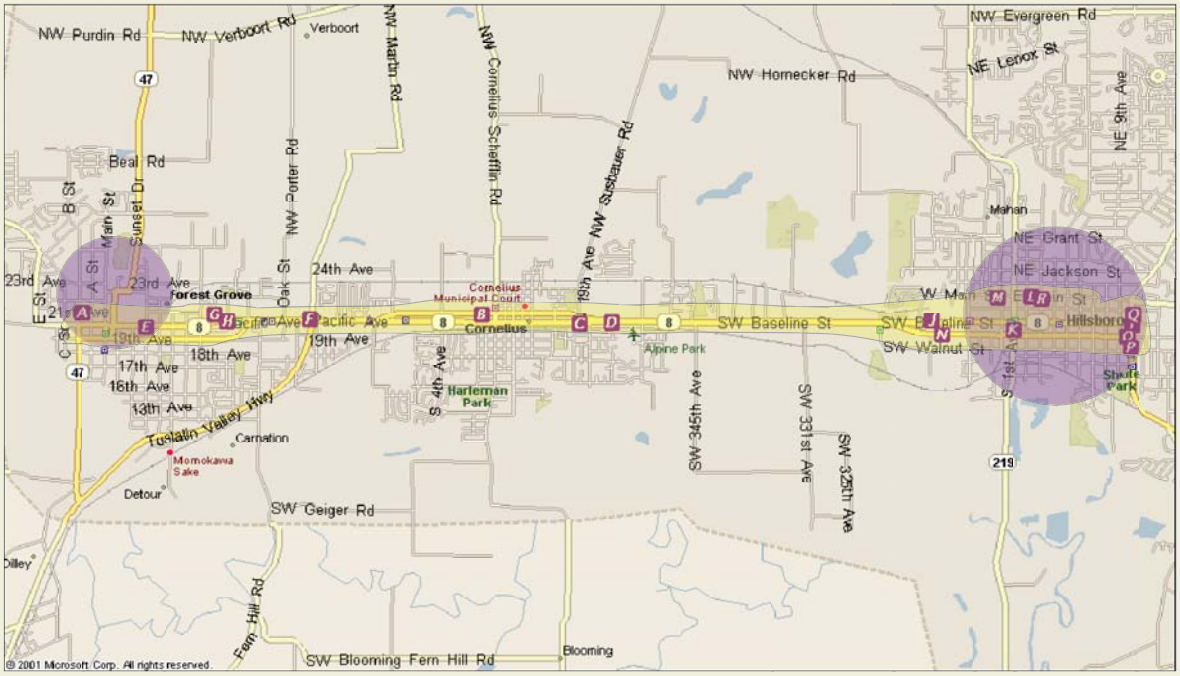
Along specifically identified corridors in the Portland area, properties in Regional Centers typically obtain the highest average rent levels while posting the lowest average vacancy rate. Vacancy among Regional Center properties measured approximately 4.3% compared to 10.0% in Open Corridor areas and 8.4% in Town Centers.

In absolute terms, because it includes 70% of the properties evaluated, Open Corridor areas have lost the most square feet of space (-25,427 sq. ft.) year to date. However in the current quarter, net absorption losses in Regional Centers have totaled -32,257. However, over 95% of the absorption loss in Regional Centers was derived from the Hillsboro West Shopping Center and the property located at 4000 SW 117th Avenue just off Canyon Road in the Beaverton Regional Center.



The following sections contain the data from which this summary was derived, as well as a visual representation of each property plotted on its corresponding corridor.

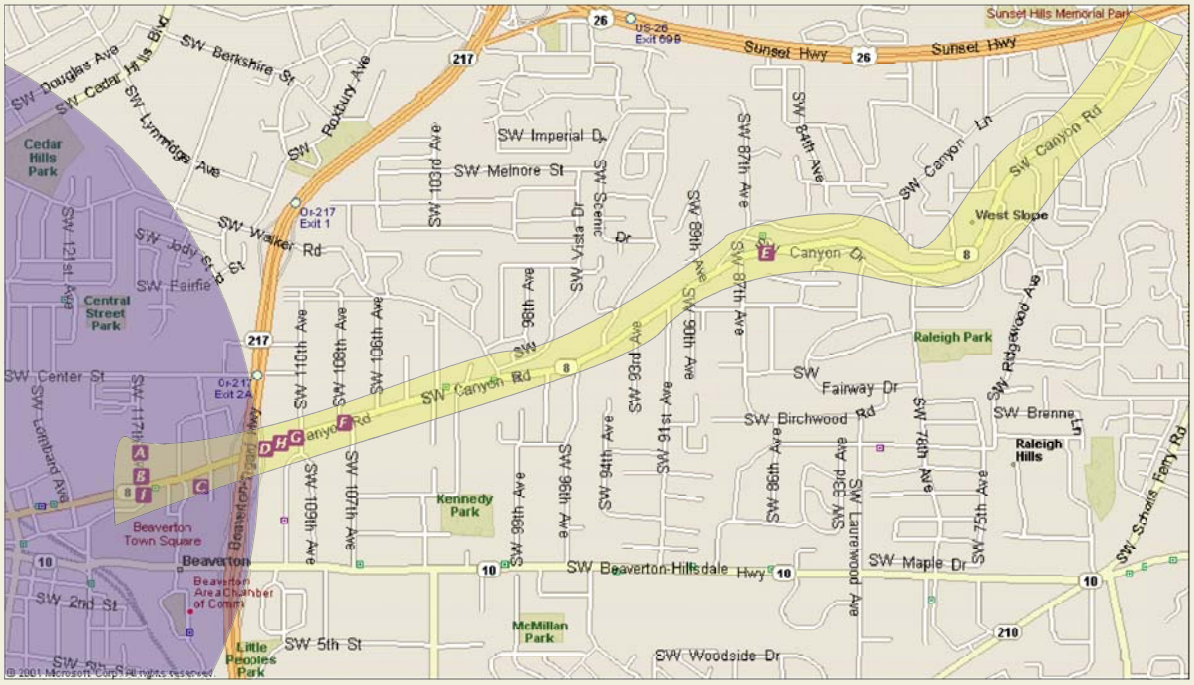
Pacific Avenue/Baseline Corridor



Building Name/ Location	Corridor Type	Assesment Statistics		Rentable S.F.		Vacant S.F.	Vacancy Rate	Quoted Rent	Leasing Activity QTD	Leasing Activity YTD	Net Absorption QTD	Net Absorption YTD
Pacific Avenue/Baseline Corridor												
A ***Forest Grove Past Office***	Town Center	Land Value	$107,970	4,992	**Direct**	0	0.0%	$ -	0	0	0	0
1822 21st Ave		Improvement Value	$168,410		**Sublet**	0	0.0%	$ -	0	0	0	0
Forest Grove, OR 97116		Improvement Value Per Sq. Ft.	$33.74		**Total**	0	0.0%	$ -	0	0	0	0
4,992 SF RBA		Land size	15,231									
		Improvement to Land Ratio	0.64									
B ***Express Lube***	Open Corridor	Land Value	$422,430	4,072	**Direct**	0	0.0%	$ -	0	0	0	0
845 N Adair St		Improvement Value	$2,103,970		**Sublet**	0	0.0%	$ -	0	0	0	0
Cornelius, OR 97113		Improvement Value Per Sq. Ft.	$516.69		**Total**	0	0.0%	$ -	0	0	0	0
4,072 SF RBA		Land size	65,957									
		Improvement to Land Ratio	0.20									
C ***Burger King Cornelius***	Open Corridor	Land Value	$208,670	2,747	**Direct**	2,747	100.0%	$ -	0	0	0	0
1910 Baseline St		Improvement Value	$0		**Sublet**	0	0.0%	$ -	0	0	0	0
Cornelius, OR 97113		Improvement Value Per Sq. Ft.	$0.00		**Total**	2,747	100.0%	$ -	0	0	0	0
2,747 SF RBA		Land size	31,523									
		Improvement to Land Ratio	na									
D ***Former Snead's Rental Bldg***	Open Corridor	Land Value	$163,080	3,168	**Direct**	0	0.0%	$ -	0	0	0	0
2223 Baseline St		Improvement Value	$29,820		**Sublet**	0	0.0%	$ -	0	0	0	0
Cornelius, OR 97113		Improvement Value Per Sq. Ft.	$9.41		**Total**	0	0.0%	$ -	0	0	0	0
3,168 SF RBA		Land size	35,695									
		Improvement to Land Ratio	5.47									
E ***Forest Grove Shopping Center***	Town Center	Land Value	$624,040	37,331	**Direct**	25,500	68.3%	$ 16.00	0	0	0	0
Pacific Ave @ Cedar St		Improvement Value	$1,341,990		**Sublet**	0	0.0%	$ -	0	0	0	0
Forest Grove, OR 97116		Improvement Value Per Sq. Ft.	$35.95		**Total**	25,500	68.3%	$ 16.00	0	0	0	0
37,331 SF RBA		Land size	123,653									
		Improvement to Land Ratio	0.47									

F	***Forest Grove Promenade***	Open Corridor	Land Value	$469,930	75,000	**Direct**	0	0.0%	$ -	0	0	0	0
	Pacific Ave @ Tualatin Valley		Improvement Value	$0		**Sublet**	0	0.0%	$ -	0	0	0	0
	Forest Grove, OR 97116		Improvement Value Per Sq. Ft.	$0.00		**Total**	0	0.0%	$ -	0	0	0	0
	75,000 SF RBA		Land size	87,461									
			Improvement to Land Ratio	na									
G	***Ballad Town Square***	Open Corridor	Land Value	$245,500	89,662	**Direct**	0	0.0%	$ 14.50	0	0	0	0
	2833 Pacific Ave		Improvement Value	$1,013,050		**Sublet**	0	0.0%	$ -	0	0	0	0
	Forest Grove, OR 97116		Improvement Value Per Sq. Ft.	$11.30		**Total**	0	0.0%	$ 14.50	0	0	0	0
	89,662 SF RBA		Land size	93,588									
			Improvement to Land Ratio	0.24									
H	***Cinema 7 / Ballad Town Square***	Open Corridor	Land Value	$538,140	89,750	**Direct**	0	0.0%	$ -	0	0	0	0
	2836 Pacific Hwy		Improvement Value	$0		**Sublet**	0	0.0%	$ -	0	0	0	0
	Forest Grove, OR 97116		Improvement Value Per Sq. Ft.	$0.00		**Total**	0	0.0%	$ -	0	0	0	0
	89,750 SF RBA		Land size	100,905									
			Improvement to Land Ratio	na									
I	***Unknown Name***	Open Corridor	Land Value	$136,200	2,000	**Direct**	2,000	100.0%	$ -	2,000	2,000	0	-2,000
	304 SE 10th Ave		Improvement Value	$0		**Sublet**	0	0.0%	$ -	0	0	0	0
	Hillsboro, OR 97123		Improvement Value Per Sq. Ft.	$0.00		**Total**	2,000	100.0%	$ -	2,000	2,000	0	-2,000
	2,000 SF RBA		Land size	11,716									
			Improvement to Land Ratio	na									
J	***Hillsboro West Shopping Center***	Regional Center	Land Value	$602,040	37,000	**Direct**	14,000	37.8%	$ -	6,000	6,000	-14,000	-14,000
	1050-1080 SW Baseline Rd		Improvement Value	$2,040,270		**Sublet**	0	0.0%	$ -	0	0	0	0
	Hillsboro, OR 97123		Improvement Value Per Sq. Ft.	$55.14		**Total**	14,000	37.8%	$ -	6,000	6,000	-14,000	-14,000
	37,000 SF RBA		Land size	123,057									
			Improvement to Land Ratio	0.30									
K	***Hillsboro Shopping Center***	Regional Center	Land Value	$913,150	49,550	**Direct**	0	0.0%	$ -	0	0	0	0
	346-386 S First Ave		Improvement Value	$2,147,540		**Sublet**	0	0.0%	$ -	0	0	0	0
	Hillsboro, OR 97123		Improvement Value Per Sq. Ft.	$43.34		**Total**	0	0.0%	$ -	0	0	0	0
	49,550 SF RBA		Land size	155,994									
			Improvement to Land Ratio	0.43									
L	***230 East Main Street Building***	Regional Center	Land Value	na	8,500	**Direct**	0	0.0%	$ -	0	0	0	0
	230 E Main St		Improvement Value	na		**Sublet**	0	0.0%	$ -	0	0	0	0
	Hillsboro, OR 97123		Improvement Value Per Sq. Ft.	na		**Total**	0	0.0%	$ -	0	0	0	0
	8,500 SF RBA		Land size	na									
			Improvement to Land Ratio	na									
M	***Unknown Name***	Regional Center	Land Value	na	6,000	**Direct**	0	0.0%	$ -	0	0	0	0
	231-259 W Main St		Improvement Value	na		**Sublet**	0	0.0%	$ -	0	0	0	0
	Hillsboro, OR 97123		Improvement Value Per Sq. Ft.	na		**Total**	0	0.0%	$ -	0	0	0	0
	6,000 SF RBA		Land size	na									
			Improvement to Land Ratio	na									
N	***Unknown Name***	Regional Center	Land Value	na	6,000	**Direct**	0	0.0%	$ -	0	0	0	0
	862 E Oak St		Improvement Value	na		**Sublet**	0	0.0%	$ -	0	0	0	0
	Hillsboro, OR 97123		Improvement Value Per Sq. Ft.	na		**Total**	0	0.0%	$ -	0	0	0	0
	6,000 SF RBA		Land size	na									
			Improvement to Land Ratio	na									
O	***Hillsboro Mall***	Regional Center	Land Value	$121,935	30,000	**Direct**	0	0.0%	$ -	0	0	0	0
	960-980 SE Oak St		Improvement Value	$3,218,630		**Sublet**	0	0.0%	$ -	0	0	0	0
	Hillsboro, OR 97123		Improvement Value Per Sq. Ft.	$107.29		**Total**	0	0.0%	$ -	0	0	0	0
	30,000 SF RBA		Land size	121,935									
			Improvement to Land Ratio	0.04									
P	***Tenth Avenue Business Center***	Open Corridor	Land Value	na	24,567	**Direct**	0	0.0%	$ -	0	0	0	0
	Tenth @ Walnut		Improvement Value	na		**Sublet**	0	0.0%	$ -	0	0	0	0
	Hillsboro, OR 97123		Improvement Value Per Sq. Ft.	na		**Total**	0	0.0%	$ -	0	0	0	0
	24,567 SF RBA		Land size	na									
			Improvement to Land Ratio	na									
Q	***Hillsboro Center***	Open Corridor	Land Value	$999,700	35,000	**Direct**	900	2.6%	$ 13.00	0	1,540	1,540	1,540
	250 SE Tenth Ave		Improvement Value	$2,459,370		**Sublet**	0	0.0%	$ -	0	0	0	0
	Hillsboro, OR 97123		Improvement Value Per Sq. Ft.	$70.27		**Total**	900	2.6%	$ 13.00	0	1,540	1,540	1,540
	35,000 SF RBA		Land size	107,031									
			Improvement to Land Ratio	0.41									
R	***Unknown Name***	Regional Center	Land Value	$69,760	5,000	**Direct**	0	0.0%	$ -	0	0	0	0
	125-137 SE Third Ave		Improvement Value	$325,110		**Sublet**	0	0.0%	$ -	0	0	0	0
	Hillsboro, OR 97123		Improvement Value Per Sq. Ft.	$65.02		**Total**	0	0.0%	$ -	0	0	0	0
	5,000 SF RBA		Land size	6,970									
			Improvement to Land Ratio	0.21									
			Pacific Avenue/Baseline Corridor		510,339	**Direct**	45,147 #	8.8%	$ 14.52 #	8,000	9,540	-12,460	-14,460
			Total Land Value	$5,622,545		**Sublet**	0 #	0.0%	$ - #	0	0	0	0
			Total Improvement Value	$14,848,160		**Total**	**45,147 #**	**8.8%**	**$ 14.52 #**	**8,000**	**9,540**	**-12,460**	**-14,460**
			Average Improvement/ square ft.	$50.20									
			Average Land/ square ft.	$5.20									
			Improvement to Land Ratio	0.378669478									

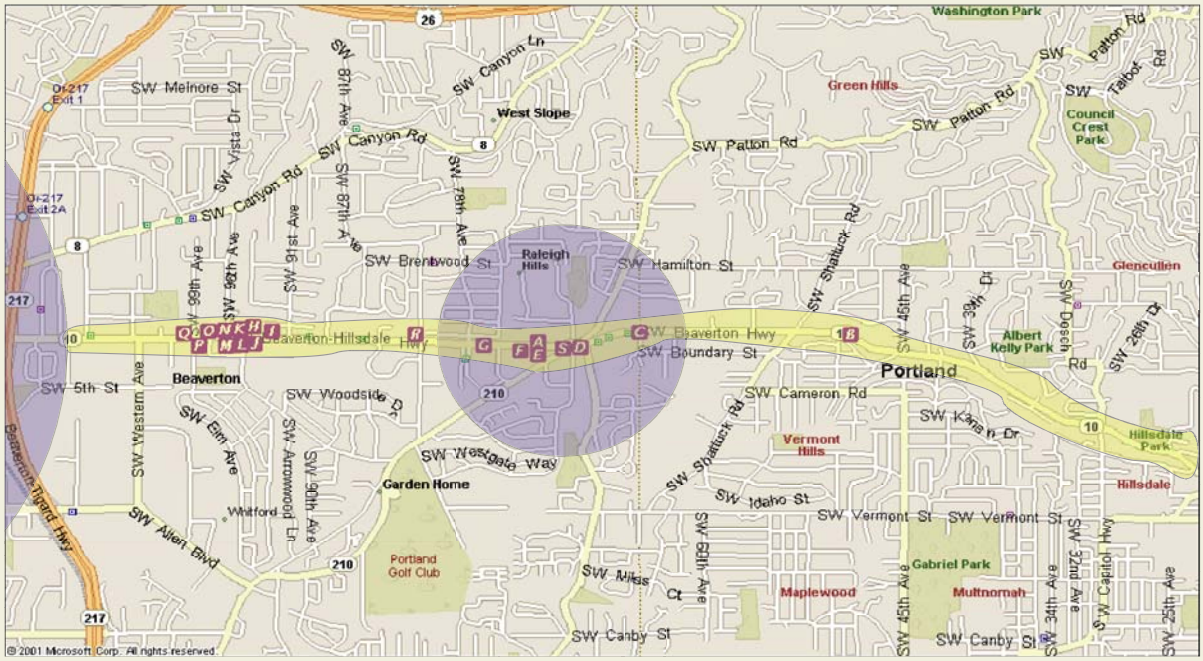
Canyon Road Corridor



Building Name/ Location	Corridor Type	Assesment Statistics		Rentable S.F.		Vacant S.F.	Vacancy Rate	Quoted Rent	Leasing Activity QTD	Leasing Activity YTD	Net Absorption QTD	Net Absorption YTD
Canyon Road Corridor					7							
A ***Unknown Name***	Regional Center	Land Value	$1,807,700	18,257	**Direct**	18,257	100.0%	$ 11.00	0	0	-18,257	-18,257
4000 SW 117th Ave		Improvement Value	$4,002,580		**Sublet**	0	0.0%	$ -	0	0	0	0
Beaverton, OR 97005		Improvement Value Per Sq. Ft.	$219.24		**Total**	18,257	100.0%	$ 11.00	0	0	-18,257	-18,257
18,257 SF RBA		Land size	322,242									
		Improvement to Land Ratio	0.45									
B ***Canyon Square***	Regional Center	Land Value	$827,300	12,000	**Direct**	0	0.0%	$ -	0	0	0	0
4130 SW 117th Ave		Improvement Value	$2,323,770		**Sublet**	0	0.0%	$ -	0	0	0	0
Beaverton, OR 97005		Improvement Value Per Sq. Ft.	$193.65		**Total**	0	0.0%	$ -	0	0	0	0
12,000 SF RBA		Land size	57,903									
		Improvement to Land Ratio	0.36									
C ***Beaverton Town Square***	Regional Center	Land Value	na	113,500	**Direct**	3,830	3.4%	$ 28.96	0	0	0	0
SW Beaverton Hillsdale Hwy		Improvement Value	na		**Sublet**	0	0.0%	$ -	0	0	0	0
Beaverton, OR 97005		Improvement Value Per Sq. Ft.	na		**Total**	3,830	3.4%	$ 28.96	0	0	0	0
113,500 SF RBA		Land size	na									
		Improvement to Land Ratio	na									
D ***West Slope Shopping Center***	Open Corridor	Land Value	$2,057,610	23,500	**Direct**	1,375	5.9%	$ 13.00	2,358	2,358	0	301
8735-8805 SW Canyon Ln		Improvement Value	$1,372,070		**Sublet**	0	0.0%	$ -	0	0	0	0
Portland, OR 97225		Improvement Value Per Sq. Ft.	$58.39		**Total**	1,375	5.9%	$ 13.00	2,358	2,358	0	301
23,500 SF RBA		Land size	148,020									
		Improvement to Land Ratio	1.50									
E ***Unknown Name***	Open Corridor	Land Value	$343,470	3,000	**Direct**	0	0.0%	$ -	0	0	0	0
8635 SW Canyon Rd		Improvement Value	$854,440		**Sublet**	0	0.0%	$ -	0	0	0	0
Portland, OR 97225		Improvement Value Per Sq. Ft.	$284.81		**Total**	0	0.0%	$ -	0	0	0	0
3,000 SF RBA		Land size	26,895									
		Improvement to Land Ratio	0.40									

F	***Unknown Name***	Open Corridor	Land Value	$407,090	4,200	**Direct**	0	0.0%	$ -		0	0	0	0
	10765 SW Canyon Rd		Improvement Value	$294,900		**Sublet**	0	0.0%	$ -		0	0	0	0
	Beaverton, OR 97005		Improvement Value Per Sq. Ft.	$70.21		**Total**	0	0.0%	$ -		0	0	0	0
	4,200 SF RBA		Land size	25,390										
			Improvement to Land Ratio	1.38										
G	***Unknown Name***	Open Corridor	Land Value	na	11,500	**Direct**	0	0.0%	$ -		0	0	0	0
	11015 SW Canyon Rd		Improvement Value	na		**Sublet**	0	0.0%	$ -		0	0	0	0
	Beaverton, OR 97005		Improvement Value Per Sq. Ft.	na		**Total**	0	0.0%	$ -		0	0	0	0
	11,500 SF RBA		Land size	na										
			Improvement to Land Ratio	na										
H	***Unknown Name***	Open Corridor	Land Value	$4,920,120	103,880	**Direct**	0	0.0%	$ -		0	0	0	0
	11055 SW Canyon Rd		Improvement Value	$11,285,860		**Sublet**	0	0.0%	$ -		0	0	0	0
	Beaverton, OR 97005		Improvement Value Per Sq. Ft.	$108.64		**Total**	0	0.0%	$ -		0	0	0	0
	103,880 SF RBA		Land size	380,301										
			Improvement to Land Ratio	0.44										
I	***Canyon Place Shopping Center***	Regional Center	Land Value	$9,568,030	156,378	**Direct**	26,572	17.0%	$ 18.17		0	9,136	0	7,994
	11701 SW Canyon Rd		Improvement Value	$7,927,430		**Sublet**	0	0.0%	$ -		0	0	0	0
	Beaverton, OR 97005		Improvement Value Per Sq. Ft.	$50.69		**Total**	26,572	17.0%	$ 18.17		0	9,136	0	7,994
	156,378 SF RBA		Land size	212,719										
			Improvement to Land Ratio	1.21										
		Canyon Road Corridor			446,215	**Direct**	50,034 #	11.2%	$ 21.29 #		2,358	11,494	-18,257	-9,962
		Total Land Value		$19,931,320		**Sublet**	0 #	0.0%	$ - #		0	0	0	0
		Total Improvement Value		$28,061,050		**Total**	**50,034 #**	**11.2%**	**$ 21.29 #**		**2,358**	**11,494**	**-18,257**	**-9,962**
		Average Improvement/ square ft.		$87.36										
		Average Land/ square ft.		$16.98										
		Improvement to Land Ratio		0.710284184										

Beaverton Hillsdale Hwy Corridor

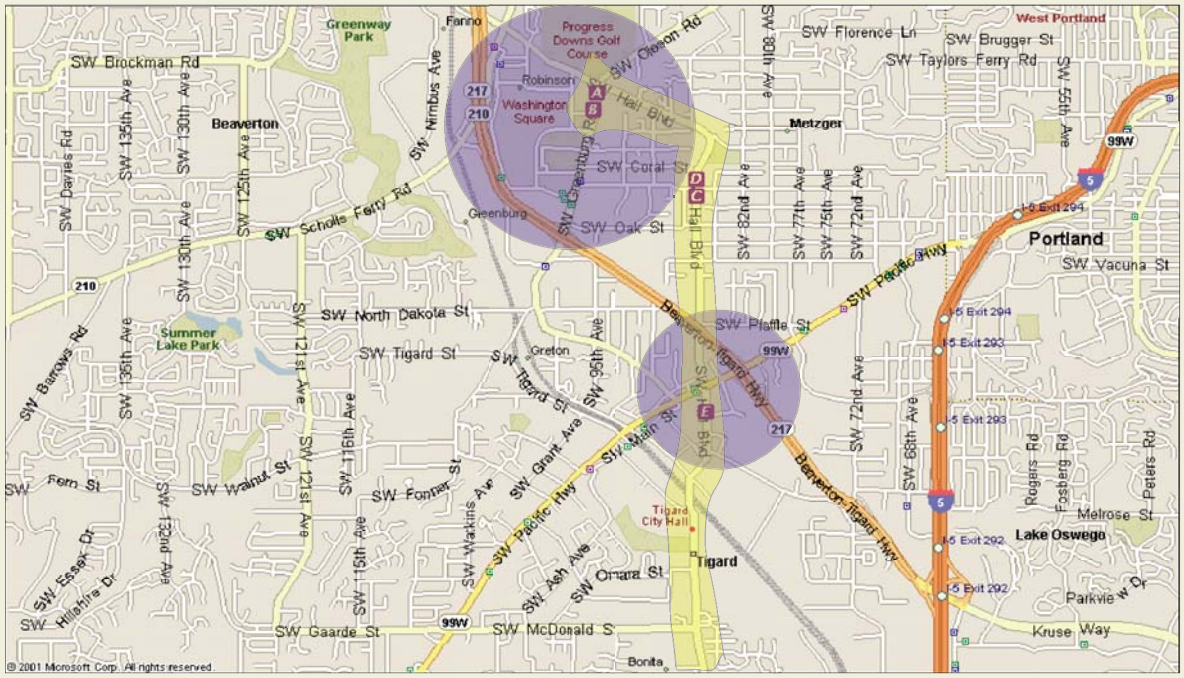


Building Name/ Location	Corridor Type	Assesment Statistics		Rentable S.F.		Vacant S.F.	Vacancy Rate	Quoted Rent	Leasing Activity QTD	Leasing Activity YTD	Net Absorption QTD	Net Absorption YTD
Beaverton Hillsdale Hwy Corridor					17							
A ***Kienow's Center***	Town Center	Land Value	$392,430	77,000	**Direct**	0	0.0%	$ -	0	0	0	0
7300 SW Beaverton - Hillsdale		Improvement Value	$1,152,500		**Sublet**	0	0.0%	$ -	0	0	0	0
Portland, OR 97225		Improvement Value Per Sq. Ft.	$14.97		**Total**	0	0.0%	$ -	0	0	0	0
77,000 SF RBA		Land size	154,483									
		Improvement to Land Ratio	0.34									
B ***Unknown Name***	Open Corridor	Land Value	$79,590	3,184	**Direct**	1,592	50.0%	$ 12.00	0	0	-1,592	-1,592
4709 SW Beaverton Hillsdale		Improvement Value	$200,970		**Sublet**	0	0.0%	$ -	0	0	0	0
Portland, OR 97221		Improvement Value Per Sq. Ft.	$63.12		**Total**	1,592	50.0%	$ 12.00	0	0	-1,592	-1,592
3,184 SF RBA		Land size	5,817									
		Improvement to Land Ratio	0.40									
C ***Raleigh West Shopping Center***	Town Center	Land Value	$173,800	69,768	**Direct**	6,758	9.7%	$ 7.39	0	0	0	0
6521 SW Beaverton Hillsdale		Improvement Value	$16,360		**Sublet**	0	0.0%	$ -	0	0	0	0
Portland, OR 97225		Improvement Value Per Sq. Ft.	$0.23		**Total**	6,758	9.7%	$ 7.39	0	0	0	0
69,768 SF RBA		Land size	127,435									
		Improvement to Land Ratio	10.62									
D ***Unknown Name***	Town Center	Land Value	$602,270	31,869	**Direct**	0	0.0%	$ -	0	0	0	0
6908 SW Beaverton Hillsdale		Improvement Value	$982,030		**Sublet**	0	0.0%	$ -	0	0	0	0
Portland, OR 97225		Improvement Value Per Sq. Ft.	$30.81		**Total**	0	0.0%	$ -	0	0	0	0
31,869 SF RBA		Land size	50,875									
		Improvement to Land Ratio	0.61									
E ***Raleigh Hills Plaza***	Town Center	Land Value	na	39,820	**Direct**	0	0.0%	$ -	0	0	0	0
7300 SW Beaverton Hillsdale		Improvement Value	na		**Sublet**	0	0.0%	$ -	0	0	0	0
Portland, OR 97225		Improvement Value Per Sq. Ft.	na		**Total**	0	0.0%	$ -	0	0	0	0
39,820 SF RBA		Land size	na									
		Improvement to Land Ratio	na									

F	***Raleigh Hills Center***	Town Center	Land Value	$273,550	17,352	**Direct**	3,140	18.1%	$	12.50	1,500	3,360	1,500	3,360
	7417 SW Beaverton Hillsdale		Improvement Value	$1,741,560		**Sublet**	0	0.0%	$	-	0	0	0	0
	Portland, OR 97225		Improvement Value Per Sq. Ft.	$100.37		**Total**	3,140	18.1%	$	12.50	1,500	3,360	1,500	3,360
	17,352 SF RBA		Land size	76,189										
			Improvement to Land Ratio	0.16										
G	***Raleigh Hills Fred Meyer Mark***	Town Center	Land Value	$4,556,230	161,200	**Direct**	4,328	2.7%	$	17.00	0	1,630	0	1,630
	7700 SW Beaverton Hillsdale		Improvement Value	$1,647,790		**Sublet**	0	0.0%	$	-	0	0	0	0
	Portland, OR 97225		Improvement Value Per Sq. Ft.	$10.22		**Total**	4,328	2.7%	$	17.00	0	1,630	0	1,630
	161,200 SF RBA		Land size	367,891										
			Improvement to Land Ratio	2.77										
H	***Unknown Name***	Open Corridor	Land Value	$255,270	5,500	**Direct**	0	0.0%	$	-	0	0	0	0
	8345 SW Beaverton Hillsdale		Improvement Value	$30,330		**Sublet**	0	0.0%	$	-	0	0	0	0
	Beaverton, OR 97005		Improvement Value Per Sq. Ft.	$5.51		**Total**	0	0.0%	$	-	0	0	0	0
	5,500 SF RBA		Land size	39,904										
			Improvement to Land Ratio	8.42										
I	***Unknown Name***	Open Corridor	Land Value	$102,440	4,200	**Direct**	0	0.0%	$	-	0	0	0	0
	9215 SW Beaverton Hillsdale		Improvement Value	$295,140		**Sublet**	0	0.0%	$	-	0	0	0	0
	Beaverton, OR 97005		Improvement Value Per Sq. Ft.	$70.27		**Total**	0	0.0%	$	-	0	0	0	0
	4,200 SF RBA		Land size	6,964										
			Improvement to Land Ratio	0.35										
J	***Valley Plaza Shopping Center***	Open Corridor	Land Value	$2,698,540	97,000	**Direct**	1,680	1.7%	$	14.00	0	0	0	0
	9300 SW Beaverton Hillsdale		Improvement Value	$2,532,960		**Sublet**	0	0.0%	$	-	0	0	0	0
	Beaverton, OR 97005		Improvement Value Per Sq. Ft.	$26.11		**Total**	1,680	1.7%	$	14.00	0	0	0	0
	97,000 SF RBA		Land size	254,411										
			Improvement to Land Ratio	1.07										
K	***Glenwood Square***	Open Corridor	Land Value	$561,960	16,000	**Direct**	10,600	66.3%	$	13.50	0	0	-10,600	-10,600
	9315-9365 SW Beaverton		Improvement Value	$104,940		**Sublet**	0	0.0%	$	-	0	0	0	0
	Beaverton, OR 97005		Improvement Value Per Sq. Ft.	$6.56		**Total**	10,600	66.3%	$	13.50	0	0	-10,600	-10,600
	16,000 SF RBA		Land size	41,269										
			Improvement to Land Ratio	5.36										
L	***Bldg 2***	Open Corridor	Land Value	$2,769,890	10,095	**Direct**	0	0.0%	$	-	0	0	0	0
	9400 SW Beaverton Hillsdale		Improvement Value	$746,093		**Sublet**	0	0.0%	$	-	0	0	0	0
	Beaverton, OR 97005		Improvement Value Per Sq. Ft.	$73.91		**Total**	0	0.0%	$	-	0	0	0	0
	10,095 SF RBA		Land size	325,684										
			Improvement to Land Ratio	3.71										
M	***Bldg 3***	Open Corridor	Land Value	na	13,000	**Direct**	0	0.0%	$	-	0	0	0	0
	9400 SW Beaverton Hillsdale		Improvement Value	na		**Sublet**	0	0.0%	$	-	0	0	0	0
	Beaverton, OR 97005		Improvement Value Per Sq. Ft.	na		**Total**	0	0.0%	$	-	0	0	0	0
	13,000 SF RBA		Land size	na										
			Improvement to Land Ratio	na										
N	***Unknown Name***	Open Corridor	Land Value	$215,150	2,200	**Direct**	2,200	100.0%	$	12.50	0	0	-2,200	-2,200
	9575 SW Beaverton Hillsdale		Improvement Value	$334,800		**Sublet**	0	0.0%	$	-	0	0	0	0
	Beaverton, OR 97005		Improvement Value Per Sq. Ft.	$152.18		**Total**	2,200	100.0%	$	12.50	0	0	-2,200	-2,200
	2,200 SF RBA		Land size	15,448										
			Improvement to Land Ratio	0.64										
O	***Unknown Name***	Open Corridor	Land Value	$347,200	6,600	**Direct**	6,600	100.0%	$	15.00	0	0	0	0
	9656-9660 SW Beaverton		Improvement Value	$742,920		**Sublet**	0	0.0%	$	-	0	0	0	0
	Beaverton, OR 97005		Improvement Value Per Sq. Ft.	$112.56		**Total**	6,600	100.0%	$	15.00	0	0	0	0
	6,600 SF RBA		Land size	24,220										
			Improvement to Land Ratio	0.47										
P	***Unknown Name***	Open Corridor	Land Value	$335,720	10,102	**Direct**	0	0.0%	$	-	0	0	0	0
	9825-9875 SW Beaverton		Improvement Value	$195,310		**Sublet**	0	0.0%	$	-	0	0	0	0
	Beaverton, OR 97005		Improvement Value Per Sq. Ft.	$19.33		**Total**	0	0.0%	$	-	0	0	0	0
	10,102 SF RBA		Land size	26,027										
			Improvement to Land Ratio	1.72										
Q	***Diamond Park Plaza***	Open Corridor	Land Value	$762,900	21,765	**Direct**	0	0.0%	$	-	0	0	0	0
	9955 SW Beaverton Hillsdale		Improvement Value	$1,064,810		**Sublet**	0	0.0%	$	-	0	0	0	0
	Beaverton, OR 97005		Improvement Value Per Sq. Ft.	$48.92		**Total**	0	0.0%	$	-	0	0	0	0
	21,765 SF RBA		Land size	63,960										
			Improvement to Land Ratio	0.72										
R	***Appleway Market***	Open Corridor	Land Value	$208,180	7,000	**Direct**	0	0.0%	$	-	0	0	0	0
	SW Laurelwood @ Beav-Hills		Improvement Value	$712,210		**Sublet**	0	0.0%	$	-	0	0	0	0
	Beaverton, OR 97005		Improvement Value Per Sq. Ft.	$101.74		**Total**	0	0.0%	$	-	0	0	0	0
	7,000 SF RBA		Land size	92,749										
			Improvement to Land Ratio	0.29										
S	***Scholls Plaza***	Town Center	Land Value	$589,200	11,494	**Direct**	0	0.0%	$	-	0	0	0	0
	4700 SW Scholls Ferry Rd		Improvement Value	$974,420		**Sublet**	0	0.0%	$	-	0	0	0	0
	Portland, OR 97225		Improvement Value Per Sq. Ft.	$84.78		**Total**	0	0.0%	$	-	0	0	0	0
	11,494 SF RBA		Land size	48,755										
			Improvement to Land Ratio	0.60										

Beaverton Hillsdale Hwy Corridor											
Total Land Value	$14,924,320	605,149	**Direct**	36,898	#	6.1%	$	13.96	#	1,500	4,990	-12,892	-9,402
Total Improvement Value	$13,475,143		**Sublet**	0	#	0.0%	$	-	#	0	0	0	0
Average Improvement/ square ft.	$24.40		**Total**	**36,898**	**#**	**6.1%**	**$**	**13.96**	**#**	**1,500**	**4,990**	**-12,892**	**-9,402**
Average Land/ square ft.	$8.67												
Improvement to Land Ratio	1.107544462												

Hall Boulevard Corridor



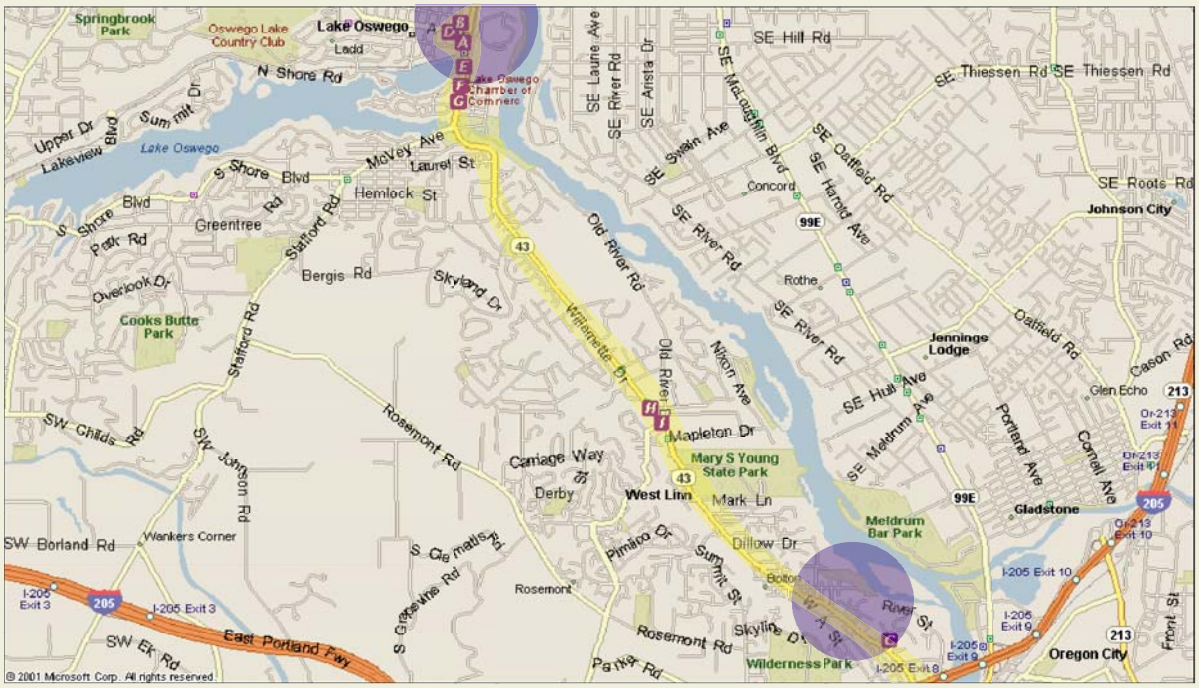
Building Name/ Location	Corridor Type	Assesment Statistics		Rentable S.F.		Vacant S.F.	Vacancy Rate	Quoted Rent	Leasing Activity QTD	Leasing Activity YTD	Net Absorption QTD	Net Absorption YTD
Hall Boulevard Corridor			5									
A ***Unknown Name***	Regional Center	Land Value	$654,020	24,500	**Direct**	10,000	40.8%	$ 4.00	0	0	0	0
9285 SW Greenburg Rd		Improvement Value	$1,141,930		**Sublet**	0	0.0%	$ -	0	0	0	0
Portland, OR 97223		Improvement Value Per Sq. Ft.	$46.61		**Total**	10,000	40.8%	$ 4.00	0	0	0	0
24,500 SF RBA		Land size	41,894									
		Improvement to Land Ratio	0.57									
B ***Unknown Name***	Regional Center	Land Value	$1,637,860	16,000	**Direct**	0	0.0%	$ -	0	0	0	0
9385 SW Greenburg Rd		Improvement Value	$1,177,410		**Sublet**	0	0.0%	$ -	0	0	0	0
Tigard, OR 97223		Improvement Value Per Sq. Ft.	$73.59		**Total**	0	0.0%	$ -	0	0	0	0
16,000 SF RBA		Land size	102,227									
		Improvement to Land Ratio	1.39									
C ***Redwood Center***	Open Corridor	Land Value	$207,350	6,500	**Direct**	2,120	32.6%	$ -	2,120	3,750	0	1,630
10225 SW Hall		Improvement Value	$503,660		**Sublet**	0	0.0%	$ -	0	0	0	0
Portland, OR 97223		Improvement Value Per Sq. Ft.	$77.49		**Total**	2,120	32.6%	$ -	2,120	3,750	0	1,630
6,500 SF RBA		Land size	16,050									
		Improvement to Land Ratio	0.41									
D ***Hall Plaza***	Open Corridor	Land Value	$431,190	11,040	**Direct**	2,050	18.6%	$ -	0	1,125	0	1,125
10120 SW Hall Blvd		Improvement Value	$55,790		**Sublet**	0	0.0%	$ -	0	0	0	0
Tigard, OR 97223		Improvement Value Per Sq. Ft.	$5.05		**Total**	2,050	18.6%	$ -	0	1,125	0	1,125
11,040 SF RBA		Land size	30,580									
		Improvement to Land Ratio	7.73									
E ***Hall Street Crossing***	Town Center	Land Value	$294,030	12,195	**Direct**	0	0.0%	$ -	0	0	0	0
12085 SW Hall Blvd		Improvement Value	$1,105,350		**Sublet**	0	0.0%	$ -	0	0	0	0
Portland, OR 97223		Improvement Value Per Sq. Ft.	$90.64		**Total**	0	0.0%	$ -	0	0	0	0
12,195 SF RBA		Land size	32,741									
		Improvement to Land Ratio	0.27									

Hall Boulevard Corridor	
Total Land Value	$3,224,450
Total Improvement Value	$3,984,140
Average Improvement/ square ft.	$56.73
Average Land/ square ft.	$14.43
Improvement to Land Ratio	0.80932146
Average Land/ square ft.	$14.43
Improvement to Land Ratio	3.93176307

70,235

Direct	14,170	#	20.2%	$	4.00	#	2,120	4,875	0	2,755
Sublet	0	#	0.0%	$	-	#	0	0	0	0
Total	**14,170**	**#**	**20.2%**	**$**	**4.00**	**#**	**2,120**	**4,875**	**0**	**2,755**

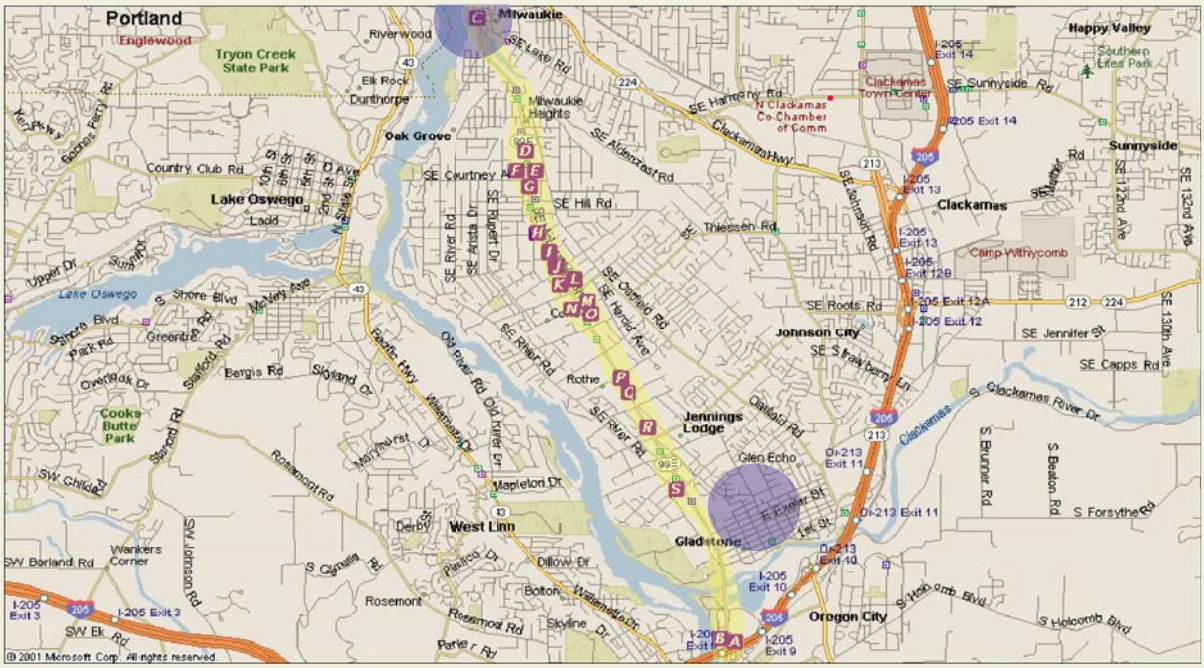
Highway 43 Corridor



	Building Name/ Location	Corridor Type	Assesment Statistics		Rentable S.F.		Vacant S.F.	Vacancy Rate	Quoted Rent	Leasing Activity QTD	Leasing Activity YTD	Net Absorption QTD	Net Absorption YTD
Highway 43 Corridor				6									
A	***Lake View Village***	Town Center	Land Value	na	50,000	**Direct**	0	0.0%	$ -	0	0	0	0
	First St @ A Ave		Improvement Value	na		**Sublet**	0	0.0%	$ -	0	0	0	0
	Lake Oswego, OR 97035		Improvement Value Per Sq. Ft.	na		**Total**	0	0.0%	$ -	0	0	0	0
	50,000 SF RBA		Land size	na									
			Improvement to Land Ratio	na									
B	***Unknown Name***	Town Center	Land Value	$255,679	9,400	**Direct**	9,400	100.0%	$ 18.00	0	0	-9,400	-9,400
	464 First St		Improvement Value	$451,040		**Sublet**	0	0.0%	$ -	0	0	0	0
	Lake Oswego, OR 97034		Improvement Value Per Sq. Ft.	$47.98		**Total**	9,400	100.0%	$ 18.00	0	0	-9,400	-9,400
	9,400 SF RBA		Land size	11,999									
			Improvement to Land Ratio	0.57									
C	***West Linn Shopping Center***	Town Center	Land Value	$217,800	56,854	**Direct**	0	0.0%	$ -	0	0	0	0
	5639-5665 Hood St		Improvement Value	$1,331,050		**Sublet**	0	0.0%	$ -	0	0	0	0
	West Linn, OR 97068		Improvement Value Per Sq. Ft.	$23.41		**Total**	0	0.0%	$ -	0	0	0	0
	56,854 SF RBA		Land size	131,773									
			Improvement to Land Ratio	0.16									
D	***The A Street Station***	Town Center	Land Value	na	17,000	**Direct**	0	0.0%	$ -	0	0	0	0
	Second St @ A Ave		Improvement Value	na		**Sublet**	0	0.0%	$ -	0	0	0	0
	Lake Oswego, OR 97034		Improvement Value Per Sq. Ft.	na		**Total**	0	0.0%	$ -	0	0	0	0
	17,000 SF RBA		Land size	na									
			Improvement to Land Ratio	na									
E	***Oswego Village***	Town Center	Land Value	$1,006,038	86,608	**Direct**	3,862	4.5%	$ 18.43	0	0	-3,862	-3,862
	11-101 N State St		Improvement Value	$1,490		**Sublet**	0	0.0%	$ -	0	0	0	0
	Lake Oswego, OR 97034		Improvement Value Per Sq. Ft.	$0.02		**Total**	3,862	4.5%	$ 18.43	0	0	-3,862	-3,862
	86,608 SF RBA		Land size	69,029									
			Improvement to Land Ratio	675.19									

F	***Unknown Name***	Open Corridor	Land Value	na		88,608	**Direct**	0	0.0%	$ -		0	0	0	0
	101 S State St		Improvement Value	na			**Sublet**	0	0.0%	$ -		0	0	0	0
	Lake Oswego, OR 97034		Improvement Value Per Sq. Ft.	na			**Total**	0	0.0%	$ -		0	0	0	0
	88,608 SF RBA		Land size	na											
			Improvement to Land Ratio	na											
G	***Lake Place Shopping Center***	Open Corridor	Land Value	$1,243,671		50,223	**Direct**	0	0.0%	$ -		0	0	0	0
	333 S State St		Improvement Value	$6,111,680			**Sublet**	0	0.0%	$ -		0	0	0	0
	Lake Oswego, OR 97034		Improvement Value Per Sq. Ft.	$121.69			**Total**	0	0.0%	$ -		0	0	0	0
	50,223 SF RBA		Land size	79,613											
			Improvement to Land Ratio	0.20											
H	***Robinwood Shopping Center***	Open Corridor	Land Value	$2,106,125		70,136	**Direct**	2,400	3.4%	$ 17.00		0	1,200	0	-1,200
	19121-19181 Willamette Dr		Improvement Value	$4,502,950			**Sublet**	0	0.0%	$ -		0	0	0	0
	West Linn, OR 97068		Improvement Value Per Sq. Ft.	$64.20			**Total**	2,400	3.4%	$ 17.00		0	1,200	0	-1,200
	70,136 SF RBA		Land size	268,022											
			Improvement to Land Ratio	0.47											
I	***West Linn Retail Center***	Open Corridor	Land Value	$676,944		29,920	**Direct**	2,600	8.7%	$ 16.00		0	0	0	0
	19303-19393 Willamette Dr		Improvement Value	$3,463,620			**Sublet**	0	0.0%	$ -		0	0	0	0
	West Linn, OR 97068		Improvement Value Per Sq. Ft.	$115.76			**Total**	2,600	8.7%	$ 16.00		0	0	0	0
	29,920 SF RBA		Land size	94,698											
			Improvement to Land Ratio	0.20											
		Highway 43 Corridor				458,749	**Direct**	18,262 #	4.0%	$ 17.53 #		0	1,200	-13,262	-14,462
		Total Land Value		$5,506,257			**Sublet**	0 #	0.0%	$ - #		0	0	0	0
		Total Improvement Value		$15,861,830			**Total**	**18,262 #**	**4.0%**	**$ 17.53 #**		**0**	**1,200**	**-13,262**	**-14,462**
		Average Improvement/ square ft.		$52.32											
		Average Land/ square ft.		$8.40											
		Improvement to Land Ratio		0.347138823											

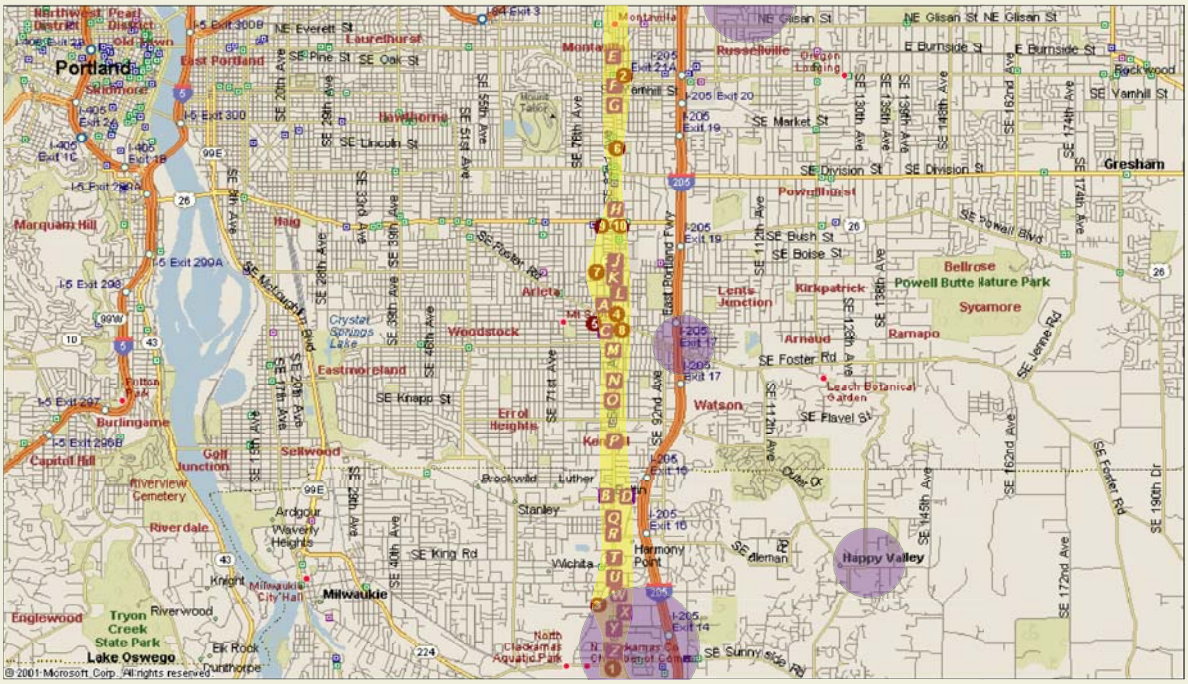
Mcloughlin Boulevard Corridor



Building Name/ Location	Corridor Type	Assesment Statistics		Rentable S.F.		Vacant S.F.	Vacancy Rate	Quoted Rent	Leasing Activity QTD	Leasing Activity YTD	Net Absorption QTD	Net Absorption YTD
Mcloughlin Boulevard Corridor					14							
A ***Oregon City Shopping Center***	Open Corridor	Land Value	$3,805,524	247,689	**Direct**	92,104	37.2%	$ -	0	0	0	10,268
McLoughlin Blvd @ I-205		Improvement Value	$9,413,080		**Sublet**	0	0.0%	$ -	0	0	0	0
Oregon City, OR 97045		Improvement Value Per Sq. Ft.	$38.00		**Total**	92,104	37.2%	$ -	0	0	0	10,268
247,689 SF RBA		Land size	717,459									
		Improvement to Land Ratio	0.40									
B ***Unknown Name***	Open Corridor	Land Value	na	220,000	**Direct**	0	0.0%	$ -	0	0	0	0
1900 McLoughlin Blvd		Improvement Value	na		**Sublet**	0	0.0%	$ -	0	0	0	0
Oregon City, OR 97045		Improvement Value Per Sq. Ft.	na		**Total**	0	0.0%	$ -	0	0	0	0
220,000 SF RBA		Land size	na									
		Improvement to Land Ratio	na									
C ***Unknown Name***	Town Center	Land Value	$246,993	6,000	**Direct**	0	0.0%	$ -	0	0	0	0
11100 SE Mcloughlin Blvd		Improvement Value	$305,380		**Sublet**	0	0.0%	$ -	0	0	0	0
Milwaukie, OR 97222		Improvement Value Per Sq. Ft.	$50.90		**Total**	0	0.0%	$ -	0	0	0	0
6,000 SF RBA		Land size	23,832									
		Improvement to Land Ratio	0.81									
D ***Unknown Name***	Open Corridor	Land Value	$87,120	4,500	**Direct**	0	0.0%	$ -	0	0	0	0
13432 SE McLoughlin Blvd		Improvement Value	$26,200		**Sublet**	0	0.0%	$ -	0	0	0	0
Oak Grove, OR 97222		Improvement Value Per Sq. Ft.	$5.82		**Total**	0	0.0%	$ -	0	0	0	0
4,500 SF RBA		Land size	20,611									
		Improvement to Land Ratio	3.33									
E ***Courtney Plaza***	Open Corridor	Land Value	na	48,000	**Direct**	1,350	2.8%	$ 12.00	0	0	-1,350	-1,350
13739-13843 SE McLoughlin		Improvement Value	na		**Sublet**	0	0.0%	$ -	0	0	0	0
Oak Grove, OR 97222		Improvement Value Per Sq. Ft.	na		**Total**	1,350	2.8%	$ 12.00	0	0	-1,350	-1,350
48,000 SF RBA		Land size	na									
		Improvement to Land Ratio	na									

F	***Oak Grove Center***	Open Corridor	Land Value	na		600	**Direct**	0	0.0%	$ -	0	0	0	0
	13765 SE McLoughlin Blvd		Improvement Value	na			**Sublet**	0	0.0%	$ -	0	0	0	0
	Oak Grove, OR 97222		Improvement Value Per Sq. Ft.	na			**Total**	0	0.0%	$ -	0	0	0	0
	600 SF RBA		Land size	na										
			Improvement to Land Ratio	na										
G	***Unknown Name***	Open Corridor	Land Value		$150,094	6,000	**Direct**	2,000	33.3%	$ 9.00	0	0	0	0
	14001 SE McLoughlin Blvd		Improvement Value		$148,110		**Sublet**	0	0.0%	$ -	0	0	0	0
	Portland, OR 97267		Improvement Value Per Sq. Ft.		$24.69		**Total**	2,000	33.3%	$ 9.00	0	0	0	0
	6,000 SF RBA		Land size		9,868									
			Improvement to Land Ratio		1.01									
H	***Unknown Name***	Open Corridor	Land Value		$168,886	1,330	**Direct**	0	0.0%	$ -	0	0	0	0
	14751 SE McLoughlin Blvd		Improvement Value		$141,590		**Sublet**	0	0.0%	$ -	0	0	0	0
	Milwaukie, OR 97267		Improvement Value Per Sq. Ft.		$106.46		**Total**	0	0.0%	$ -	0	0	0	0
	1,330 SF RBA		Land size		9,903									
			Improvement to Land Ratio		1.19									
I	***Oak Grove Market Center***	Open Corridor	Land Value		$2,285,556	97,197	**Direct**	5,200	5.3%	$ 16.35	0	0	-900	-900
	15099 SE McLoughlin Blvd		Improvement Value		$10,796,470		**Sublet**	0	0.0%	$ -	0	0	0	0
	Milwaukie, OR 97267		Improvement Value Per Sq. Ft.		$111.08		**Total**	5,200	5.3%	$ 16.35	0	0	-900	-900
	97,197 SF RBA		Land size		277,051									
			Improvement to Land Ratio		0.21									
J	***Unknown Name***	Open Corridor	Land Value		$375,390	4,500	**Direct**	0	0.0%	$ -	0	0	0	0
	15300 SE McLoughlin Blvd		Improvement Value		$157,920		**Sublet**	0	0.0%	$ -	0	0	0	0
	Milwaukie, OR 97267		Improvement Value Per Sq. Ft.		$35.09		**Total**	0	0.0%	$ -	0	0	0	0
	4,500 SF RBA		Land size		27,382									
			Improvement to Land Ratio		2.38									
K	***Ace Hardware***	Open Corridor	Land Value	na		18,000	**Direct**	0	0.0%	$ -	0	0	0	0
	15530 SE McLoughlin Blvd		Improvement Value	na			**Sublet**	0	0.0%	$ -	0	0	0	0
	Milwaukie, OR 97267		Improvement Value Per Sq. Ft.	na			**Total**	0	0.0%	$ -	0	0	0	0
	18,000 SF RBA		Land size	na										
			Improvement to Land Ratio	na										
L	***Pep Boys***	Open Corridor	Land Value	na		20,215	**Direct**	20,215	100.0%	$ 10.00	0	0	0	0
	15574 SE McLoughlin Blvd		Improvement Value	na			**Sublet**	0	0.0%	$ -	0	0	0	0
	Milwaukie, OR 97267		Improvement Value Per Sq. Ft.	na			**Total**	20,215	100.0%	$ 10.00	0	0	0	0
	20,215 SF RBA		Land size	na										
			Improvement to Land Ratio	na										
M	***Twin Oaks Center***	Open Corridor	Land Value		$996,291	44,000	**Direct**	13,164	29.9%	$ 11.00	1,836	1,836	1,836	-9,164
	16025 SE McLoughlin Blvd		Improvement Value		$693,350		**Sublet**	0	0.0%	$ -	0	0	0	0
	Milwaukie, OR 97267		Improvement Value Per Sq. Ft.		$15.76		**Total**	13,164	29.9%	$ 11.00	1,836	1,836	1,836	-9,164
	44,000 SF RBA		Land size		132,344									
			Improvement to Land Ratio		1.44									
N	***Holly Farm Shopping Center***	Open Corridor	Land Value		$3,019,000	115,707	**Direct**	80,864	69.9%	$ 11.18	0	0	0	-42,000
	16074 SE McLoughlin Blvd		Improvement Value		$5,917,000		**Sublet**	0	0.0%	$ -	0	0	0	0
	Milwaukie, OR 97267		Improvement Value Per Sq. Ft.		$51.14		**Total**	80,864	69.9%	$ 11.18	0	0	0	-42,000
	115,707 SF RBA		Land size		422,526									
			Improvement to Land Ratio		0.51									
O	***McLoughlin Plaza***	Open Corridor	Land Value		$1,843,143	64,100	**Direct**	23,600	36.8%	$ 12.00	0	0	-23,600	-23,600
	16234-16252 SE McLoughlin		Improvement Value		$1,309,550		**Sublet**	0	0.0%	$ -	0	0	0	0
	Portland, OR 97267		Improvement Value Per Sq. Ft.		$20.43		**Total**	23,600	36.8%	$ 12.00	0	0	-23,600	-23,600
	64,100 SF RBA		Land size		263,409									
			Improvement to Land Ratio		1.41									
P	***Riverwood Place***	Open Corridor	Land Value		$512,020	13,200	**Direct**	0	0.0%	$ -	0	0	0	0
	17185 SE McLoughlin Blvd		Improvement Value		$91,690		**Sublet**	0	0.0%	$ -	0	0	0	0
	Oak Grove, OR 97267		Improvement Value Per Sq. Ft.		$6.95		**Total**	0	0.0%	$ -	0	0	0	0
	13,200 SF RBA		Land size		52,805									
			Improvement to Land Ratio		5.58									
Q	***Hollywood Plaza***	Open Corridor	Land Value		$586,812	9,106	**Direct**	5,068	55.7%	$ 10.93	0	0	0	0
	17405 SE McLoughlin Blvd		Improvement Value		$1,096,360		**Sublet**	0	0.0%	$ -	0	0	0	0
	Milwaukie, OR 97267		Improvement Value Per Sq. Ft.		$120.40		**Total**	5,068	55.7%	$ 10.93	0	0	0	0
	9,106 SF RBA		Land size		61,678									
			Improvement to Land Ratio		0.54									
R	***Jennings Plaza***	Open Corridor	Land Value		$488,196	25,532	**Direct**	0	0.0%	$ -	0	0	0	0
	18010-18094 SE McLoughlin		Improvement Value		$1,771,900		**Sublet**	0	0.0%	$ -	0	0	0	0
	Milwaukie, OR 97267		Improvement Value Per Sq. Ft.		$69.40		**Total**	0	0.0%	$ -	0	0	0	0
	25,532 SF RBA		Land size		53,304									
			Improvement to Land Ratio		0.28									
S	***Castle Restaurant***	Open Corridor	Land Value		$279,744	6,000	**Direct**	0	0.0%	$ -	0	0	0	0
	19201 SE River Rd		Improvement Value		$474,120		**Sublet**	0	0.0%	$ -	0	0	0	0
	Milwaukie, OR 97267		Improvement Value Per Sq. Ft.		$79.02		**Total**	0	0.0%	$ -	0	0	0	0
	6,000 SF RBA		Land size		81,782									
			Improvement to Land Ratio		0.59									
	total land		**Mcloughlin Boulevard Corridor**			951,676	**Direct**	243,565 #	25.6%	$ 13.19 #	1,836	1,836	-24,014	-66,746
	2,153,954		Total Land Value		$14,844,769		**Sublet**	0 #	0.0%	$ - #	0	0	0	0
			Total Improvement Value		$32,342,720		**Total**	**243,565 #**	**25.6%**	**$ 13.19 #**	**1,836**	**1,836**	**-24,014**	**-66,746**
	land/ sq ft		Average Improvement/ square ft.		$49.43									
	$6.89		Average Land/ square ft.		$6.89									
			Improvement to Land Ratio		0.45898332									

82nd Avenue Corridor



Building Name/ Location	Corridor Type	Assesment Statistics		Rentable S.F.		Vacant S.F.	Vacancy Rate	Quoted Rent	Leasing Activity QTD	Leasing Activity YTD	Net Absorption QTD	Net Absorption YTD
82nd Avenue Corridor			34									
A ***Unknown Name***	Open Corridor	Land Value	$102,700	900	**Direct**	0	0.0%	$ -	0	0	0	0
5207 SE 80th Ave		Improvement Value	$82,400		**Sublet**	0	0.0%	$ -	0	0	0	0
Portland, OR 97206		Improvement Value Per Sq. Ft.	$91.56		**Total**	0	0.0%	$ -	0	0	0	0
900 SF RBA		Land size	7,590									
		Improvement to Land Ratio	1.25									
B ***Unknown Name***	Open Corridor	Land Value	na	115,000	**Direct**	0	0.0%	$ -	0	0	0	0
82nd Ave @ Johnson Creek		Improvement Value	na		**Sublet**	0	0.0%	$ -	0	0	0	0
Portland, OR 97266		Improvement Value Per Sq. Ft.	na		**Total**	0	0.0%	$ -	0	0	0	0
115,000 SF RBA		Land size	na									
		Improvement to Land Ratio	na									
C ***North Parcel***	Open Corridor	Land Value	$10,940	3,950	**Direct**	0	0.0%	$ -	0	0	0	0
SE 82nd @ Schiller		Improvement Value	$237,510		**Sublet**	0	0.0%	$ -	0	0	0	0
Portland, OR 97266		Improvement Value Per Sq. Ft.	$60.13		**Total**	0	0.0%	$ -	0	0	0	0
3,950 SF RBA		Land size	12,096									
		Improvement to Land Ratio	0.05									
D ***Unknown Name***	Open Corridor	Land Value	na	92,183	**Direct**	0	0.0%	$ -	0	8,214	7,000	7,000
SE 82nd Ave @ SE Johnson		Improvement Value	na		**Sublet**	0	0.0%	$ -	0	0	0	0
Portland, OR 97266		Improvement Value Per Sq. Ft.	na		**Total**	0	0.0%	$ -	0	8,214	7,000	7,000
92,183 SF RBA		Land size	na									
		Improvement to Land Ratio	na									
E ***Unknown name***	Open Corridor	Land Value	$152,950	4,628	**Direct**	0	0.0%	$ -	0	0	0	0
110 SE 82nd Ave		Improvement Value	$245,340		**Sublet**	0	0.0%	$ -	0	0	0	0
Portland, OR 97216		Improvement Value Per Sq. Ft.	$53.01		**Total**	0	0.0%	$ -	0	0	0	0
4,628 SF RBA		Land size	9,500									
		Improvement to Land Ratio	0.62									

F	***Unknown Name***	Open Corridor	Land Value	$362,250	15,000	**Direct**	0	0.0%	$ -	0	0	0	0
	707 SE 82nd Ave		Improvement Value	$385,280		**Sublet**	0	0.0%	$ -	0	0	0	0
	Portland, OR 97216		Improvement Value Per Sq. Ft.	$25.69		**Total**	0	0.0%	$ -	0	0	0	0
	15,000 SF RBA		Land size	19,904									
			Improvement to Land Ratio	0.94									
G	***Unknown Name***	Open Corridor	Land Value	$708,400	17,000	**Direct**	0	0.0%	$ -	0	0	0	0
	1134 SE 82nd Ave		Improvement Value	$951,060		**Sublet**	0	0.0%	$ -	0	0	0	0
	Portland, OR 97216		Improvement Value Per Sq. Ft.	$55.94		**Total**	0	0.0%	$ -	0	0	0	0
	17,000 SF RBA		Land size	44,000									
			Improvement to Land Ratio	0.74									
H	***Unknown Name***	Open Corridor	Land Value	$357,670	11,500	**Direct**	0	0.0%	$ -	0	11,500	0	0
	3232 SE 82nd Ave		Improvement Value	$467,600		**Sublet**	0	0.0%	$ -	0	0	0	0
	Portland, OR 97266		Improvement Value Per Sq. Ft.	$40.66		**Total**	0	0.0%	$ -	0	11,500	0	0
	11,500 SF RBA		Land size	26,136									
			Improvement to Land Ratio	0.76									
I	***Eastport Plaza Shopping***	Open Corridor	Land Value	$6,011,730	500,000	**Direct**	3,500	0.7%	$ 24.00	0	7,000	5,200	7,000
	3850-4328 SE 82nd Ave		Improvement Value	$628,096		**Sublet**	0	0.0%	$ -	0	0	0	0
	Portland, OR 97266		Improvement Value Per Sq. Ft.	$1.26		**Total**	3,500	0.7%	$ 24.00	0	7,000	5,200	7,000
	500,000 SF RBA		Land size	430,427									
			Improvement to Land Ratio	9.57									
J	***Walgreen's***	Open Corridor	Land Value	$936,710	16,855	**Direct**	0	0.0%	$ -	0	0	0	0
	4325 SE 82nd Ave		Improvement Value	$123,970		**Sublet**	0	0.0%	$ -	0	0	0	0
	Portland, OR 97266		Improvement Value Per Sq. Ft.	$7.36		**Total**	0	0.0%	$ -	0	0	0	0
	16,855 SF RBA		Land size	44,605									
			Improvement to Land Ratio	7.56									
K	***Unknown Name***	Open Corridor	Land Value	$527,426	7,500	**Direct**	0	0.0%	$ -	0	0	0	0
	4616 SE 82nd Ave		Improvement Value	$605,480		**Sublet**	0	0.0%	$ -	0	0	0	0
	Portland, OR 97266		Improvement Value Per Sq. Ft.	$80.73		**Total**	0	0.0%	$ -	0	0	0	0
	7,500 SF RBA		Land size	37,673									
			Improvement to Land Ratio	0.87									
L	***Unknown Name***	Open Corridor	Land Value	$120,250	4,500	**Direct**	0	0.0%	$ -	0	0	0	0
	4800-4812 SE 82nd Ave		Improvement Value	$0		**Sublet**	0	0.0%	$ -	0	0	0	0
	Portland, OR 97266		Improvement Value Per Sq. Ft.	$0.00		**Total**	0	0.0%	$ -	0	0	0	0
	4,500 SF RBA		Land size	7,469									
			Improvement to Land Ratio	na									
M	***82nd Avenue Car Lot***	Open Corridor	Land Value	$284,620	3,000	**Direct**	0	0.0%	$ -	0	0	0	0
	6135 SE 82nd Ave		Improvement Value	$118,630		**Sublet**	0	0.0%	$ -	0	0	0	0
	Portland, OR 97266		Improvement Value Per Sq. Ft.	$39.54		**Total**	0	0.0%	$ -	0	0	0	0
	3,000 SF RBA		Land size	20,330									
			Improvement to Land Ratio	2.40									
N	***Unknown Name***	Open Corridor	Land Value	$44,000	1,120	**Direct**	0	0.0%	$ -	0	0	0	0
	6805 SE 82nd Ave		Improvement Value	$52,050		**Sublet**	0	0.0%	$ -	0	0	0	0
	Portland, OR 97266		Improvement Value Per Sq. Ft.	$46.47		**Total**	0	0.0%	$ -	0	0	0	0
	1,120 SF RBA		Land size	5,500									
			Improvement to Land Ratio	0.85									
O	***Unknown Name***	Open Corridor	Land Value	$493,490	7,340	**Direct**	0	0.0%	$ -	0	0	0	0
	6850-6920 SE 82nd Ave		Improvement Value	$108,920		**Sublet**	0	0.0%	$ -	0	0	0	0
	Portland, OR 97266		Improvement Value Per Sq. Ft.	$14.84		**Total**	0	0.0%	$ -	0	0	0	0
	7,340 SF RBA		Land size	43,108									
			Improvement to Land Ratio	4.53									
P	***Unknown Name***	Open Corridor	Land Value	$322,150	4,400	**Direct**	0	0.0%	$ -	0	0	0	0
	8045 SE 82nd Ave		Improvement Value	$314,500		**Sublet**	0	0.0%	$ -	0	0	0	0
	Portland, OR 97266		Improvement Value Per Sq. Ft.	$71.48		**Total**	0	0.0%	$ -	0	0	0	0
	4,400 SF RBA		Land size	53,300									
			Improvement to Land Ratio	1.02									
Q	***Unknown Name***	Open Corridor	Land Value	$154,001	10,500	**Direct**	0	0.0%	$ -	0	0	0	0
	9515 SE 82nd Ave		Improvement Value	$459,000		**Sublet**	0	0.0%	$ -	0	0	0	0
	Portland, OR 97266		Improvement Value Per Sq. Ft.	$43.71		**Total**	0	0.0%	$ -	0	0	0	0
	10,500 SF RBA		Land size	27,321									
			Improvement to Land Ratio	0.34									
R	***Unknown Name***	Open Corridor	Land Value	$111,122	7,000	**Direct**	0	0.0%	$ -	0	0	0	0
	9800 SE 82nd Ave		Improvement Value	$201,230		**Sublet**	0	0.0%	$ -	0	0	0	0
	Portland, OR 97266		Improvement Value Per Sq. Ft.	$28.75		**Total**	0	0.0%	$ -	0	0	0	0
	7,000 SF RBA		Land size	10,019									
			Improvement to Land Ratio	0.55									
S	***Unknown Name***	Open Corridor	Land Value	$111,987	2,000	**Direct**	0	0.0%	$ -	0	0	0	0
	9801 SE 82nd Ave		Improvement Value	$36,720		**Sublet**	0	0.0%	$ -	0	0	0	0
	Portland, OR 97266		Improvement Value Per Sq. Ft.	$18.36		**Total**	0	0.0%	$ -	0	0	0	0
	2,000 SF RBA		Land size	9,967									
			Improvement to Land Ratio	3.05									
T	***Southgate Shopping Center***	Open Corridor	Land Value	$1,412,452	51,977	**Direct**	0	0.0%	$ -	0	0	0	0
	10409 SE 82nd Ave		Improvement Value	$1,529,410		**Sublet**	0	0.0%	$ -	0	0	0	0
	Portland, OR 97266		Improvement Value Per Sq. Ft.	$29.42		**Total**	0	0.0%	$ -	0	0	0	0
	51,977 SF RBA		Land size	163,523									

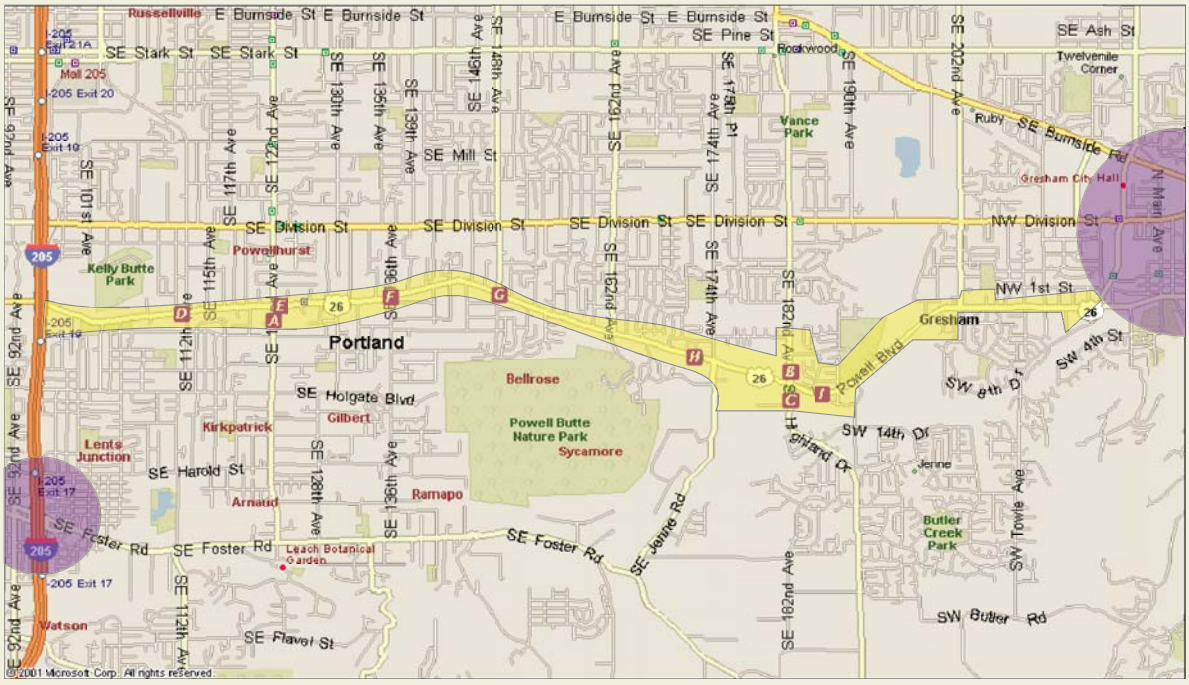
			Improvement to Land Ratio	0.92										
U	***82nd Avenue Auto Center***	Open Corridor	Land Value	$530,302	15,000	**Direct**	4,830	32.2%	$ 17.00	0	0	0	0
	10721 SE 82nd Ave		Improvement Value	$0		**Sublet**	0	0.0%	$ -	0		4,820	4,656
	Portland, OR 97266		Improvement Value Per Sq. Ft.	$0.00		**Total**	4,830	32.2%	$ 17.00	0	0	4,820	4,656
	15,000 SF RBA		Land size	24,411									
			Improvement to Land Ratio	na									
V	***Unknown Name***	Open Corridor	Land Value	$511,832	22,192	**Direct**	0	0.0%	$ -	0	2,556	0	2,556
	10822 SE 82nd Ave		Improvement Value	$3,590,400		**Sublet**	0	0.0%	$ -	0	0	0	0
	Clackamas, OR 97266		Improvement Value Per Sq. Ft.	$161.79		**Total**	0	0.0%	$ -	0	2,556	0	2,556
	22,192 SF RBA		Land size	71,785									
			Improvement to Land Ratio	0.14									
W	***Ross Center***	Regional Center	Land Value	$5,438,167	132,500	**Direct**	6,045	4.6%	$ 16.50	1,167	1,167	0	-1,167
	11211 SE 82nd Ave		Improvement Value	$10,260,930		**Sublet**	0	0.0%	$ -	0	0	0	0
	Portland, OR 97266		Improvement Value Per Sq. Ft.	$77.44		**Total**	6,045	4.6%	$ 16.50	1,167	1,167	0	-1,167
	132,500 SF RBA		Land size	298,664									
			Improvement to Land Ratio	0.53									
X	***Clackamas Square***	Regional Center	Land Value	$5,093,379	140,000	**Direct**	3,200	2.3%	$ 17.00	0	1,588	0	7,988
	11250-11390 SE 82nd Ave		Improvement Value	$4,103,460		**Sublet**	0	0.0%	$ -	0	0	0	0
	Portland, OR 97266		Improvement Value Per Sq. Ft.	$29.31		**Total**	3,200	2.3%	$ 17.00	0	1,588	0	7,988
	140,000 SF RBA		Land size	208,274									
			Improvement to Land Ratio	1.24									
Y	***Sherwin Williams Center***	Regional Center	Land Value	$574,069	9,829	**Direct**	4,800	48.8%	$ 16.00	0	0	0	0
	11475 SE 82nd Ave		Improvement Value	$815,620		**Sublet**	0	0.0%	$ -	0	0	0	0
	Portland, OR 97266		Improvement Value Per Sq. Ft.	$82.98		**Total**	4,800	48.8%	$ 16.00	0	0	0	0
	9,829 SF RBA		Land size	27,651									
			Improvement to Land Ratio	0.70									
Z	***Clackamas Town Center***	Regional Center	Land Value	$13,318,471	1,212,029	**Direct**	0	0.0%	$ -	0	0	0	0
	12000 SE 82nd Ave		Improvement Value	$477,740		**Sublet**	0	0.0%	$ -	0	0	0	0
	Portland, OR 97266		Improvement Value Per Sq. Ft.	$0.39		**Total**	0	0.0%	$ -	0	0	0	0
	1,212,029 SF RBA		Land size	1,284,729									
			Improvement to Land Ratio	27.88									
1	***Unknown Name***	Regional Center	Land Value	$677,322	18,755	**Direct**	0	0.0%	$ -	0	0	0	0
	12670 SE 82nd Ave		Improvement Value	$1,541,990		**Sublet**	0	0.0%	$ -	0	0	0	0
	Portland, OR 97267		Improvement Value Per Sq. Ft.	$82.22		**Total**	0	0.0%	$ -	0	0	0	0
	18,755 SF RBA		Land size	46,503									
			Improvement to Land Ratio	0.44									
2	***Sunnybrook Center***	Open Corridor	Land Value	$672,082	31,995	**Direct**	5,008	15.7%	$ 22.00	0	0	0	-5,008
	13011-13061 SE 84th Ave		Improvement Value	$134,165		**Sublet**	0	0.0%	$ -	0	0	0	0
	Portland, OR 97266		Improvement Value Per Sq. Ft.	$4.19		**Total**	5,008	15.7%	$ 22.00	0	0	0	-5,008
	31,995 SF RBA		Land size	60,589									
			Improvement to Land Ratio	5.01									
3	***Woodworks NW***	Regional Center	Land Value	$350,271	7,320	**Direct**	0	0.0%	$ -	0	0	0	0
	8050 SE Causey Ave		Improvement Value	$562,950		**Sublet**	0	0.0%	$ -	0	0	0	0
	Portland, OR 97222		Improvement Value Per Sq. Ft.	$76.91		**Total**	0	0.0%	$ -	0	0	0	0
	7,320 SF RBA		Land size	26,273									
			Improvement to Land Ratio	0.62									
4	***Tom Peterson Furniture Store***	Open Corridor	Land Value	$582,060	13,504	**Direct**	0	0.0%	$ -	0	0	0	0
	8130-8136 SE Foster Rd		Improvement Value	$570,700		**Sublet**	0	0.0%	$ -	0	0	0	0
	Portland, OR 97206		Improvement Value Per Sq. Ft.	$42.26		**Total**	0	0.0%	$ -	0	0	0	0
	13,504 SF RBA		Land size	23,000									
			Improvement to Land Ratio	1.02									
5	***LaRog Jewelry Bldg***	Open Corridor	Land Value	na	850	**Direct**	0	0.0%	$ -	0	0	0	0
	8130-8136 SE Foster Rd		Improvement Value	na		**Sublet**	0	0.0%	$ -	0	0	0	0
	Portland, OR 97206		Improvement Value Per Sq. Ft.	na		**Total**	0	0.0%	$ -	0	0	0	0
	850 SF RBA		Land size	na									
			Improvement to Land Ratio	na									
6	***Unknown Name***	Open Corridor	Land Value	$210,000	12,100	**Direct**	0	0.0%	$ -	0	0	0	0
	8030 SE Harold St		Improvement Value	$376,470		**Sublet**	0	0.0%	$ -	0	0	0	0
	Portland, OR 97206		Improvement Value Per Sq. Ft.	$31.11		**Total**	0	0.0%	$ -	0	0	0	0
	12,100 SF RBA		Land size	15,000									
			Improvement to Land Ratio	0.56									
7	***Unknown Name***	Open Corridor	Land Value	$425,980	23,661	**Direct**	11,000	46.5%	$ 20.00	0	7,510	0	12,661
	8220 SE Harrison St		Improvement Value	$237,100		**Sublet**	0	0.0%	$ -	0	0	0	0
	Portland, OR 97216		Improvement Value Per Sq. Ft.	$10.02		**Total**	11,000	46.5%	$ 20.00	0	7,510	0	12,661
	23,661 SF RBA		Land size	53,248									
			Improvement to Land Ratio	1.80									
8	***Unknown Name***	Open Corridor	Land Value	$542,510	15,150	**Direct**	0	0.0%	$ -	0	0	0	0
	8033 SE Holgate Blvd		Improvement Value	$521,750		**Sublet**	0	0.0%	$ -	0	0	0	0
	Portland, OR 97206		Improvement Value Per Sq. Ft.	$34.44		**Total**	0	0.0%	$ -	0	0	0	0
	15,150 SF RBA		Land size	62,726									
			Improvement to Land Ratio	1.04									

9	***Unknown Name***	Open Corridor	Land Value	$267,980	6,000	**Direct**	6,000	100.0%	$	9.00	0	0	0	0
	8225 SE Insley St		Improvement Value	$370,690		**Sublet**	0	0.0%	$	-	0	0	0	0
	Portland, OR 97266		Improvement Value Per Sq. Ft.	$61.78		**Total**	6,000	100.0%	$	9.00	0	0	0	0
	6,000 SF RBA		Land size	17,400										
			Improvement to Land Ratio	0.72										
10	***Powell Professional Center***	Open Corridor	Land Value	$16,421	5,000	**Direct**	4,800	96.0%	$	-	0	0	0	0
	8028 SE Powell Blvd		Improvement Value	$0		**Sublet**	0	0.0%	$	-	0	0	0	0
	Portland, OR 97206		Improvement Value Per Sq. Ft.	$0.00		**Total**	4,800	96.0%	$	-	0	0	0	0
	5,000 SF RBA		Land size	0										
			Improvement to Land Ratio	na										
11	***Unknown Name***	Open Corridor	Land Value	$778,810	13,916	**Direct**	0	0.0%	$	-	0	0	0	0
	8201 SE Powell Blvd		Improvement Value	$1,519,610		**Sublet**	0	0.0%	$	-	0	0	0	0
	Portland, OR 97266		Improvement Value Per Sq. Ft.	$109.20		**Total**	0	0.0%	$	-	0	0	0	0
	13,916 SF RBA		Land size	37,626										
			Improvement to Land Ratio	0.51										

82nd Avenue Corridor	
Total Land Value	$42,214,504
Total Improvement Value	$31,630,771
Average Improvement/ square ft.	$13.56
Average Land/ square ft.	$13.07
Improvement to Land Ratio	1.334602435

					2,556,154	**Direct**	49,183	# 1.9%	$	21.20	# 1,167	39,535	12,200	31,030
						Sublet	0	# 0.0%	$	-	# 0	0	4,820	4,656
						Total	**49,183**	**# 1.9%**	**$**	**21.20**	**# 1,167**	**39,535**	**17,020**	**35,686**

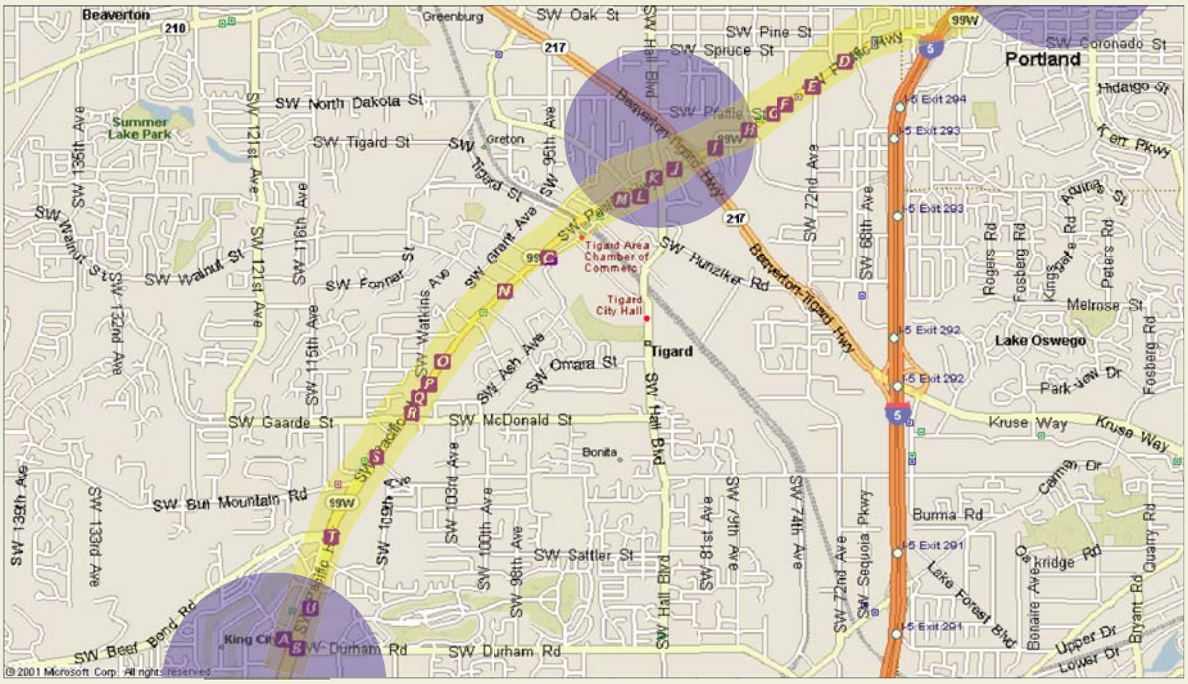
Powell Boulevard Corridor



Building Name/ Location	Corridor Type	Assesment Statistics		Rentable S.F.		Vacant S.F.	Vacancy Rate	Quoted Rent	Leasing Activity QTD	Leasing Activity YTD	Net Absorption QTD	Net Absorption YTD
Powell Boulevard Corridor			7									
A ***Powell Villa Center***	Open Corridor	Land Value	$1,420,350	63,607	**Direct**	0	0.0%	$ -	0	0	0	7,664
3660 SE 122nd Ave		Improvement Value	$3,252,250		**Sublet**	0	0.0%	$ -	0	0	0	0
Portland, OR 97236		Improvement Value Per Sq. Ft.	$51.13		**Total**	0	0.0%	$ -	0	0	0	7,664
63,607 SF RBA		Land size	89,396									
		Improvement to Land Ratio	0.44									
B ***Unknown Name***	Open Corridor	Land Value	$337,590	6,400	**Direct**	3,200	50.0%	$ 15.00	0	0	0	0
4273 SE 182nd Blvd		Improvement Value	$78,560		**Sublet**	0	0.0%	$ -	0	0	0	0
Portland, OR 97202		Improvement Value Per Sq. Ft.	$12.28		**Total**	3,200	50.0%	$ 15.00	0	0	0	0
6,400 SF RBA		Land size	31,363									
		Improvement to Land Ratio	4.30									
C ***Gresham Auto***	Open Corridor	Land Value	$273,920	5,372	**Direct**	0	0.0%	$ -	0	0	5,732	5,732
1100 SW Highland Dr		Improvement Value	$218,530		**Sublet**	0	0.0%	$ -	0	0	0	0
Gresham, OR 97080		Improvement Value Per Sq. Ft.	$40.68		**Total**	0	0.0%	$ -	0	0	5,732	5,732
5,372 SF RBA		Land size	36,530									
		Improvement to Land Ratio	1.25									
D ***Unknown Name***	Open Corridor	Land Value	$184,960	6,000	**Direct**	0	0.0%	$ -	0	0	0	0
11140 SE Powell Blvd		Improvement Value	$126,980		**Sublet**	0	0.0%	$ -	0	0	0	0
Portland, OR 97266		Improvement Value Per Sq. Ft.	$21.16		**Total**	0	0.0%	$ -	0	0	0	0
6,000 SF RBA		Land size	20,715									
		Improvement to Land Ratio	1.46									
E ***Unknown Name***	Open Corridor	Land Value	$85,870	4,752	**Direct**	0	0.0%	$ -	0	0	0	0
12300-12306 SE Powell Blvd		Improvement Value	$0		**Sublet**	0	0.0%	$ -	0	0	0	0
Portland, OR 97236		Improvement Value Per Sq. Ft.	$0.00		**Total**	0	0.0%	$ -	0	0	0	0
4,752 SF RBA		Land size	19,662									
		Improvement to Land Ratio	na									

F	***Unknown Name***	Open Corridor	Land Value	$67,480	1,100	**Direct**	0	0.0%	$ -		0	0	0	0
	13607 SE Powell Blvd		Improvement Value	$125,890		**Sublet**	0	0.0%	$ -		0	0	0	0
	Portland, OR 97236		Improvement Value Per Sq. Ft.	$114.45		**Total**	0	0.0%	$ -		0	0	0	0
	1,100 SF RBA		Land size	5,851										
			Improvement to Land Ratio	0.54										
G	***Unknown Name***	Open Corridor	Land Value	$283,850	17,000	**Direct**	0	0.0%	$ -		0	0	0	0
	14802-14910 SE Powell Blvd		Improvement Value	$1,301,840		**Sublet**	0	0.0%	$ -		0	0	0	0
	Portland, OR 97236		Improvement Value Per Sq. Ft.	$76.58		**Total**	0	0.0%	$ -		0	0	0	0
	17,000 SF RBA		Land size	73,616										
			Improvement to Land Ratio	0.22										
H	***Meadowland Shopping Center***	Open Corridor	Land Value	na	92,000	**Direct**	4,069	4.4%	$ 15.00		0	731	0	731
	17112 SE Powell Blvd		Improvement Value	na		**Sublet**	0	0.0%	$ -		0	0	0	0
	Portland, OR 97236		Improvement Value Per Sq. Ft.	na		**Total**	4,069	4.4%	$ 15.00		0	731	0	731
	92,000 SF RBA		Land size	na										
			Improvement to Land Ratio	na										
I	***Unknown Name***	Open Corridor	Land Value	na	12,000	**Direct**	0	0.0%	$ -		0	0	0	0
	1111 SE Powell Rd		Improvement Value	na		**Sublet**	0	0.0%	$ -		0	0	0	0
	Gresham, OR 97030		Improvement Value Per Sq. Ft.	na		**Total**	0	0.0%	$ -		0	0	0	0
	12,000 SF RBA		Land size	na										
			Improvement to Land Ratio	na										
		Powell Boulevard Corridor			208,231	**Direct**	7,269	# 3.5%	$ 15.00	#	0	731	5,732	14,127
		Total Land Value		$2,654,020		**Sublet**	0	# 0.0%	$ -	#	0	0	0	0
		Total Improvement Value		$5,104,050		**Total**	**7,269**	**# 3.5%**	**$ 15.00**	**#**	**0**	**731**	**5,732**	**14,127**
		Average Improvement/ square ft.		$51.31										
		Average Land/ square ft.		$9.58										
		Improvement to Land Ratio		0.519983151										

Pacific Highway Corridor



Building Name/ Location	Corridor Type	Assesment Statistics		Rentable S.F.		Vacant S.F.	Vacancy Rate	Quoted Rent	Leasing Activity QTD	Leasing Activity YTD	Net Absorption QTD	Net Absorption YTD
Pacific Highway Corridor			21									
A ***Unknown Name***	Town Center	Land Value	$555,390	1,871	**Direct**	0	0.0%	$ -	0	0	0	7,664
15900 SW 116th Ave		Improvement Value	$1,061,240		**Sublet**	0	0.0%	$ -	0	0	0	0
Portland, OR 97224		Improvement Value Per Sq. Ft.	$567.20		**Total**	0	0.0%	$ -	0	0	0	7,664
1,871 SF RBA		Land size	42,947									
		Improvement to Land Ratio	0.52									
B ***Willowbrook Business Park***	Town Center	Land Value	$2,587,250	50,635	**Direct**	6,035	11.9%	$ 13.84	0	1,200	1,200	1,200
11515-11545 Durham Rd		Improvement Value	$3,049,540		**Sublet**	0	0.0%	$ -	0	0	0	0
Portland, OR 97224		Improvement Value Per Sq. Ft.	$60.23		**Total**	6,035	11.9%	$ 13.84	0	1,200	1,200	1,200
50,635 SF RBA		Land size	236,393									
		Improvement to Land Ratio	0.85									
C ***Unknown Name***	Open Corridor	Land Value	$174,830	14,021	**Direct**	0	0.0%	$ -	0	0	0	5,732
12564 SW Main St		Improvement Value	$284,470		**Sublet**	0	0.0%	$ -	0	0	0	0
Tigard, OR 97223		Improvement Value Per Sq. Ft.	$20.29		**Total**	0	0.0%	$ -	0	0	0	5,732
14,021 SF RBA		Land size	25,905									
		Improvement to Land Ratio	0.61									
D ***Pacific Terrace***	Open Corridor	Land Value	$1,193,760	39,798	**Direct**	13,349	33.5%	$ 11.39	0	10,315	-1,789	2,249
11525-11539 SW Pacific Hwy		Improvement Value	$2,301,330		**Sublet**	0	0.0%	$ -	0	0	0	0
Tigard, OR 97223		Improvement Value Per Sq. Ft.	$57.83		**Total**	13,349	33.5%	$ 11.39	0	10,315	-1,789	2,249
38,789 SF RBA		Land size	89,103									
		Improvement to Land Ratio	0.52									
E ***Unknown Name***	Open Corridor	Land Value	$32,150	6,560	**Direct**	0	0.0%	$ -	0	0	0	0
11606 SW Pacific Hwy		Improvement Value	$272,740		**Sublet**	0	0.0%	$ -	0	0	0	0
Tigard, OR 97223		Improvement Value Per Sq. Ft.	$41.58		**Total**	0	0.0%	$ -	0	0	0	0
6,560 SF RBA		Land size	14,666									
		Improvement to Land Ratio	na									

F	***Auto Stop Center***	Open Corridor	Land Value	$435,160	15,000	**Direct**	0	0.0%	$ -	0	0	0	3,886
	11643 SW Pacific Hwy		Improvement Value	$558,110		**Sublet**	0	0.0%	$ -	0	0	0	0
	Tigard, OR 97223		Improvement Value Per Sq. Ft.	$37.21		**Total**	0	0.0%	$ -	0	0	0	3,886
	15,000 SF RBA		Land size	29,764									
			Improvement to Land Ratio	0.78									
G	***Unknown Name***	Open Corridor	Land Value	$219,930	10,000	**Direct**	0	0.0%	$ -	0	0	0	0
	11654 SW Pacific Hwy		Improvement Value	$177,580		**Sublet**	0	0.0%	$ -	0	0	0	0
	Tigard, OR 97223		Improvement Value Per Sq. Ft.	$17.76		**Total**	0	0.0%	$ -	0	0	0	0
	10,000 SF RBA		Land size	15,426									
			Improvement to Land Ratio	1.24									
H	***Pacific Crossroads***	Town Center	Land Value	$1,592,750	39,340	**Direct**	1,377	3.5%	$ 19.00	0	731	0	2,400
	11705 SW Pacific Hwy		Improvement Value	$4,578,860		**Sublet**	0	0.0%	$ -	0	0	0	0
	Tigard, OR 97223		Improvement Value Per Sq. Ft.	$116.39		**Total**	1,377	3.5%	$ 19.00	0	731	0	2,400
	39,340 SF RBA		Land size	135,826									
			Improvement to Land Ratio	0.35									
I	***Cash & Carry***	Town Center	Land Value	$749,640	32,380	**Direct**	0	0.0%	$ -	0	9,772	0	9,722
	11745 SW Pacific Hwy		Improvement Value	$4,135,920		**Sublet**	9,772	30.2%	$ 10.00	0	0	0	-9,722
	Tigard, OR 97223		Improvement Value Per Sq. Ft.	$127.73		**Total**	9,772	30.2%	$ 10.00	0	9,772	0	0
	32,380 SF RBA		Land size	107,798									
			Improvement to Land Ratio	0.18									
J	***Unknown Name***	Town Center	Land Value	$622,480	6,000	**Direct**	0	0.0%	$ -	0	0	0	0
	11847 SW Pacific Hwy		Improvement Value	$301,650		**Sublet**	0	0.0%	$ -	0	0	0	0
	Tigard, OR 97223		Improvement Value Per Sq. Ft.	$50.28		**Total**	0	0.0%	$ -	0	0	0	0
	6,000 SF RBA		Land size	20,251									
			Improvement to Land Ratio	2.06									
K	***Unknown Name***	Town Center	Land Value	$3,004,900	117,398	**Direct**	4,988	4.2%	$ 11.94	0	1,939	0	450
	11945 SW Pacific Hwy		Improvement Value	$4,808,200		**Sublet**	0	0.0%	$ -	0	0	0	0
	Tigard, OR 97223		Improvement Value Per Sq. Ft.	$40.96		**Total**	4,988	4.2%	$ 11.94	0	1,939	0	450
	117,398 SF RBA		Land size	285,090									
			Improvement to Land Ratio	0.62									
L	***Unknown Name***	Town Center	Land Value	$194,050	3,288	**Direct**	3,288	100.0%	$ 22.81	0	0	0	-3,288
	11975 SW Pacific Hwy		Improvement Value	$188,230		**Sublet**	0	0.0%	$ -	0	0	0	0
	Tigard, OR 97223		Improvement Value Per Sq. Ft.	$57.25		**Total**	3,288	100.0%	$ 22.81	0	0	0	-3,288
	3,288 SF RBA		Land size	12,188									
			Improvement to Land Ratio	1.03									
M	***Unknown Name***	Town Center	Land Value	$337,800	7,500	**Direct**	0	0.0%	$ -	0	7,500	0	7,500
	11993 SW Pacific Hwy		Improvement Value	$444,620		**Sublet**	0	0.0%	$ -	0	0	0	0
	Tigard, OR 97223		Improvement Value Per Sq. Ft.	$59.28		**Total**	0	0.0%	$ -	0	7,500	0	7,500
	7,500 SF RBA		Land size	22,104									
			Improvement to Land Ratio	0.76									
N	***Hudson Plaza***	Open Corridor	Land Value	$844,820	12,750	**Direct**	3,900	30.6%	$ 12.00	0	0	0	-628
	12900-12950 SW Pacific Hwy		Improvement Value	$1,417,020		**Sublet**	0	0.0%	$ -	0	0	0	0
	Tigard, OR 97223		Improvement Value Per Sq. Ft.	$111.14		**Total**	3,900	30.6%	$ 12.00	0	0	0	-628
	12,750 SF RBA		Land size	57,095									
			Improvement to Land Ratio	0.60									
O	***Tigard Marketplace***	Open Corridor	Land Value	$5,674,780	117,646	**Direct**	1,000	0.9%	$ 22.00	0	0	0	0
	13500 SW Pacific Hwy		Improvement Value	$9,397,560		**Sublet**	0	0.0%	$ -	0	0	0	0
	Tigard, OR 97223		Improvement Value Per Sq. Ft.	$79.88		**Total**	1,000	0.9%	$ 22.00	0	0	0	0
	117,646 SF RBA		Land size	505,704									
			Improvement to Land Ratio	0.60									
P	***Tigard Retail Center***	Open Corridor	Land Value	$601,120	22,275	**Direct**	1,375	6.2%	$ 13.50	0	1,650	0	0
	13701-13727 SW Pacific Hwy		Improvement Value	$1,046,560		**Sublet**	0	0.0%	$ -	0	0	0	0
	Portland, OR 97223		Improvement Value Per Sq. Ft.	$46.98		**Total**	1,375	6.2%	$ 13.50	0	1,650	0	0
	22,275 SF RBA		Land size	49,906									
			Improvement to Land Ratio	0.57									
Q	***Unknown Name***	Open Corridor	Land Value	$654,570	11000	**Direct**	1,200	10.9%	$ -	1,200	3,384	-1,200	84
	13815 SW Pacific Hwy		Improvement Value	$697,950		**Sublet**	0	0.0%	$ -	0	0	0	0
	Tigard, OR 97223		Improvement Value Per Sq. Ft.	$63.45		**Total**	1,200	10.9%	$ -	1,200	3,384	-1,200	84
	11,000 SF RBA		Land size	48,549									
			Improvement to Land Ratio	0.94									
R	***Unknown Name***	Open Corridor	Land Value	$1,516,290	24800	**Direct**	0	0.0%	$ -	0	0	0	0
	13880-13900 SW Pacific Hwy		Improvement Value	$976,530		**Sublet**	0	0.0%	$ -	0	0	0	0
	Tigard, OR 97223		Improvement Value Per Sq. Ft.	$39.38		**Total**	0	0.0%	$ -	0	0	0	0
	24,800 SF RBA		Land size	118,916									
			Improvement to Land Ratio	1.55									
S	***Unknown Name***	Open Corridor	Land Value	$839,740	20000	**Direct**	0	0.0%	$ -	0	0	0	0
	14255 SW Pacific Hwy		Improvement Value	$1,435,530		**Sublet**	0	0.0%	$ -	0	0	0	0
	Tigard, OR 97224		Improvement Value Per Sq. Ft.	$71.78		**Total**	0	0.0%	$ -	0	0	0	0
	20,000 SF RBA		Land size	73,300									
			Improvement to Land Ratio	0.58									
T	***Canterbury Square***	Open Corridor	Land Value	$239,450	80000	**Direct**	3,000	3.8%	$ 11.95	0	0	0	0
	15000 SW Pacific Hwy		Improvement Value	$414,050		**Sublet**	0	0.0%	$ -	0	0	0	0
	Portland, OR 97224		Improvement Value Per Sq. Ft.	$5.18		**Total**	3,000	3.8%	$ 11.95	0	0	0	0
	80,000 SF RBA		Land size	291,785									
			Improvement to Land Ratio	0.58									

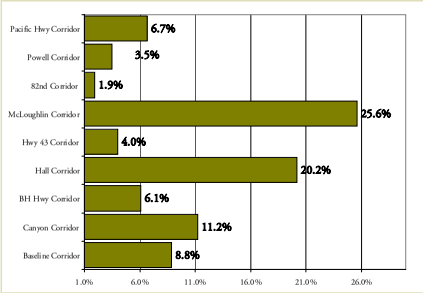
Tigard Promenade Center	Town Center	Land Value	$3,779,710	106575	**Direct**	0	0.0%	$ -		0	0	0	0
15660 SW Pacific Hwy		Improvement Value	$10,594,710		**Sublet**	0	0.0%	$ -		0	0	0	0
Portland, OR 97224		Improvement Value Per Sq. Ft.	$99.41		**Total**	0	0.0%	$ -		0	0	0	0
106,575 SF RBA		Land size	369,317										
		Improvement to Land Ratio	0.36										

Pacific Highway Corridor											
Total Land Value	$25,850,570	738,837	**Direct**	39,512	#	5.3%	$ 15.27	#	1,200	36,491	-1,789	36,971
Total Improvement Value	$48,142,400		**Sublet**	9,772	#	1.3%	$ 10.00	#	0	0	0	-9,722
Average Improvement/ square ft.	$64.04		**Total**	**49,284**	**#**	**6.7%**	**$ 14.94**	**#**	**1,200**	**36,491**	**-1,789**	**27,249**
Average Land/ square ft.	$10.13											
Improvement to Land Ratio	0.536960559											

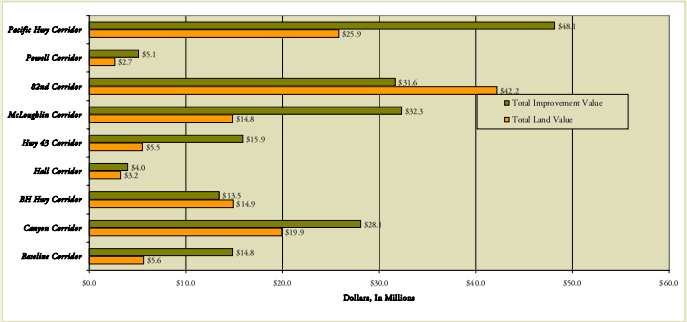
SUMMARY OF STATISTICS BY CORRIDOR LOCATION

CORRIDOR TYPE	Rentable S.F.		Vacant S.F.	Vacancy Rate	Quoted Rent	Leasing Activity QTD	Leasing Activity YTD	Net Absorption QTD	Net Absorption YTD
Pacific Avenue/Baseline Corridor	510,339	Direct	45,147	8.8%	$ 14.52	8,000	9,540	-12,460	-14,460
Total Land Value / Total Improvement Value / Average Improvement/ square ft.	0	**Sublet**	0	0.0%	$ -	0	0	0	0
$5,622,545 / $14,848,160 / $50.20	0	**Total**	**45,147**	**8.8%**	**$ 14.52**	**8,000**	**9,540**	**-12,460**	**-14,460**
Average Land Value / Average Improvement Value / Average Land Size									
#DIV/0! / #DIV/0! / 77,194									
Canyon Road Corridor	446,215	0 **Direct**	50,034	11.2%	$ 21.29	2,358	11,494	-18,257	-9,962
Total Land Value / Total Improvement Value / Average Improvement/ square ft.		0 **Sublet**	0	0.0%	$ -	0	0	0	0
$19,931,320 / $28,061,050 / $87.36		0 **Total**	**50,034**	**11.2%**	**$ 21.29**	**2,358**	**11,494**	**-18,257**	**-9,962**
Average Land Value / Average Improvement Value / Average Land Size									
$2,847,331 / $4,008,721 / 167,639									
Beaverton Hillsdale Hwy Corridor	605,149	0 **Direct**	36,898	6.1%	$ 13.96	1,500	4,990	-12,892	-9,402
Total Land Value / Total Improvement Value / Average Improvement/ square ft.		0 **Sublet**	0	0.0%	$ -	0	0	0	0
$14,924,320 / $13,475,143 / $24.40		0 **Total**	**36,898**	**6.1%**	**$ 13.96**	**1,500**	**4,990**	**-12,892**	**-9,402**
Average Land Value / Average Improvement Value / Average Land Size									
$877,901 / $792,655 / 101,299									
Hall Boulevard Corridor	70,235	0 **Direct**	14,170	20.2%	$ 4.00	2,120	4,875	0	2,755
Total Land Value / Total Improvement Value / Average Improvement/ square ft.		0 **Sublet**	0	0.0%	$ -	0	0	0	0
$3,224,450 / $3,984,140 / $56.73		0 **Total**	**14,170**	**20.2%**	**$ 4.00**	**2,120**	**4,875**	**0**	**2,755**
Average Land Value / Average Improvement Value / Average Land Size									
$189,674 / $234,361 / 44,698									
Highway 43 Corridor	458,749	0 **Direct**	18,262	4.0%	$ 17.53	0	1,200	-13,262	-14,462
Total Land Value / Total Improvement Value / Average Improvement/ square ft.		0 **Sublet**	0	0.0%	$ -	0	0	0	0
$5,506,257 / $15,861,830 / $52.32		0 **Total**	**18,262**	**4.0%**	**$ 17.53**	**0**	**1,200**	**-13,262**	**-14,462**
Average Land Value / Average Improvement Value / Average Land Size									
$917,710 / $2,643,638 / 109,189									
Mcloughlin Boulevard Corridor	951,676	0 **Direct**	243,565	25.6%	$ 13.19	1,836	1,836	-24,014	-66,746
Total Land Value / Total Improvement Value / Average Improvement/ square ft.		0 **Sublet**	0	0.0%	$ -	0	0	0	0
$14,844,769 / $32,342,720 / $49.43		0 **Total**	**243,565**	**25.6%**	**$ 13.19**	**1,836**	**1,836**	**-24,014**	**-66,746**
Average Land Value / Average Improvement Value / Average Land Size									
$1,060,341 / $2,310,194 / 153,854									
82nd Avenue Corridor	2,556,154	0 **Direct**	49,183	1.9%	$ 21.20	1,167	39,535	12,200	31,030
Total Land Value / Total Improvement Value / Average Improvement/ square ft.		0 **Sublet**	0	0.0%	$ -	0	0	4,820	4,656
$42,214,504 / $31,630,771 / $13.56		0 **Total**	**49,183**	**1.9%**	**$ 21.20**	**1,167**	**39,535**	**17,020**	**35,686**
Average Land Value / Average Improvement Value / Average Land Size									
$1,241,603 / $1,020,347 / 97,889									
Powell Boulevard Corridor	208,231	0 **Direct**	7,269	3.5%	$ 15.00	0	731	5,732	14,127
Total Land Value / Total Improvement Value / Average Improvement/ square ft.		0 **Sublet**	0	0.0%	$ -	0	0	0	0
$2,654,020 / $5,104,050 / $51.31		0 **Total**	**7,269**	**3.5%**	**$ 15.00**	**0**	**731**	**5,732**	**14,127**
Average Land Value / Average Improvement Value / Average Land Size									
$379,146 / $850,675 / 39,590									
Pacific Highway Corridor	738,837	0 **Direct**	39,512	5.3%	$ 15.27	1,200	36,491	-1,789	36,971
Total Land Value / Total Improvement Value / Average Improvement/ square ft.		0 **Sublet**	9,772	1.3%	$ 10.00	0	0	0	-9,722
$25,850,570 / $48,142,400 / $64.04		0 **Total**	**49,284**	**6.7%**	**$ 14.94**	**1,200**	**36,491**	**-1,789**	**27,249**
Average Land Value / Average Improvement Value / Average Land Size									
$1,230,980 / $2,292,495 / 121,525									
Total of All Corridors	6,545,585	**Direct**	504,040	7.7%	$ 15.93	18,181	110,692	-64,742	-30,149
Total Land Value / Total Improvement Value / Average Improvement/ square ft.		**Sublet**	9,772	0.1%	$ 10.00	0	0	4,820	-5,066
$134,772,755 / $193,450,264 / $49.93		**Total**	**513,812**	**7.8%**	**$ 15.82**	**18,181**	**110,692**	**-59,922**	**-35,215**
Average Land Value / Average Improvement Value / Average Land Size									
$1,078,182 / $1,653,421 / 104,547									

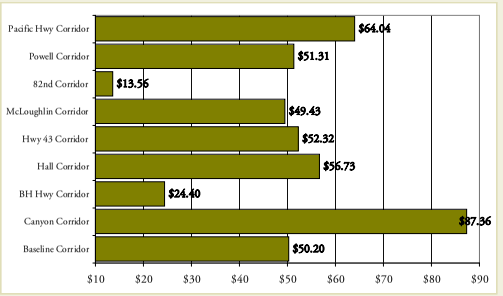
VACANCY RATES



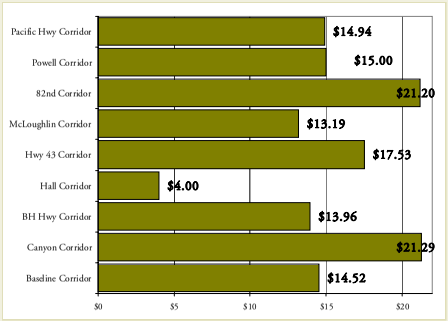
TOTAL LAND/IMPROVEMENT VALUES



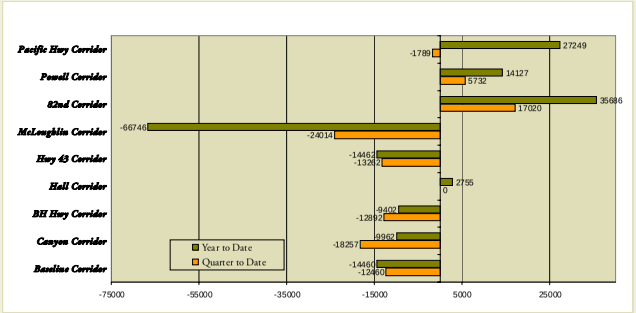
AVG. IMPROVEMENT VALUE PER SQ. FT.



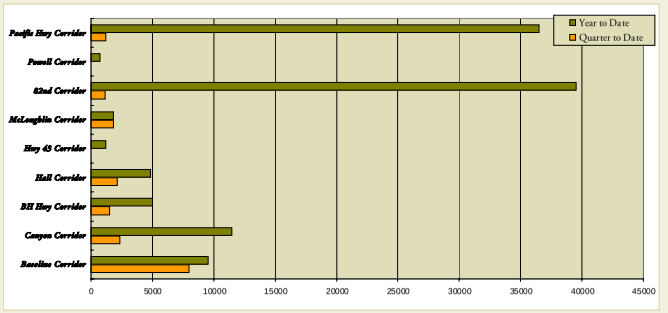
QUOTED RENTS



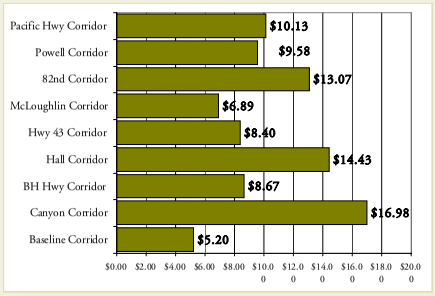
NET ABSORPTION



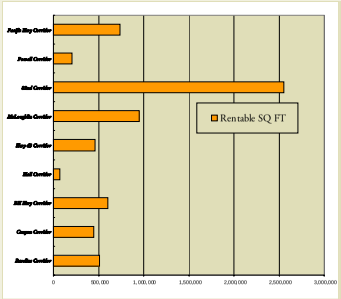
LEASING ACTIVITY

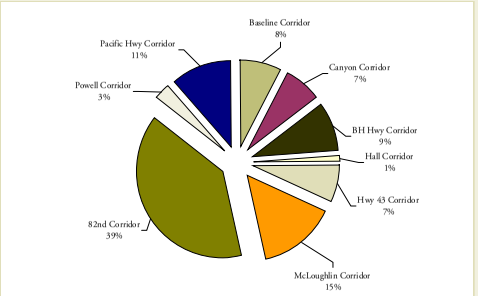


AVERAGE LAND VALUE PER SQ. FT.

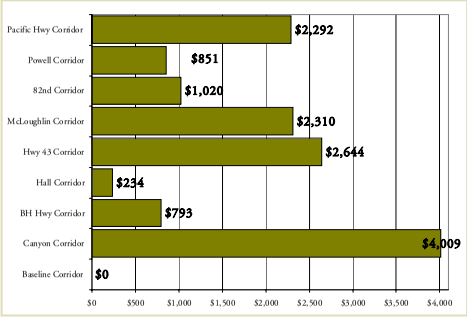


RENTABLE SQUARE FEET AND MARKET SHARE





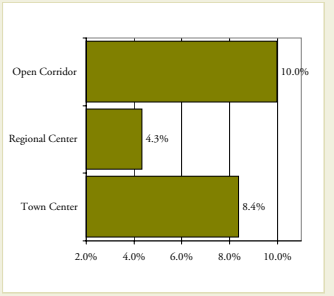
AVERAGE IMPROVEMENT VALUE



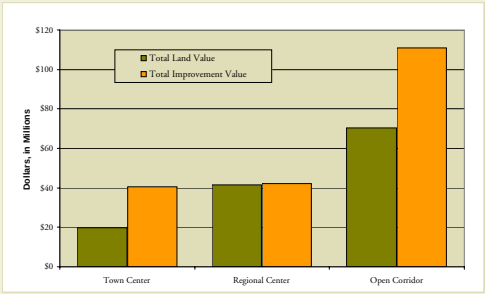
SUMMARY OF STATISTICS BY PROXIMITY TO TOWN/REGIONAL CENTERS

CENTER TYPES	Rentable S.F.		Vacant S.F.	Vacancy Rate		Quoted Rent	Leasing Activity QTD	Leasing Activity YTD	Net Absorption QTD	Net Absorption YTD
Town Center Totals	1,053,870	Direct	78,448	7.4%	$	15.82	1,500	26,132	-10,562	17,376
Total Land Value / Total Improvement Value / Average Improvement/ square ft.		Sublet	9,772	0.9%	$	10.00	0	0	0	-9,722
$19,759,100 / $40,382,340 / $42.64		**Total**	**88,220**	**8.4%**	**$**	**15.18**	**1,500**	**26,132**	**-10,562**	**7,654**
Average Land Value / Average Improvement Value / Average Land Size										
$1,039,953 / $2,125,386 / 98,632										
Regional Center Totals	2,003,118	Direct	86,704	4.3%	$	18.74	7,167	17,891	-32,257	-17,442
Total Land Value / Total Improvement Value / Average Improvement/ square ft.		Sublet	0	0.0%	$	-	0	0	0	0
$41,653,474 / $42,067,360 / $22.51		**Total**	**86,704**	**4.3%**	**$**	**18.74**	**7,167**	**17,891**	**-32,257**	**-17,442**
Average Land Value / Average Improvement Value / Average Land Size										
$2,192,288 / $2,214,072 / 202,469										
Open Corridor Totals	3,488,597	Direct	348,660	10.0%	$	17.36	9,514	66,669	-21,923	-30,083
Total Land Value / Total Improvement Value / Average Improvement/ square ft.		Sublet	0	0.0%	$	-	0	0	4,820	4,656
$70,355,281 / $111,000,564 / $43.82		**Total**	**348,660**	**10.0%**	**$**	**17.36**	**9,514**	**66,669**	**-17,103**	**-25,427**
Average Land Value / Average Improvement Value / Average Land Size										
$790,509 / $1,247,197 / 85,972										

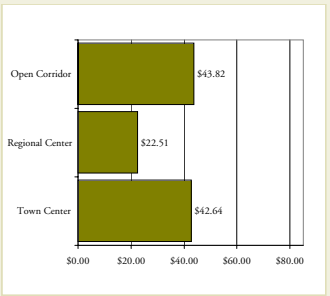
VACANCY RATES



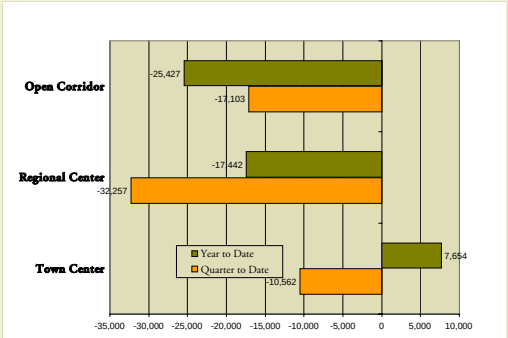
TOTAL LAND/IMPROVEMENT VALUES



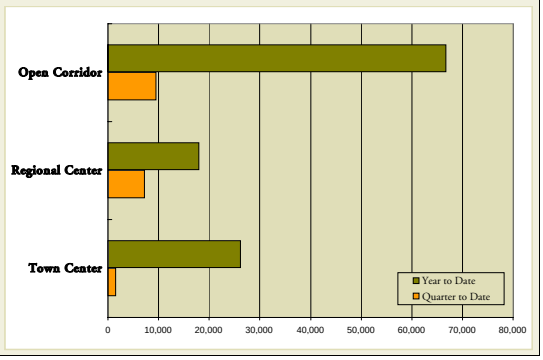
AVG. IMPROVEMENT VALUE PER SQ. FT.



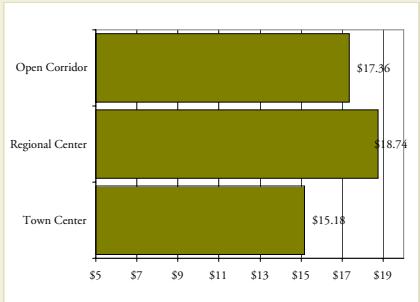
NET ABSORPTION



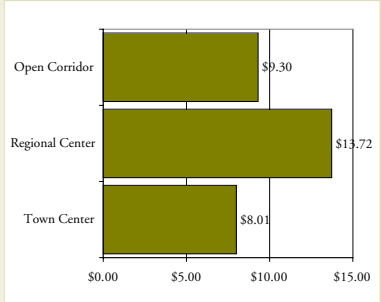
LEASING ACTIVITY



QUOTED RENTS



AVERAGE LAND VALUE PER SQ. FT.



AVERAGE IMPROVEMENT VALUE