031208 - MPAC - 04

Linking Transportation to Land Use, the Economy and the Environment

2035 Regional Transportation Plan

Kim Ellis, Principal Transportation Planner

Project Timeline

June '06 -March '07	• Research and Policy Development
March-Sept. '07	• System Development and Analysis (federal)
Oct. '07-March '08	• Review & Adoption Process (federal)
March -Oct. '08	• Evaluation Framework and Scenarios Analysis (state)
	• Funding Framework (state)
Nov. '08-April '09	• System Development and Funding Strategy (state)
Summer/Fall '09	• Review & Adoption Process (final plan)

Where We Are Now

- Federal component approved by U.S. DOT on Feb. 29
- Consultation with local and state agencies and MCCI
- Addressing input received to date on work program
- Refinement of work program for LCDC approval

Key Work Program Elements

- Funding Framework and Strategy
- Evaluation Framework and Performance Measures
- Transportation Investment Scenarios Analysis
- System Development and Analysis

Funding Framework & Strategy

Issues to address

- Significant gap between projects & funding
- Continued funding shortfall and shift of funding burden to local governments
- Rising costs and aging infrastructure threaten ability to fund new capacity and growing backlog of aging infrastructure

Work Program Objectives

- Strengthen relationship between RTP policies and funding decisions
- Confirm definition of regional system
- Define what sources, new mechanisms and responsibility for various needs
- Develop long-term strategy and commitments

Evaluation Framework

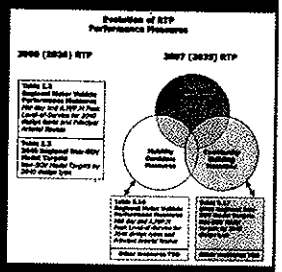
Issues to address

- Elected officials advocating for new tools to inform decision-making and priorities
- Work Program Objectives
- Develop framework for identifying needs, and evaluating and prioritizing investments
- Continue LOS evolution to consider mobility policy within a broader set of measures that are directly linked to RTP policies
- Create 3 layers of measures - region-wide, mobility corridors and community building
- Establish on-going monitoring system

Old and New

Current Measures
- Highway capacity
- Mode shares

New Measures
- Safety
- Reliability
- Access
- Mobility corridor capacity
- Land use effects
- Environmental effects
- Equity
- Economic effects
- Return on investment



Investment Scenarios Analysis

Issues to address
- Need better understanding of the effects of different investment choices

Work Program Objectives
- Evaluate distinct policy choices that frame boundaries of political landscape and public opinion
- Test RTP policies to understand the relative cost and effect of choices on travel behavior and development patterns
- Test proposed evaluation framework performance measures
- Starting point for RTP System Development and rec'd policy refinements

System Development

Issues to address
- Define what package of investments best support 2040 Growth Concept and RTP goals

Work Program Objectives
- Evaluate different levels and packages of investments
- Balance land use and transportation
- Update financially constrained system
- Define "state system of investments" linked to long-term funding strategy

Parallel Planning Activities

- Other Making the Greatest Place Tracks
  - *Focused Investments/Placemaking*
  - *Urban/rural reserves*
  - *Performance-Based Growth Management*
  - *Regional Infrastructure Analysis*
- High Capacity Transit System Plan
- Regional Transportation System Management and Operations Plan
- Regional Freight Plan
- ODOT Tolling Analysis

Public Process

- Metro policy and technical advisory committees & work groups
- Stakeholder workshops
- Fact sheets and print media
- Open houses and public hearings
- Project website

Upcoming Milestones

March '08	• Finalize work program; kick-off funding discussion
April/May '08	• Council/JPACT/MPAC direction on scenarios analysis principles
Oct./Nov. '08	• Scenarios results released
Dec. '08	• Council/JPACT/MPAC direction on policy refinements & system development principles

TOD Project Seven-Day Notice

Per the TOD Program Work Plan adopted by Council Resolution 98-2619, "as soon as practical upon approval by the Steering Committee, the Executive Officer will provide written notification to the Metro Council of potential TOD projects and the Council will have seven (7) days to notify the Executive of a request to review a potential project in executive session... "z

Project Name: The Prescott

Action Item: On March 13, 2008, the TOD Steering Committee authorized $300,000 for the purchase of a TOD Easement for The Prescott with the following conditions: 1) 5-6 story building height; 2) 145 market rate rental units; 3) approximately 11,000 SF retail; 4) 100 underground parking spaces; and 5) building constructed as per illustrated drawings submitted.

Project Background: The Prescott promises to serve as an excellent example of how quality architectural design leads to public acceptance of higher density, mixed use projects with low parking ratios. Myhre Group architects has designed a distinctive building with the relatively high density of 160 dwelling units per acre and a parking ratio of 0.68 spaces per apartment. The project developer is Sierra Investment Fund LLC, an affiliate of Sierra Construction LLC, which was started in 1986 and moved into the condo market in 2001-02. The Prescott is one of its first projects in Portland; this is the first time this developer has worked with Metro's TOD program.

Project Description: The developer is proposing a 5 - 6 story mixed-use project providing 145 to155 market rate rental units, over 11,000 SF retail, and 100 underground parking spaces. The site plan shows build-out to the sidewalks with a large interior courtyard above the underground structured parking. Building heights are 65 feet in the 6 story building section along Interstate, stepping down to 52 feet for the building sections along Prescott Street and Maryland Avenue. The building face on the south side of the lot, along Skidmore, accommodates one level of street grade retail to allow natural light into the courtyard.

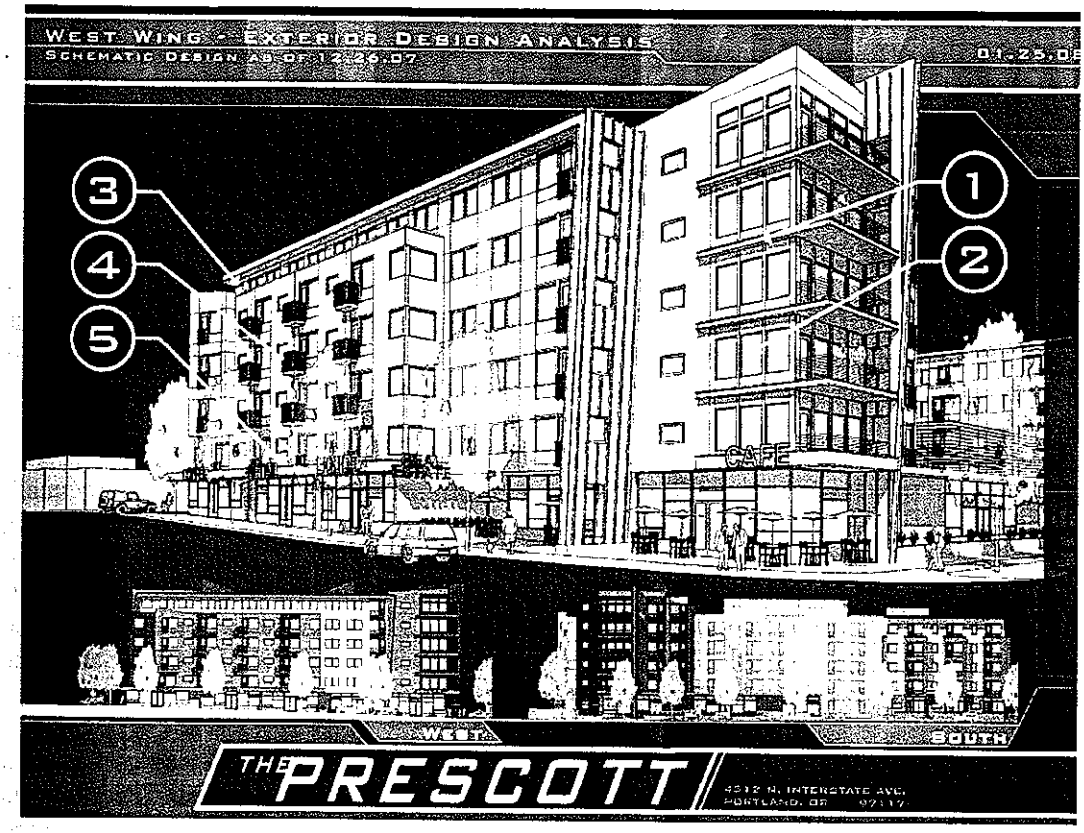
The Prescott's added residential units, in combination with the retail uses are expected to generate 103 additional transit trips per day. The cost per induced transit rider would be $0.79. The cost premiums for The Prescott include: $2.0 million for the underground parking ($20,000/space); $177,000 for fire safety and engineering complexity; $120,000 for fire sprinklers tied to alarm in the residential units; $66,000 for additional stairs; $65,000 for hydraulic elevators and potentially $155,000 more if the recommended traction elevators are used; between $35,000 to $160,000 for additional architectural services; and $550,000 for post-tension slabs.

Project Location: Located at 4312 N. Interstate Avenue between Prescott and Skidmore, the Prescott is right at a MAX light rail station, in a highly visible position at a curve on Interstate Avenue.

Project Budget: Localized MTIP funding for the TOD Program will support this $300,000 project expense.

Potential Issues: The property has been assembled over many years as a development site by private landowners. The purchase agreement with the developer is for the seller to deliver the site vacant on September 30, 2008. The Steering Committee and staff concluded that the TOD Program should not fund relocation benefits because the TOD Program did not purchase the property or cause the site to be assembled for the proposed project.

Michael Jordan, Chief Operating Officer for — 3/20/08 Date


WEST WING - EXTERIOR DESIGN ANALYSIS
SCHEMATIC DESIGN AS OF 12.29.07
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4
5
1
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CAFE
WEST
SOUTH
THE PRESCOTT
4312 N. INTERSTATE AVE.
PORTLAND, OR 97217


Prescott
N

Agenda Item Number 5.0

TITLE 4 INDUSTRIAL AREAS COMPLIANCE

Metro Council Work Session
Tuesday, March 25, 2008
Metro Council Chamber

METRO COUNCIL

Work Session Worksheet

Presentation Date:	March 25, 2008	Time:	Length: 30 min
Presentation Title:	Urban Growth Management Functional Plan Title 4 Compliance		
Department:	Planning		
Presenters:	Sherry Oeser & Ray Valone		

ISSUE & BACKGROUND

The Regional Framework Plan calls for a strong economic climate in this region by balancing economic growth throughout the region and by encouraging the efficient use of land for industrial and commercial uses. To improve the region's economic climate, Title 4 of the Functional Plan requires local governments to provide and protect the supply of sites for jobs as well as to protect the capacity and efficiency of the region's transportation system to move goods and services. As part of the June 2004 urban growth boundary (UGB) decision to add employment land, the Council amended Title 4 and limited the types and scale of non-industrial uses in Regionally Significant Industrial Areas (RSIAs) and Industrial Areas. The Council and the Land Conservation and Development Commission (LCDC) relied upon these limits on non-industrial uses to provide some of the needed capacity for industrial use and to reduce the need to expand the UGB.

To comply with the new Title 4 requirements, local governments with either a designated RSIA or Industrial Area need to review and, if necessary, revise their land use regulations and submit documentation. The original deadline for compliance with Title 4 was July 22, 2007, two years after acknowledgement by the state Land Conservation and Development Commission of the Council's decision.

Staff intended to send a memo to local jurisdictions in early 2007 summarizing compliance requirements and deadlines. However, to respond to Council's expressed desire to move to a different system of compliance, the Chief Operating Officer sent a memo to mayors, county commission chairs, city and county administrators, and planning directors in November 2007. This memo outlined a new approach to functional plan compliance that integrates compliance with performance measures. A copy of that memo is attached.

The cities of Hillsboro and Portland submitted either revised regulations or a request for an extension of the compliance deadline by the original deadline. Staff have worked with the other local governments to ascertain whether they have revised their regulations or whether they will request a deadline extension.

Of the 21 jurisdictions that have either an RSIA or an Industrial Area, five are submitting documentation of their revised regulations, 13 are requesting extensions, and three have not responded definitively about whether they will request an extension or submit documentation. A summary is attached.

The process for an extension request is spelled out in Title 8 of the Function Plan: the Council holds a public hearing to consider the request and notifies the appropriate city or county, MPAC, the Department of Land Conservation and Development, and anyone requesting notification. The Council may grant an extension if it finds that 1) the city or county is making progress toward complying with the requirement, or 2) there is good cause for failure to meet the deadline for compliance. The Council may establish conditions for the extension and must issue an order on the request.

OPTIONS AVAILABLE

Because most local governments are requesting deadline extensions, staff is proposing to bundle all of the extension requests into one resolution and to hold one public hearing on all of the requests. It is currently the intent of staff to recommend a new compliance deadline based on conversations with each local government which means that each jurisdiction may have a different deadline.

Another option would be to bring individual resolutions to the Council with separate public hearings.

A third option is for Council to amend the original ordinance, though this would be a more lengthy process and require submission to the state LCDC for approval.

IMPLICATIONS AND SUGGESTIONS

Local governments are making progress in complying with Title 4 requirements. The extension is allowed under Metro Code and would not adversely affect protection of Regionally Significant Industrial Areas or industrial areas.

QUESTION(S) PRESENTED FOR CONSIDERATION

Does the Council agree with the staff recommendation to bundle extension requests?

Does the Council agree with the potential of having separate deadlines for each jurisdiction?

LEGISLATION WOULD BE REQUIRED FOR COUNCIL ACTION _X Yes __No
DRAFT IS ATTACHED ___Yes __X No

REGIONAL SERVICES

600 NORTHEAST GRAND AVENUE | PORTLAND, OREGON 97232 2736
TEL 503 797 1700 | FAX 503 797 1797

METRO

November 28, 2007

TO: Mayors and County Commission Chairs
City and County Administrators
Planning Directors

FROM: Michael Jordan, Chief Operating Officer

RE: Integrating Urban Growth Management Functional Plan Compliance and Performance Measures

The Urban Growth Management Functional Plan, originally adopted unanimously by the Metro Policy Advisory Committee and the Metro Council in 1996, regulates how local governments implement the 2040 Growth Concept. Local governments in the region are required to comply with the Plan's provisions and each year Metro is required to submit a compliance report to the Metro Council detailing each local government's compliance with the Functional Plan.

Elected officials and staff from throughout the region have identified several issues with the current approach to compliance.

- Compliance requirements tend to be focused more on reporting rather than a more substantive evaluation of whether and how 2040 is being implemented.
- Many of the requirements in the Functional Plan are prescriptive. Local governments want more flexibility to meet regional goals.
- Local governments in the region have limited staff resources.

With the New Look at Regional Choices/Making the Greatest Place and Performance Measures projects underway at Metro, now is an appropriate time to revisit how Metro approaches compliance. During the next two years, Metro will be working with you through the Metro Policy Advisory Committee and with your staff through the Metro Technical Advisory Committee to integrate compliance with performance standards. The goal of this endeavor is to develop and use performance standards to evaluate progress in implementing the 2040 Growth Concept.

As a result, Metro will suspend certain Functional Plan reporting requirements, revise Functional Plan titles as needed, continue current compliance requirements for the most recent changes including Title 4 (Industrial and Employment Areas) and Title 13 (Nature in Neighborhoods), and change the annual compliance report. These changes and what local jurisdictions need to do are detailed in the attached sheet.

I believe that integrating compliance with performance measures will result in a more meaningful evaluation and assessment of how the region as a whole is achieving the goals set out in the 2040 Growth Concept. I look forward to continuing our work together.

Attachment 1 – Urban Growth Management Functional Plan Compliance Changes

Functional Plan Title	Requirement	Action
Title 1 Housing and Employment Accommodation	Annual dwelling unit and job capacity report – Metro Code 3.07.120(D)	Temporarily suspend report – local governments do not need to send in annual report Local governments must continue to submit proposed zone changes to Metro for review
Title 1 Housing and Employment Accommodation	Biennial report on actual density of new residential density per net developed acre – Metro Code 3.07.140(D)	Temporarily suspend report – local governments do not need to send in biennial report
Title 2 Regional Parking Policy	Annual report on number and location of new parking spaces – Metro Code 3.07.220(D)	Temporarily suspend report – local governments do not need to send in annual report
Title 3 Water Quality and Flood Management		Metro staff will continue to work with the three jurisdictions that are not in compliance with the Water Quality Performance Standards
Title 4 Industrial and other Employment Areas	Protection of Regionally Significant Industrial Areas – limit size and location of retail commercial uses – Metro Code 3.07.420	Deadline for action was July 22, 2007 for jurisdictions that have Regionally Significant Industrial Areas. Those jurisdictions must either submit information showing they have met requirement or submit a request to extend the deadline to Metro
Title 4 Industrial and other Employment Areas	Protection of Industrial Areas – limit new buildings for retail commercial uses – Metro Code 3.07.430	Deadline for action was July 22, 2007 for jurisdictions that have Industrial Areas. Those jurisdictions must either submit information showing they have met requirement or submit a request to extend the deadline to Metro
Title 4 Industrial and other Employment Areas	Map Amendment Process – Metro Code 3.07.450	Continue requiring amendments to the Title 4 Employment and Industrial Areas map
Title 6 Central City, Regional Centers, Town Centers and Station Communities	Development strategy – Metro Code 3.07.620	Eliminate December 31, 2007 deadline – Metro staff will be working with local government staff to assist and evaluate development strategies
Title 6 Central City, Regional Centers, Town Centers and Station Communities	Biennial progress report – Metro Code 3.07.650	Suspend reporting requirement – Metro staff will be working with local government staff to evaluate centers progress
Title 7 Housing Choice	Affordable Housing Supply – Metro Code. 3.07.740(B)	Temporarily suspend reporting requirement
Title 11 Planning for New Urban Areas	Concept planning – Metro Code 3.07.1120	Continue concept planning for all areas brought into the UGB since 2002
Title 13 Nature in Neighborhoods	Application to Riparian Habitat and Upland Wildlife Areas and Comprehensive Plan Amendments – Metro Code 3.07.1330	Maintain compliance deadlines of March 13, 2007 for Tualatin Basin Natural Resources Coordinating Committee (TBNRCC) members and January 5, 2009 for non-TBNRCC members
Title 13 Nature in Neighborhoods	Report on progress in using voluntary and incentive based education, acquisition, and restoration habitat protection – 3.07.1360(C)	Move deadline to March 15, 2008 to correspond with DEQ TMDL deadline

Urban Growth Management Functional Plan Title 4 Compliance Update

Jurisdictions Requesting Extensions:

- Beaverton
- Damascus
- Fairview
- Gresham
- Happy Valley
- Lake Oswego
- Milwaukie
- Portland
- Sherwood
- Tigard
- Troutdale
- Wilsonville
- Wood Village

Jurisdictions submitting documentation for compliance:

- Clackamas County
- Cornelius
- Hillsboro
- Oregon City
- Tualatin

Waiting for definitive response:

- Durham
- Forest Grove
- Washington County

PORTLAND STREETCAR
DEVELOPMENT ORIENTED TRANSIT

PREPARED BY THE OFFICE OF TRANSPORTATION
AND
PORTLAND STREETCAR, INC.

PORTLAND, OREGON

Sam Adams, City Commissioner
Michael Powell, Board Chair

April 2008

Portland Streetcar
Development Oriented Transit
April 2008

On July 20, 2001, the Portland Streetcar opened and became the first modern streetcar system in North America. It is part of a unique public/private strategy to link investment in high quality transit service with major redevelopment.

Like many other cities, Portland is growing in population and is proactively looking for ways to promote economic development while managing growth. Keeping Downtown Portland healthy is critical to the region's economic stability. The Portland Streetcar is at the heart of a new approach to shaping cities that promotes investment at the City's core, provides homes for people of diverse income groups and supports the urban amenities that make great cities great. Since 1997 when the original streetcar alignment was identified, properties along its length have experienced significant changes:

- $3.5 billion has been invested within two blocks of the streetcar alignment.
- 10,212 new housing units and 5.4 million square feet of office, institutional, retail and hotel construction have been constructed within two blocks of the alignment.
- 55% of all CBD development since 1997 has occurred within 1-block of the streetcar and properties located closest to the streetcar line more closely approach the zoned density potential than properties situated farther away.
- Developers are building new residential buildings with significantly lower parking ratios than anywhere else in the region.

Development Oriented Transit

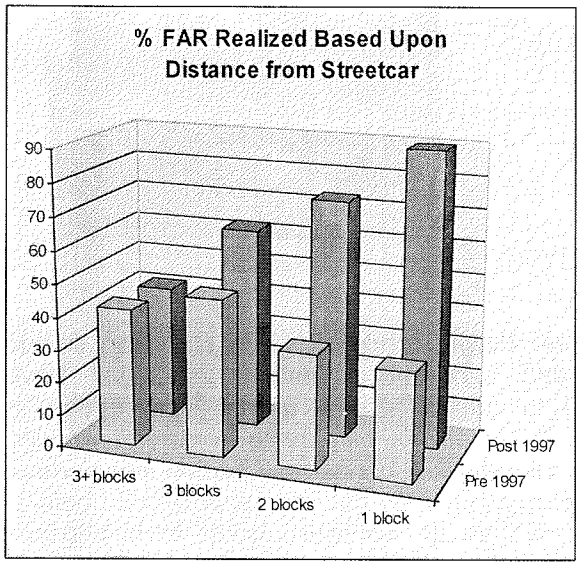
The Portland Streetcar was initiated by the City of Portland to connect two major redevelopment areas: 70 aces of abandoned rail yards and a contaminated brownfield site just north of Downtown (the River District) with another 128 acres of largely underused or vacant industrial land requiring environmental remediation at the opposite end of Downtown (the South Waterfront).

Over the 17-year evolution of the Portland Streetcar, the goals have remained consistent:

- Use a commitment to a high quality transit service as an incentive for high density mixed-use development within the Central City. Link neighborhoods with a convenient and attractive transportation alternative and attract new transit ridership.
- Connect major attractions in the Central City with high quality transit.
- Build and operate in mixed traffic and on existing right-of-way at lower cost than other fixed rail options. Fit the scale and traffic patterns of existing neighborhoods.
- Reduce short inner-city auto trips, parking demand, traffic congestion and air pollution.

Development Density and Concentration

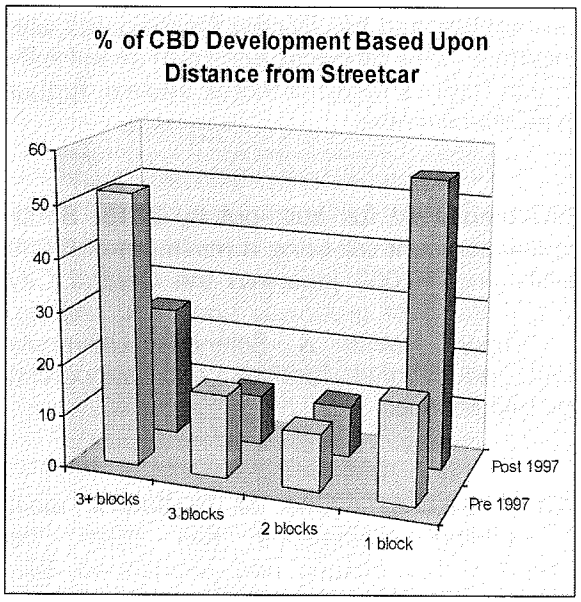
The Streetcar investment has become the centerpiece of a significant shift in the density and location of new development within Portland's Central Business District. In a 2005 study, E.D. Hovee & Company found that the "properties located closest to the streetcar line have experienced the largest share of development – and at Floor Area Ratios (FARs) that more closely approach the properties' zoned density potential – than properties situated further from the streetcar alignment."



Prior to 1997, new projects were built to less than half of the allowable density allowed on a site in the CBD.

Since the streetcar alignment was chosen in 1997, new development achieved an average of 90% of the FAR potential within one block of the streetcar line. This percentage steadily drops to 43% at three or more blocks from the alignment.

Source: ED Hovee & Company, *Portland Streetcar Development Impacts*, October 2005



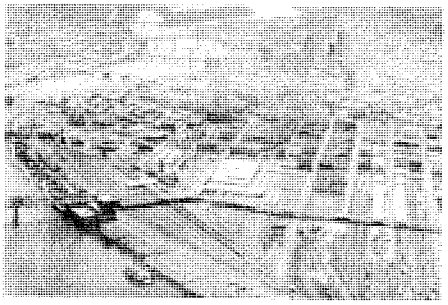
Prior to 1997, land located within one block of the streetcar alignment captured 19% of all development.

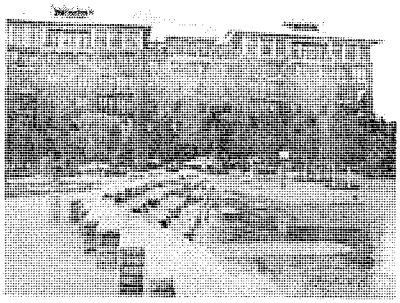
Since the streetcar alignment was identified, 55% of all new development within the CBD has occurred within one block of the streetcar.

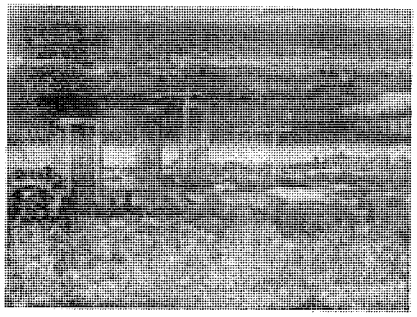
Source: ED Hovee & Company, *Portland Streetcar Development Impacts*, October 2005

Development Impacts

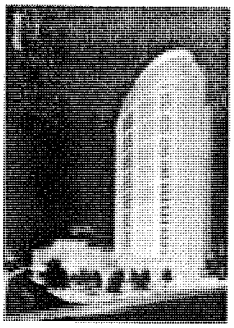
The River District/Pearl District. Where once there was a contaminated railyard, a new neighborhood has emerged. New grocery stores, restaurants, galleries, shops and banks now line the streets. Portland Streetcar goes through the heart of this area, stopping every two or three blocks and providing high quality transit access for business and residents.



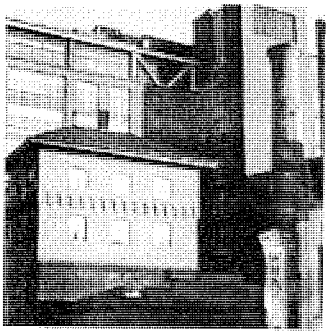




New Urban Neighborhoods. The streetcar, limited parking and excellent pedestrian amenities have combined to create a new urban living option in Portland. It serves not only those living and working along the alignment, it brings new people into parts of the central city they may not have experienced before. It has served as an economic boost to businesses along the alignment while preserving much-needed auto access. It provides direct access to employment, educational facilities and health care for residents with a mix of incomes. The Streetcar has been seamlessly integrated into TriMet's regional transit system, further enhancing its effectiveness.

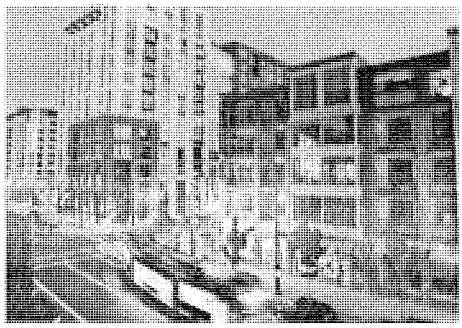


South Waterfront. At full build-out by 2015, South Waterfront development will bring a minimum of 5,000 housing units and 10,000 jobs into the Central City along with a major river greenway and park, parking, emerging Oregon Health & Sciences University development, educational facilities and supporting retail goods and services.



The Brewery Blocks. One of Portland's most significant building renovations has been the redevelopment of the historic and abandoned Blitz Weinhard Brewery. This five-block project on the Streetcar line is Portland's largest single development involving commercial, residential and retail uses.

Development Lessons Learned



Public and Private Responsibilities. The enormous success of linking transportation investments with development can be replicated in municipalities that have one or more large development sites with owners who are willing to work together to advance a common vision. The City's obligation has been to provide a stable source of funding to build public improvements. The developers' obligation has been to contribute to the infrastructure costs and commit to build high-density, mixed-income housing meeting the City's housing targets. From a political standpoint, the ability to point to an agreement with joint obligations of the respective public and private partners carries substantial clout and provides dependability and flexibility that both parties can rely upon.

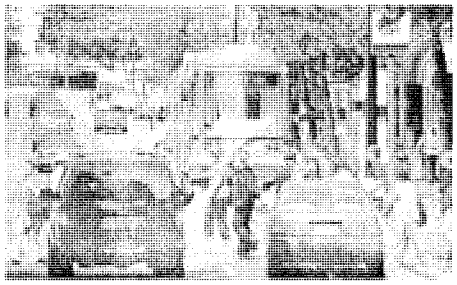
Development Agreements. The Portland Development Commission (PDC) negotiated a Master Development Agreement with Hoyt Street Properties, owners of a 40-acre brownfield in the heart of the River District. The Agreement tied development densities to public improvements with the minimum required housing density increased incrementally from 15 to 87 units per acre when the Lovejoy Viaduct was deconstructed, to 109 units/acre when the streetcar construction commenced and 131 units/acre when the first neighborhood park was built. The developer has stated that without the Streetcar and the accessibility it provides, these densities would not have been possible. The agreement was a unique and essential piece of the public/private partnership that catalyzed development of the River District and serves as a model for the agreement established for in South Waterfront.

Local Improvement District. The innovative $19.4 million Streetcar Local Improvement District (LID) has been a useful tool and includes those property owners that stand to receive the greatest financial benefit from their proximity to the Streetcar. This, coupled with other public and private resources, helped fund both the Streetcar and the critical investments in the urban environment that complement the higher density vision for the area.

Stakeholder Involvement. Involving stakeholders in the Streetcar project design has been absolutely critical to its success and expansion. Without public support, projects of this magnitude can get bogged down to the degree that the public investment cannot move in tandem with development. The individuals and agencies that make up Portland Streetcar, Inc. are nimble and astute individuals that make the Streetcar a development investment that you can count on. In addition, a whole new interest group is emerging composed of those devoted to high-density urban living—a perspective that didn't exist before.

Reduced Parking. The success of early projects in the River District demonstrated a market demand for a new type of higher density community—one that supports living with or without a car. Due in part of the high quality transit service provided by Streetcar, developers are able to construct mixed use projects with parking ratios lower than found elsewhere in the city. Reducing the amount of parking that a developer must build makes a building more financially feasible. Now, with a full understanding of the role that Streetcar can play in affecting the urban environment and market confidence in urban living, developers have begun construction on larger, higher-risk projects in South Waterfront. The first River District projects were six stories—South Waterfront has started with 21 to 35-story condominium towers.

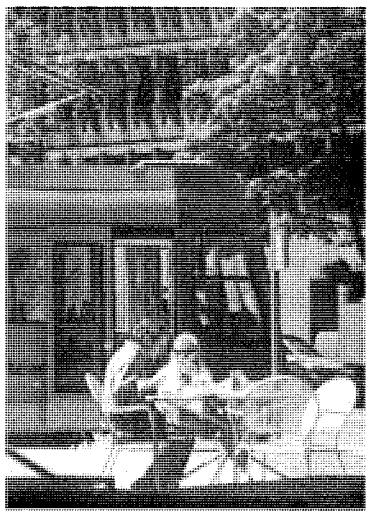
Underlying Values



Improving Livability. Development oriented transit supports improved livability for high density environments that support public goals for urban containment, sustainable living and reduced dependence on an automobile. But higher density development does not always mean a more "livable" community. In the case of development near Streetcar; however, the package includes parallel public and private efforts to ensure that affordable housing, public open spaces, brownfield redevelopment, high quality urban design and public art occur in unison.

Fit Within the Urban Environment. Design tradeoffs were made to better fit the Portland Streetcar into the scale and traffic patterns of the neighborhoods through which it travels. Streetcar vehicles, manufactured in the Czech Republic, are 8 feet wide and 66 feet long. They run in mixed traffic and, except at stops, accommodate existing curbside parking and loading. Streetcar stops occur every few blocks and shelters are smaller to fit within the neighborhood's architecture.

Economical Construction and Operation. The Streetcar technology is less expensive than other forms of fixed-rail transportation. The project is designed so that the system is economical to build and operate. There were four critical design principles: 1) use available rights-of-way; 2) limit the investment in facilities to essentials, 3) to the extent possible, use off-the-shelf equipment, 4) operate the system on a safe, no-frills basis, and 5) use construction methods that minimize costs. The project was also designed to avoid costly expenses associated with relocating utilities and the stations were developed similar to bus stops to reduce system costs.



Partnerships Matter. The City of Portland owns the Streetcar while Portland Streetcar Inc (PSI), a nonprofit corporation, is responsible for designing, managing construction and operating the system. The PSI Board is made up of individuals representing the perspectives of citizens, city agencies and property owners along the Streetcar alignment. The trade-offs made in this type of decision-making body have continued to make the Portland Streetcar a better project by serving the needs of a diverse community.

Minimize Disruption to Businesses and Residents. Project design and construction methods were designed to build the Streetcar quickly and efficiently to minimize construction impacts on adjacent businesses and residents. In addition, design decisions were made with implications for the ultimate Streetcar operations by preserving on-street parking, keeping construction within the existing right-of-way and sharing the streetcar lane with autos. The project also placed a very high priority on responsiveness to inquiries received from adjacent property owners throughout the construction process.

System Description

Key Milestones: In 1990, the City of Portland initiated a feasibility study for the Streetcar, hired a project manager, established a Citizen Advisory Committee (CAC) and began hosting a series of public meetings with a plan emerging at the end of that year. Key project milestones include:

1992 City of Portland secures $900,000 federal HUD grant and matches with local funds
1995 May, City issues RFP to design, build, operate and maintain Streetcar. The nonprofit corporation, Portland Streetcar Inc is selected
1999 May, Construction begins from Legacy Good Samaritan Hospital to Portland State University
2001 January, Project Substantial Completion
2001 July, Begin passenger service
2005 March, Streetcar service to RiverPlace begins
2006 October, Service to South Waterfront & Portland Aerial Tram Connection
2006 Loop Extension alignment selected
2007 August, Service into South Waterfront begins

Financing. Locally funding the $56.9 million, 2.4 mile first phase made the Streetcar a unique transportation project. The total Phase 1 project cost was under $25 million per alignment mile and included purchase of seven vehicles. Total capital construction costs for the .6 mile extension to RiverPlace was $16 million or $13 million per track mile and included a new roadway on a retained structure to provide access to properties along the riverfront in preparation for an extension to South Waterfront. The capital budget for the .6 mile single-track extension from RiverPlace to Gibbs Street was $15.8 million, or $13 million per track mile, and included purchase of three vehicles. The .4 mile extension from Gibbs to Lowell cost $14.45 million, or $12 million per track mile, and included roadway work. Total capital cost was $103,150,000 for 4.0 mile alignment averaging $12.9 million per track mile.

Funding sources for these phases of the project (in millions) include:

- $ 28.60 Bonds backed by revenues from a $.20/hour short-term parking rate increase in City-owned parking garages
- $ 21.50 Tax increment financing from the City's urban renewal agency (PDC)
- $ 19.40 Property owner contribution through an LID on non-owner occupied residences
- $ 10.00 Regional transportation funds
- $ 8.75 City funds
- $ 2.10 Connect Oregon
- $ 5.00 Reallocated transit funds from TriMet
- $ 3.10 Transportation land sale
- $ 4.70 Other sources
- **$103.15 million total construction costs**

Ridership. When Streetcar initially opened in 2001, the projected ridership target was 3,500 weekday rides. Not only was that target immediately exceeded, ridership by the fall of 2005 grew to over 9,000 riders each week day. Saturday ridership has demonstrated the greatest percentage growth from 3,200 to 9,000 in the past six years. Weekday ridership in the winter of 2007/08 is 11,900 per day.

Management. The City of Portland has contracted with Portland Streetcar, Inc (PSI) for professional services related to the design, construction and operation of the streetcar system. PSI is a private non-profit corporation formed for the single purpose of implementing the Portland Streetcar as a project that will benefit the livability and economic vitality of Portland and its central city. It is governed by a Board of Directors, the members of which come from both the public and private sectors and who represent institutions, businesses and other constituents along the alignment.

For more information, visit the Portland Streetcar website at www.portlandstreetcar.org.

D J-B

From: Robin McArthur
To: Council
Date: 4/16/2008 2:51 PM
Subject: Making the Greatest Place: Summary of April 9 Council Work Session
Attachments: CouncilApril2008SiteUpdate.doc; brownfields.pdf; 2008 Making the Greatest P lace Upcoming Events.doc

CC: Bateschell, Miranda; Benner, Richard; Conder, Sonny; Cotugno, Andy; ...

Thank you for meeting with "Making the Greatest Place" staff last Wednesday, April 9th, to discuss our work program. Below is a summary of next steps.

Scenarios - Council gave a "thumbs up" to proceed with the revised Scenario Framework and the Regional Transportation Plan scenarios with the following considerations.
Spatial scale - Council would like scenario results to be presented at the smallest spatial scale possible. Staff will investigate ways to report results at a more local or sub-regional scale while still maintaining the accuracy of the data. MetroScope is, however, a regional model and reporting at local geographies must be done judiciously as the use of smaller geographies increases the risk of inaccuracy or misrepresentation. Council also indicated that it would like scenario results to be presented at the jurisdictional level, where decisions are made (i.e., decisions are not made at the census tract level). Staff will be able to report results for some cities, depending on the size of the jurisdiction and how well the census tract boundaries coincide with city boundaries.
More accurate phasing for urbanization - Council indicated that it would like some scenarios to consider the implications of a slower urbanization of recent UGB expansions (e.g., N. Bethany and Damascus). Staff will incorporate this thematic variation into the "Cause and Effect" scenarios.
Performance indicator - Council would like staff to develop a performance indicator that reports the combined cost of housing and transportation for households. Staff will investigate ways to do that. Because MetroScope provides limited transportation outputs, it will be necessary to use both MetroScope and the travel demand model to generate the combined measure. This may involve a longer-term improvement to our scenario reporting and may not be available for the "Cause and Effect" scenario results.
Effects of different property tax rates - Council indicated an interest in modeling the effects of different property tax rates and differing costs of service provision. Staff does not currently have the baseline data needed to perform this type of analysis (e.g. how service costs relate to population density, etc), but will consider how we might be able to model these assumptions in the future.
Investing in Our Communities - Staff received positive comments on the draft work program outline designed to seek and assess local aspirations for communities within the region. Several ideas were generated about the upcoming Placemaking Summit. Staff will incorporate those ideas into the event brief and work with Councilors Liberty and Collette to make the event happen.

Brownfields - Miranda Bateschell provided an update on the Brownfields grant results. She did not have sufficient time to discuss specifics of each site so attached is a written description of each site and a map. She is available to brief Councilors separately if requested (503-797-1817).

Upcoming Events - Sherry Oeser reviewed a hand-out of upcoming events scheduled for the next few months - see attached for an electronic version.

Economic and Employment Trends Work - Council discussed draft "guiding principles for employment and economic trends work". There appeared to be agreement on a few major points:

1) Whereas Metro is not the entity charged with producing an economic development strategy for the region, our actions (e.g., transportation planning and funding, promoting tourism, improving quality of life by implementing Region 2040, and land supply). Overall economic prosperity is a function of many factors for which Metro has little direct influence (e.g., work force quality, tax incentives, the state of the world and national economies).

2) Metro should engage the region, up-front, in discussions about regional and global trends and the relative benefits of attracting certain industries.

3) The consultant work should focus on understanding factors that influence where and how businesses locate and provide guidance on how to attract appropriate businesses to centers, corridors and employment areas.

4) We need to engage a broad group of stakeholders in this work; especially those that actually run businesses, have a long term perspective, and that can help us promote more efficient use of land, resources and infrastructure.

Staff will work with Councilors Park and Hosticka to define next steps.

Topics proposed for the May 14th Making the Greatest Place Council Work Session
- Infrastructure - emerging results from the consultant study
- Performance Based Growth Management - preparation for adopting the resolution
- Employment and Economic Trends - work scope outline, process

Making the Greatest Place Upcoming Special Events

Overall purpose: To motivate local communities in the region to think boldly about where and how to grow in the next 50 years

April

- *Planning Directors Meeting - April 11*
  Purpose: To coordinate efforts relating to periodic review issues including economic development, housing, public facilities and services, transportation, urbanization and natural resources as well as Making the Greatest Place aspirations
  Audience: Local Planning Directors from throughout the region

- *Neighboring Communities Meeting - April 17*
  Purpose: To continue discussions of long-term aspirations of neighboring communities for use in scenario work and Placemaking events
  Audience: Neighboring Communities mayors/chairs

May

- *Mayor's Institute on City Design - May 7-9*
  Purpose: To bring four mayors in the region together with design experts to find solutions to the most critical urban design challenges facing their cities
  Audience: Invited mayors

- *50-year Range Forecast (Tentative dates are May 12 or May 22)*
  Purpose: To get peer review of the 50-year population and employment forecast from a diverse group of users and experts that will be used for Reserve and Placemaking efforts
  Audience: Reserves Steering Committee and constituent groups, MPAC, JPACT, MTAC, and TPAC

- *Reserves Steering Committee (May 14)*
  Purpose: To continue discussion of reserves work program, study areas, and urban reserve factors
  Audience: Reserves Steering Committee and interested parties

- *Urban Land Institute/Metro Infrastructure event with the International Society of City and Regional Planners (ISOCARP) - May 15*
  Purpose: To gain insights from planning professionals from different counties and perspectives on infrastructure issues
  Audience: Infrastructure Advisory Committee, service providers, local planning staff, city managers, neighborhood/community leaders, and developers

(continued on next page)

- *Infrastructure Workshop (at MPAC) - May 28*

  Purpose: To review comparative infrastructure costs, financing gaps and possible solutions

  Audience: Elected officials, service providers

July

- *Design and Development Code Workshop (date to be determined)*

  Purpose: To introduce and highlight tools and solutions contained in the Design and Development Code Tool Kit (second installment of Community Investment Tool Kit)

  Audience: Local planning commissioners, local government staff, developers, designers, planning and architecture organizations (e.g., American Institute of Architects, Urban Land Institute, American Landscape Architects)

- *Placemaking Summit- July 18*

  Purpose: To gain a common understanding of shared values and how jurisdictions are implementing Region 2040 in their communities and to increase awareness of innovative tools to achieve 20- and 50-year visions

  Audience: Mayors/chairs; city councilors; county commissioners; local planning directors; neighboring communities mayors, city councilors, county commissioners, administrators and planning directors; state agency representatives, TriMet, and Port of Portland

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Wood Village
Site description: City hall property located at Halsey and 238th

Contamination history: old Heating Oil Tank on property, historic use of city public works facilities and a small lumber mill on the northern portion of the property

Metro's program assistance: conducting Phase I and Phase II environmental site assessments to define if there is and the extent of contamination.

Redevelopment potential: assessments will help define any future cleanup costs and help the city prepare the site for sale and redevelopment of the property. The city's vision for the site is a new city hall with vertical, mixed-use along Halsey. The city has already encouraged and is seeing the development of two more vertical, mixed-use projects along Halsey. In addition, the city is conducting studies to determine more funding opportunities for the redevelopment of the site and financial incentives for that area of the Halsey corridor including urban renewal and a vertical housing development zone.

Site partnerships: DEQ's HOT program, city staff

Milwaukie
Site description: operates as an auto mechanics shop at the corner of SE 32nd Avenue and Olsen Street on a corridor w/commercial activities surrounded by residential neighborhoods.

Contamination history: long-term contamination by Cain petroleum company as an old gas station and auto repair facility. Tanks are removed, but there is potentially significant contamination remaining on site.

Metro's program assistance: owner is not responsible for the contamination and wants to sell the property; there is some interest in commercial and/or mixed-use redevelopment. In the past, attempted to sell the site, but lenders were hesitant due to contamination issues. If actual contamination meets the worst-case scenario, then it could present a threat to human health and the environment.

Redevelopment potential: property would not sell without a Phase II site assessment due to potential contamination issues. Metro's financial and technical assistance will define the contamination and determine whether cleanup needs to occur right away and what the costs of future cleanup would be for the buyer. Either way, it will allow the property owner to sell the property and move it a big step toward redevelopment.

Site partnerships: DEQ, city staff

Cornelius:
Site description: located at 10th and Baseline, the site is currently a vacant lot with no structures along the main street of town.

Contamination history: the site operated as an old gas station in the 1930's to 1950's. There is evidence the tanks have been removed

Metro's program assistance: the current owner has owned the site since the 1970's. With recent changes in legislation, he has been unable to develop the site due to fear of what contamination he may find. The city has also denied him opportunities to operate businesses on that site that did not require digging into the ground. As a result, he was happy to leave this site a vacant lot for the rest of his life. Metro's technical and financial assistance with a Phase I site assessment has helped to define the likely contamination scenario and cleanup costs for the site with a low to high range.

Redevelopment potential: This has defined what sampling would need to occur under a Phase II and a fair sale price for the owner and potential buyers. The owner now has some security that the worst-case scenario will still result in some profit from the sale of the property and will not have sever negative consequences. Metro's program will offer financial assistance with a Phase II and technical assistance with Prospective Purchaser agreement if a buyer is identified.

Site partnerships: Metro and the Brownfields Task Force are attempting to identify non-profit organizations interested in purchasing/redeveloping this site.

Beaverton

Site description: located at the corner of Baseline and 170th, the site is across from the El Monica MAX station; the vacant, old gas station remains on the property

Contamination history: operated as a gas station with two underground tanks prior to current ownership; these tanks have been removed, but the pre-1974 exemption was claimed and there is no information on soil sampling, analysis, or remaining contamination in association with these tanks. Current owner also operated a gas station installing three tanks in 1980 and were closed and removed using soil matrix rules. When working on the MAX line, Tri-met discovered and removed petroleum contamination along the sewer line. Outstanding issues remain that need to be defined for redevelopment plans.

Metro's program assistance: the property is for sale and there is significant interest in the property, but it is not selling due to undefined contamination remaining and a fair sale price. Metro is helping to define any remaining contamination issues and the potential cleanup costs for redevelopment of the site into a transit-oriented mixed-use residential project. In addition, there is master planning requirement for this and six neighboring properties that presents a hurdle for prospective purchases and the development timeline. This program is also providing technical assistance by working with the city to negotiate that requirement through a development agreement with a prospective purchaser.

Redevelopment potential: the brownfields program is working to remove the two barriers to sale and redevelopment of the property by defining contamination issues and a fair sale price and removing the master planning requirement.

Site partnerships: the program is working with the TOD program, Oregon Solutions, the City of Beaverton, and DEQ in an attempt to organize a prospective purchaser, sale, and redevelopment planning. We are also looking at the opportunity to organize surrounding property owners for redevelopment of the entire area into a dense, mixed-use, transit-oriented development.

Sherwood:

Site description: a vacant lot located within the City's downtown Urban Renewal Area on 1st and Pine Streets.

Contamination history: the site operated as an old ford dealership and gas station prior to current ownership. The current owners have owned the property for 23 years as a vacant lot next door to their business offices in an old Victorian home. Subsurface mapping done in 2005 confirmed the underground storage tanks have not been removed. A gas station across the street has had significant sampling, monitoring, and cleanup activities, which detected contamination issues on this site either from its own historical uses or migrating contaminants from the other gas station.

Metro's program assistance: the program will provide assistance by defining the contamination extent and source. As part of the assessment process and soil sampling, the underground storage tanks will also be removed, which will help better prepare the site for cleanup and redevelopment.

Redevelopment potential: the city is interested in purchasing this property once the contamination and cleanup costs are defined. The city intends to develop a 2 or 3 story, mixed-use office/commercial building. If the city can identify a developer, Metro's program can also provide assistance through an integrated remediation and redevelopment plan for that end use.

Site partnerships: we are working with DEQ, OECDD, the city, and the owners to conduct assessment, remove the remaining tanks, develop cleanup plans, acquire cleanup funds, and complete a prospective purchaser's agreement to limit the city's liability.

METRO
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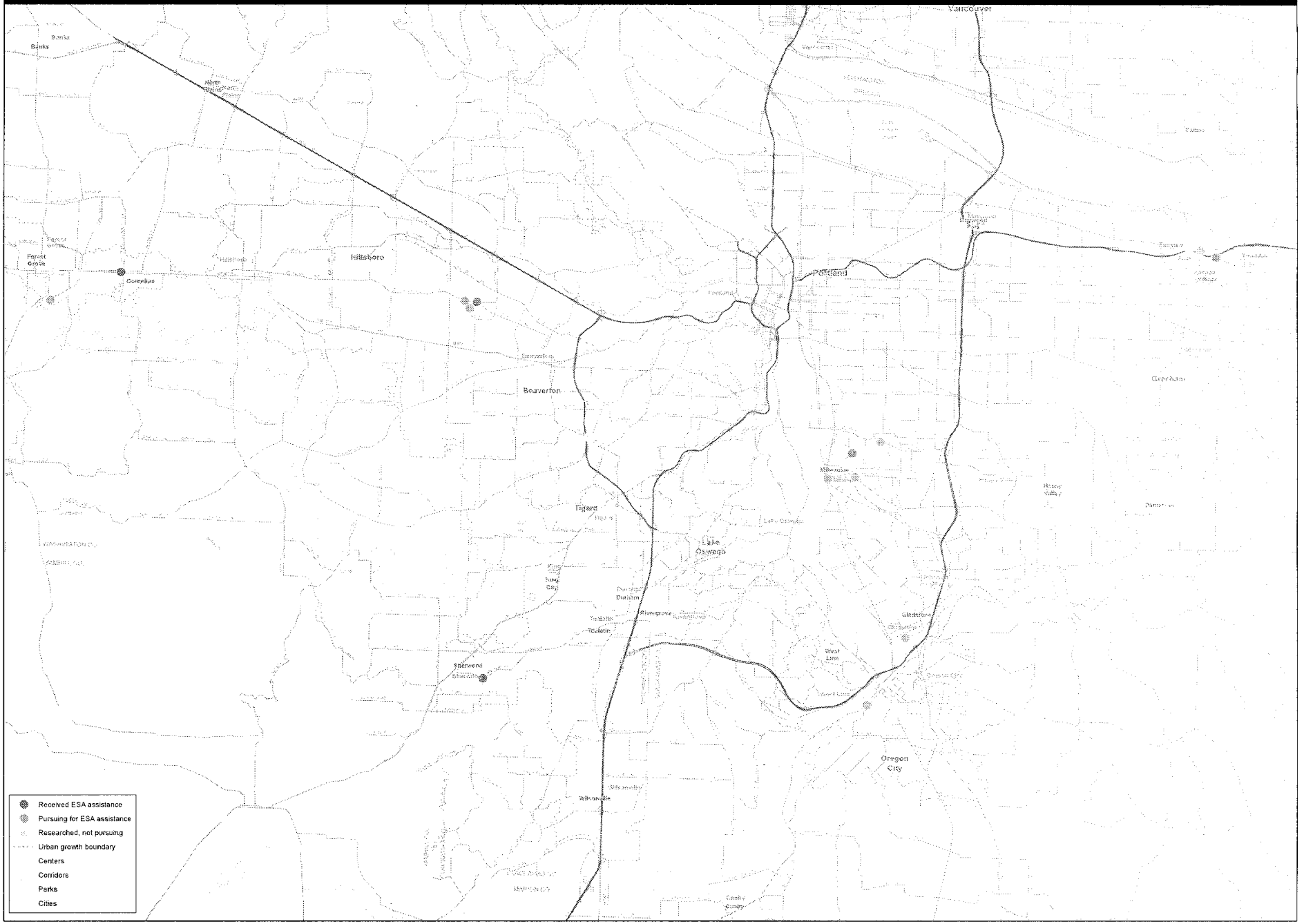
Metro's Brownfield Program Site Status

Portland Metropolitian Region



Making the Greatest Place Upcoming Special Events

Overall purpose: To motivate local communities in the region to think boldly about where and how to grow in the next 50 years

May

- *Mayor's Institute on City Design -- May 7-9*
  Purpose: To bring four mayors in the region (Forest Grove, Gresham, Milwaukie, and Oregon City) together with design experts to find solutions to the most critical urban design challenges facing their cities
  Audience: Invited mayors

- *Reserves Steering Committee -- May 14*
  Purpose: To continue discussion of reserves work program, study areas, and urban reserve factors
  Audience: Reserves Steering Committee and interested parties

- *Urban Land Institute/Metro Infrastructure event with the International Society of City and Regional Planners (ISOCARP) - May 15*
  Purpose: To gain insights from planning professionals from different counties and perspectives on infrastructure issues
  Audience: Infrastructure Advisory Committee, service providers, local planning staff, city managers, neighborhood/community leaders, and developers

- *Infrastructure Workshop (Oregon Convention Center) - May 28*
  Purpose: To review comparative infrastructure costs, financing gaps and possible solutions
  Audience: Elected officials, service providers

- *50-year Range Forecast -- May 30*
  Purpose: To get peer review of the 50-year population and employment forecast from a diverse group of users and experts that will be used for Reserve and Placemaking efforts
  Audience: Reserves Steering Committee and constituent groups, MPAC, JPACT, MTAC, and TPAC

June

- *Reserves Steering Committee - June 9*
  Purpose: To continue discussion of reserves work program, study areas, and urban reserve factors
  Audience: Reserves Steering Committee and interested parties

(continued on next page)

- *Transportation Infrastructure Financing with the Urban Land Institute -- June 25-26 and July 1*

  Purpose: To discuss transportation financing options and regional solutions with a panel of experts in transportation finance, elected officials and business leaders in the region

  Audience: JPACT, MPAC, ULI leadership, regional business leaders

July

- *Reserves Steering Committee - July 9*

  Purpose: To continue discussion of reserves work program, study areas, and urban reserve factors

  Audience: Reserves Steering Committee and interested parties

- *Placemaking Summit -- July 18*

  Purpose: To focus attention on how to implement the Region 2040 Growth Concept and to increase awareness of innovative tools to achieve 20- and 50-year visions

  Audience: Mayors/chairs; city councilors; county commissioners; local planning directors; neighboring communities mayors, city councilors, county commissioners, administrators and planning directors; state agency representatives, TriMet, and Port of Portland

- *Design and Development Code Workshop (July 30)*

  Purpose: To introduce and highlight tools and solutions contained in the Design and Development Code Tool Kit (second installment of Community Investment Tool Kit)

  Audience: Local planning commissioners, local government staff, developers, designers, planning and architecture organizations (e.g., American Institute of Architects, Urban Land Institute, American Landscape Architects)

Fall

- *Case Study Workshops (dates to be determined)*
- *Joint MPAC/JPACT workshops on scenario results*

Winter 2009

- *Placemaking Summit*

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BEFORE THE METRO COUNCIL

FOR THE PURPOSE OF AFFIRMING A DEFINITION OF A "SUCCESSFUL REGION" AND COMMITTING METRO TO WORK WITH REGIONAL PARTNERS TO IDENTIFY PERFORMANCE INDICATORS AND TARGETS AND TO DEVELOP A DECISION-MAKING PROCESS TO CREATE SUCCESSFUL COMMUNITIES	))))))))	RESOLUTION NO. 08-3940 Introduced by Councilor Carl Hosticka

WHEREAS, the preamble to Metro's Charter states that Metro shall undertake "...as its most important service, planning and policy making to preserve and enhance the quality of life and the environment for ourselves and future generations... "; and

WHEREAS, the concept of "quality of life" is given further clarification in the 2040 Growth Concept, the Regional Framework Plan and Metro Council Goals and Objectives; and

WHEREAS, to preserve and enhance the quality of life for current and future generations, growth management policies should be based upon measurable performance toward the achievement of regional goals and objectives; and

WHEREAS, Title 9 (Performance Measures) of the Urban Growth Management Functional Plan states that the Metro Council shall adopt and periodically revise performance measures to be used in evaluating and adjusting, as necessary, Metro's functional plans, the urban growth boundary (UGB), and other regional plans; and

WHEREAS, the region has an increasing ability to measure its success in realizing its goals, to use performance measures and to understand the likely effects of different policy options; and

WHEREAS, state law currently requires Metro to determine the capacity of the region's UGB every five years, using a precise methodology set forth at ORS 197.296, and to add capacity if the UGB does not have sufficient room to accommodate population and employment growth forecasted for the next 20 years; and

WHEREAS, the current approach to growth management causes the region to apply a level of analytical precision to long-range population and employment forecasts that does not account for the dynamic nature of housing and employment needs and markets; and

WHEREAS, the current approach can lead to UGB land allocations that do not help to create great communities that enhance the quality of life for ourselves and future generations; and

WHEREAS, this cyclical approach has also had the effect of diverting the region's attention and resources from critical, shorter-term efforts to build livable communities within the region's centers and corridors and, instead, has directed scarce resources to a continual analysis of need to add to the region's long-term development capacity by adding land from outside the UGB; and

WHEREAS, despite the passage of approximately 13 years since its adoption, support for the 2040 Growth Concept remains strong among local governments and the general public, and

WHEREAS, the 2040 Growth Concept also holds promise for addressing contemporary and pressing concerns, such as the region's rapid population growth and its contributions to global warming, and for directing investments in infrastructure in a time of limited funds; and

WHEREAS, in order to establish performance measures to inform future growth management decisions, the region should affirmatively state its vision of long-term success in creating a livable region and its constituent communities; and

WHEREAS, a performance-based approach to growth management will be most successful if jurisdictions throughout the region participate in its development and integrate it into their decision making; and

WHEREAS, Metro and its regional partners intend to use a performance-based approach to help determine whether and where to (1) allocate growth to and within the UGB; (2) invest in communities within the UGB; and (3) expand the UGB; now, therefore

BE IT RESOLVED that the Metro Council

1. Affirms a definition of a successful region and its constituent communities, as set forth in Exhibit A, attached hereto.
2. Commits, based on the principles articulated in Exhibit B, to working with all of our regional partners to identify the performance indicators, targets and decision making process necessary to create successful communities.

ADOPTED by the Metro Council this _____ day of _____, 2008

_____
David Bragdon, Council President

Approved as to form:

_____
Daniel B. Cooper, Metro Attorney

Exhibit A
To Resolution No. 08-3940

A Definition of a Successful Region

1. People live and work in vibrant communities where they can choose to walk for pleasure and to meet their everyday needs.

2. Current and future residents benefit from the region's sustained economic competitiveness and prosperity.

3. People have safe and reliable transportation choices that enhance their quality of life.

4. The region is a leader in minimizing contributions to global warming.

5. Current and future generations enjoy clean air, clean water and healthy ecosystems.

6. The benefits and burdens of growth and change are distributed equitably.

Exhibit B
To Resolution No. 08-3940

Guiding Principles - Performance Based Growth Management

1. The new growth management approach should be outcome-oriented, with the outcomes endorsed through regional commitment to a definition of performance or outcome.

2. The new approach should be transparent, allowing for explicit weighing of community values and desired outcomes.

3. Performance or outcome should be defined in a way that is readily measurable and has clear cause-and-effect linkages with policy choices.

4. A combination of measures will be used to assess progress toward meeting the region's goals and will inform decisions about which policy tools are needed to achieve the desired outcomes.

5. Measurements should accommodate local aspirations and should support equitable outcomes across the region while also achieving region-wide goals.

6. The new approach will link performance measures reporting directly with growth management decisions.

7. The new approach should rely on an integrated set of policy and financial tools, including public investments, land supply decisions, local zoning and other strategies.

8. Strategies should be aligned at the regional, local, state and federal level to support progress toward achieving the outcomes desired for the region and to effectively leverage private investment.

9. Changes to state statute and administrative rules may be needed to fully implement this approach.

STAFF REPORT

IN CONSIDERATION OF RESOLUTION NO. 08-3940, FOR THE PURPOSE OF AFFIRMING A DEFINITION OF A "SUCCESSFUL REGION" AND COMMITING METRO TO WORK WITH REGIONAL PARTNERS TO IDENTIFY PERFORMANCE INDICATORS AND TARGETS AND TO DEVELOP A DECISION-MAKING PROCESS TO CREATE SUCCESSFUL COMMUNITIES

Date: May 5, 2008 Prepared by: Ted Reid

BACKGROUND

Contents of the resolution:
Staff has been developing the Performance-Based Growth Management (PBGM) concept in order to allow for a more robust conversation about how different growth management strategies measure up to the region's aspirations. The proposed resolution is a first step towards designing a performance-based growth management system that helps to create the successful communities that the region desires. The resolution has three main purposes:

1. Define success – The resolution describes the region's desired outcomes with respect to creating successful, livable communities (see Exhibit A to the resolution).

2. Establish guiding principles – The resolution articulates a set of principles (see Exhibit B to the resolution) that will guide the creation of a performance-based growth management system.

3. Commit to collaboration – The resolution commits the Metro Council, based on the desired outcomes and guiding principles, to work with regional partners to identify the performance indicators, targets and decision-making process necessary to create successful communities.

Relationship of this resolution's outcome statement to past Metro policy statements
Past policy documents such as the 2040 Growth Concept, Regional Urban Growth Goals, and the Regional Framework plan have informed the writing of the outcome statements found in Exhibit A to the resolution. However, the resolution's list of desired outcomes is different from previous policy statements in that it strives to articulate only the desired outcomes, not the strategies thereto. For instance, past policies have included goal statements such as "adequate land supply" or "compact urban form." While these are important strategies, these statements fail to capture what is most important to the region: outcomes like clean air and water and thriving communities. The resolution also attempts to list only those outcomes that may be most directly influenced by growth management strategies.

The resolution's focus on outcomes, not strategies, also recognizes the fact that no single strategy is likely to accomplish the desired outcomes. Instead, a combination of local and regional policies and private and public investments will be needed. Finally, given its pressing importance, an outcome statement related to global warming has been added despite its absence in past policy statements.

How the resolution's outcome statements could translate into strategies and indicators
The intent is to have these desired outcomes be at the forefront when making growth management decisions. This would be accomplished through the use of performance indicators that correspond to each desired outcome.

Attachment 1 to this staff report includes, for each of the six outcome statements, illustrative examples of strategies for achieving the outcome as well as draft indicators for measuring the effectiveness of those strategies. Additional stakeholder input will be solicited before finalizing the list of performance indicators.

It is worth noting that, as with the performance indicators mandated by ORS 197.301, there is no performance indicator for adequate growth capacity. This is because the very premise of PBGM is that capacity can (and will) be provided through a variety of strategies. A PBGM system would provide the means of weighing the costs and benefits of those strategies in light of the region's desired outcomes.

The attached list of sample performance indicators includes those that are currently mandated under ORS 197.301 as well as a number of the performance indicators that were generated in Metro's agency-wide performance measurement project. These indicators were supplemented with performance indicators that are being considered for use in the Regional Transportation Plan (RTP) as well as those that are being reported in the Title 13 (Nature in Neighborhoods) *State of the Watersheds* report.

Performance indicators would be used retrospectively (to monitor past performance) as well as prospectively (to report the results of scenario modeling) to allow for adaptive management. However, there are likely to be important performance indicators for which modeling is currently not possible (e.g. many of the habitat-related indicators) or for which historic data is not available (e.g. many of the transportation indicators). Given the importance of such indicators, staff recommends that the inability to both measure and model results for a given indicator not preclude its use.

Staff anticipates that many performance indicators will be most informative when mapped, thereby allowing for sub-regional analysis and targeted corrective strategies.

Existing statutes
In some ways, a PBGM system is already described in the Oregon Revised Statutes (ORS 197.301 and 197.302). Those statutes articulate a set of performance measures that are to be reported by Metro every two years and require that corrective actions be taken if additional growth capacity is needed. The proposed PBGM system is an attempt to improve upon what is already required by statute.

Better indicators
One such improvement would be to develop performance indicators that measure the impacts of growth as experienced by the region's residents. In particular, most of the performance indicators currently required under ORS 197.301 (for instance, residential vacancy rates) fail to describe, in any intuitive way, quality of life or cost of living for the region's residents.

Adaptive management
A second improvement would be to more explicitly link the performance indicators with growth management strategies so that such strategies specifically address performance deficiencies. Under our current system, there is no attempt to demonstrate how a particular strategy, such as a UGB expansion, might improve performance.

Adaptive strategies could take many forms, depending on the circumstances. For example, the region's experience has shown that providing land supply alone does not create a community. Improved access to open space, transit, and other urban amenities are some of the most effective means of attracting residents and employers to the region's centers, corridors and employment areas.

Scenario modeling would help establish a cause and effect linkage between a strategy and outcomes. As previously noted, under a PBGM system, performance indicators would be used both retrospectively (as

required by the statute) as well as prospectively in scenario modeling. A variety of strategies, including UGB expansions, could be tested using modeled scenarios. For instance, a scenario that tests limited UGB expansions, upzoning and investments in corridor improvements could be tested against a strategy that provides for more aggressive UGB expansions and investments in transit connections between centers.

These scenarios will be an iterative process that, in coordination with local partners, will provide for the refinement of strategies. When measured against the performance indicators, some scenarios will perform better than others. However, it will be a matter for deliberation at Metro and at the local level which strategies produce the desired results at the right risk or cost level. When the Council does decide that there is a need for additional land supply, a performance-based system would provide a transparent, outcome-based means of arriving at that decision and of choosing amongst urban reserve areas, based on the quality of the concept plan.

Designing the decision-making system
As noted, any policy decisions and public investments that influence urban form could be considered growth management decisions. Many of these actions are taken at the local level while the Metro Council takes others. Given the dispersed nature of these decisions, it is most accurate to describe PBGM as an outcome-oriented decision-making paradigm, rather than as a single, unified system for making all growth management decisions.

This outcome-oriented decision-making paradigm is one that is currently being incorporated into the Regional Transportation Plan (RTP). Metro's RTP staff is, in conjunction with external advisors, identifying performance indicators that will be used to monitor and model the performance of the region's transportation network and its effects on land use, thereby informing investment decisions. Staff's intent is that one set of performance indicators be used by the RTP and to guide Metro's other actions and investments.

For this decision-making paradigm to be most effective, it also needs to be relied upon by the region's cities. Consequently, the proposed resolution commits Metro to work with its regional partners to design the PBGM decision-making framework. Staff anticipates that the design of this framework will involve the development of performance targets that are linked with adaptive strategies. Staff intends that this decision-making framework as well as the aforementioned scenario modeling capabilities be regarded by local jurisdictions as a valuable tool for considering future choices.

ANALYSIS/INFORMATION

1. **Known Opposition**
There is no known opposition to this resolution.

2. **Legal Antecedents**
ORS 197.296 to 197.303
Urban Growth Management Functional Plan (in particular, Title 9, Performance Measures)

3. **Anticipated Effects**
If this resolution is adopted, staff will work with Metro's regional partners to create a performance-based growth management system. This work will include the identification of performance indicators, performance targets, and adaptive strategies. Once implemented, a PBGM system would consist of the ongoing provision of technical resources to local jurisdictions for considering the effects of different local strategies. This technical assistance will be of particular importance as 12 of the region's cities enter

Periodic Review of their comprehensive plans over the next several years. Staff does not anticipate that a PBGM system will be any easier to implement than the current growth management system. However, staff believes that a PBGM system can more be more successful in helping local jurisdictions to create great communities that are an asset to the region.

4. **Budget Impacts**

Development of the Performance-Based Growth Management concept is already included in the budget. Though there will be no new budget impacts as a consequence of adopting this resolution, an ongoing performance-based growth management system would incur new costs, particularly for data collection, management, interpretation, and display.

RECOMMENDED ACTION

Staff recommends that Council adopt the resolution.

OUTCOME 1: People live and work in vibrant communities where they can choose to walk for pleasure and to meet their everyday needs

Strategies	Draft performance indicators	Indicator mandated by state?
Create a compact urban form by encouraging growth (jobs and housing) in centers and corridors	Private investment in centers and corridors as a percent of total private investment in the region	No
	Residential vacancy rates (renters, owners)	Yes
	Refill rate - industrial, commercial, residential	Yes
	Percent of employment (and employers) and population in the three-county region that is within centers and corridors	No
Encourage efficient use of land in all communities	The rate of conversion of vacant land to improved	Yes
	The sales price of vacant land	Yes
	Average density by design type (center, corridor, industrial/employment area)	No
Encourage mixed uses in centers and corridors	Percent of area within centers and corridors with compact urban form characteristics (mixed use index)	No
Provide urban amenities (parks, street car, plazas, boulevard treatments, bike lanes, sidewalks, etc)	Neighborhood score (statistical measure of neighborhood desirability - the portion of property sales price not explained by private improvements)	No
	Number and percentage of households within 1/2 mile of public open space (park, plaza, natural area)	Yes

OUTCOME 2: Current and future residents benefit from the region's sustained economic competitiveness and prosperity

Strategies	Draft performance indicators	Indicator mandated by state?
Provide for the efficient and reliable movement of freight and goods.	Total delay and cost of delay on the regional freight network in mid-day and PM peak	yes (mobility)
Provide regional access to labor and markets	Number and percentage of households and jobs within 30 minutes of the (Tier 1) central city, regional centers, and industrial areas for mid-day and PM peak (visualized using travel time contours)	yes (accessibility)
Attract employers and a qualified work force by preserving and improving the region's quality of life	Traded sector jobs in the region as a percent of the U.S. average	No
	The level of job creation within individual cities and the urban areas of a county inside the metropolitan service district	Yes
Protect critical industrial lands from conflicting uses	Percentage of employment (and employers) located in Title 4 (industrial/employment) areas	No

OUTCOME 3: People have safe and reliable transportation choices that enhance their quality of life

Strategies	Draft performance indicators	Indicator mandated by state?
Provide for the efficient and reliable movement of people	Average commute length	yes (accessibility)
Provide community access to daily activities	Number and percent of homes within 1/2 mile of regional transit service	No
	Number and percent of homes within 1/2 mile of a regional trail	No
Invest our resources wisely	User cost per mile (auto and truck)	No
Design a safe transportation system	Per capita crashes, serious injuries and fatalities by mode	No

OUTCOME 4: The region is a leader in minimizing contributions to global warming

Strategies	Draft performance indicators	Indicator mandated by state?
Reduce dependence on automobile	VMT per capita	No
	Total VMT	No
	Non drive alone mode share for central city and individual regional centers (% by mode)	No
	Tons of transportation-related greenhouse gas emissions per year	No
Encourage reductions in residential energy consumption	Average BTU consumption per household	No

OUTCOME 5: Current and future generations enjoy clean air, clean water and healthy ecosystems

Strategies	Draft performance indicators	Indicator mandated by state?
Protect / enhance ecological function	The amount of environmentally sensitive land that is protected and the amount of environmentally sensitive land that is developed (statutory language - needs refinement for use)	Yes
Preserve and improve streamside, wetland and flood area habitat connectivity	Number of acres of Class I and II high value riparian habitat	No
	Number of acres of undeveloped floodplain	No
Preserve large areas of contiguous habitat and avoid fragmentation	Number of acres of Class A and B high value upland habitat	No
Preserve and improve special habitats of concern (native oak, riparian bottomland hardwood, wetlands, river islands and deltas, as well as habitats with specific key functions)	Number of acres and categorical types of special or at-risk species	No
Minimize conversion of rural lands to urban uses	Acres consumed in UGB expansion areas	No

OUTCOME 6: The benefits and burdens of growth and change are distributed equitably

Strategies	Draft performance indicators	Indicator mandated by state?
Minimize geographic concentrations of poverty by providing housing and transportation choices in centers and corridors	The density and price ranges of residential development, including both single family and multifamily residential units	Yes
	A measure of combined housing/transportation costs (probably an index)	No
	Percent of residents living in poverty	No
	Number and percent of low-income (define) households within 1/2 mile of high-capacity transit or frequent bus service	No
Ensure clean air for all by reducing dependence on automobile	Total pounds of selected air toxins emitted.	Yes (air quality)
Encourage an efficient urban form that reduces the costs of providing infrastructure	Average regional, community, local infrastructure costs by census tract	No

Performance-Based Growth Management – project timeline

Work Component	Spring 2008	Summer / Fall 2008	Winter / Spring 2009	Summer / Fall 2009	Winter / Spring 2010	Summer / Fall 2010	Winter / Spring 2011	Summer / Fall 2011
Introduce concept	Concept reviewed by MTAC, MPAC, various stakeholders							
Define successful outcomes	Adoption of a resolution that defines successful outcomes & states an intent to create a growth management system guided by those outcomes	Refine a list of performance indicators that gauges progress towards desired outcomes						
Use scenarios to illustrate the likely outcomes of different policy choices.	Test cause & effect with scenarios.	Cause & effect scenarios - report on the effects of different policy choices, including RTP choices	Hybrid scenarios - report on the outcomes of different combinations of local and regional strategies	Preferred scenario – report on the outcomes of a preferred combination of local and regional strategies (scenario reflects local aspirations)				
Document past and future trends and discuss how the region should respond		Report on past trends and future choices in the context of mega-trends such as fuel shortages, demographic changes, and global warming.						
Design a framework for collaborative decision-making		Develop a process for collaborative decision making	Agreement on a new decision making process that links strategies with performance targets					
Implementation (growth management decisions, monitoring, adaptation)				Agreement to implement the local and regional actions that are contemplated in the preferred scenario for creating capacity	Implementation, monitoring, adaptation			

051408-MPAC-02

TRANSIT ORIENTED DEVELOPMENT PROGRAM

TRANSIT ORIENTED DEVELOPMENT



IN THE METRO REGION



Presented by: Megan Gibb

METRO PLANNING DEPARTMENT

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TRANSIT ORIENTED DEVELOPMENT PROGRAM

TOD Program Overview

The purpose of Metro's TOD and Centers Program is to create public-private partnerships that produce transit oriented development projects and vibrant, compact urban centers in order to increase travel by transit, walking and biking.

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TRANSIT ORIENTED DEVELOPMENT PROGRAM

TOD Program Overview

TOD projects have been supported in:

- -5 Regional Centers
- -3 Town Centers
- -19 Station Areas

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TRANSIT ORIENTED DEVELOPMENT PROGRAM

TOD Program Strategies

- **Create market comparables** for higher density buildings near transit and centers
- **Develop developers** with expertise in higher-density mixed-use buildings in suburban settings
- **Increase acceptance of urban style buildings** through high quality design
- **Carry out place making** and contribute to local identity

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Transit-Oriented Development

TOD projects have three fundamental characteristics that enhance transit ridership:

- A mix of moderate to high intensity land uses;
- A physical or functional connection to the transit system;
- Design features that reinforce pedestrian relationships and scale—a walkable environment.

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Transit-Oriented Development

Public Investments to Help Offset Added Costs of Mixed Use Higher Density Projects

- TOD Easements and land write-downs
- Funding to offset "cost premiums"
- Capitalized value of increased transit ridership used as threshold test of investment

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Transit-Oriented Development

- Cost premiums associated with higher density mixed use are:
  - structured parking
  - elevator
  - separation of uses
  - building material
  - thicker footings
  - complex fire systems

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Why?

- Mixed use and higher density best for transit use and walk/bike trips
- Market forces aren't produce this product in suburban locations

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Good Data: Metro 1994 Travel Behavior Survey

Area	*Transit Modal Share*	*Non-auto Modal Share*	*VMT per Capita*	*Auto Ownership per Household*
Mixed Use/ Good Transit	11.5 %	41.9 %	9.80	0.93
Remainder of Region	1.2%	12.7%	21.79	1.93
Difference	942%	230%	45%	48%

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How Does it Work?

1. Cost Premium Analysis (project must have cost premiums)
2. Capitalized Farebox Revenue (must have delta, daily transit fare x 30 years = capitalized farebox revenue – enhances overall system effectiveness by bringing users to the system
3. TOD Steering Committee
4. 7 day notice to Metro Council
5. Development Agreement
   - Preconstruction performance prior to transfer of deed or release of funds
     - Approval of preliminary plans
     - Approval of construction drawings
     - Proof of permit
     - Construction bid
     - Proof of equity capital and mortgage financing (you have a project!)

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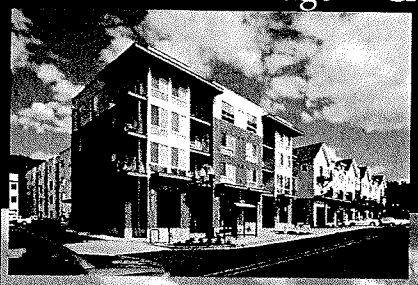
TRANSIT ORIENTED DEVELOPMENT PROGRAM

Example Projects

North Main Village – City of Milwaukie



4 stories
64 workforce rentals
33 condominiums/townhomes
8,000 ft² ground floor retail
TOD Funding: $550,000 loan

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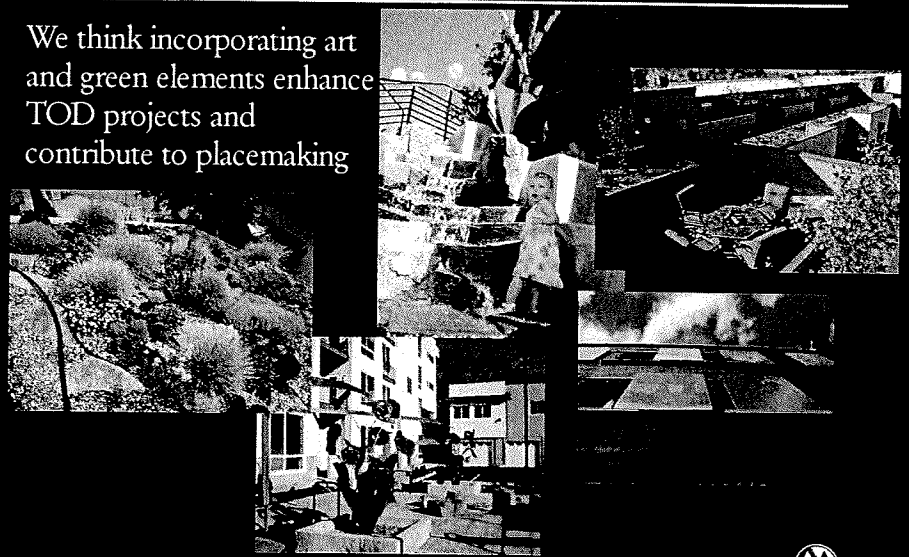
TRANSIT ORIENTED DEVELOPMENT PROGRAM

Also...

- We think incorporating art and green elements enhance TOD projects and contribute to placemaking



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Challenges

- Empty retail
- Construction cost increases
- Market dynamics
- Funding

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TRANSIT ORIENTED DEVELOPMENT PROGRAM

Program Results to Date

2,950 Housing Units

(Including 989 Affordable Units and 344 Senior)

3,541 Induced Transit Riders Per Day

438,436 sq. ft. Retail

783,737 sq. ft. Office

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TRANSIT ORIENTED DEVELOPMENT PROGRAM

Other TOD Benefits...

- Uses land more efficiently (80 acres vs. 504), less impermeable surface
- In higher density, transit served, mixed-use areas, households produce **2.5 times** less GHG emissions consume **half** the energy
- TOD projects produce 50% fewer auto trips
- Advancing 2040 vision

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Urban Living Infrastructure

New pilot program which invests in urban amenities (groceries, cafés, restaurants, brew 'n views, etc.) which enhance urban living to complement existing TOD program activities

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TRANSIT ORIENTED DEVELOPMENT PROGRAM

Metro TOD Program

Annual report is available online:

Contact information:
Megan Gibb
503.797.1753
Megan.Gibb@oregonmetro.gov

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051408-MPAC-03

EXECUTIVE SUMMARY

Urban Living Infrastructure

JUNE 2007

INTRODUCTION

JOHNSON GARDNER was retained by METRO to document the pricing effects of urban living infrastructure. The objectives of the work were as follows:

Document current trends and development patterns in Districts where robust urban amenities exist and appear to have facilitated private mixed-use development. Determine extent, if any, that urban amenities have on housing prices and the extent to which the urban amenity mix influences pricing.

Determine if government can cost-effectively stimulate pricing effects that will allow for mixed use development by investing in enhancements to the urban living infrastructure.

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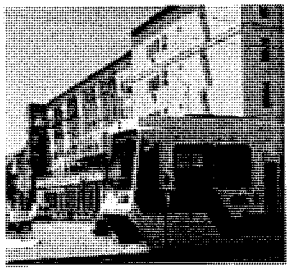
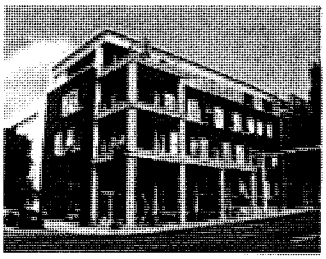
Metro's web site
www.metro-region.org



Transit Oriented Development PROGRAM OVERVIEW

Metro's growth management plan, The 2040 Growth Concept, calls for the region to grow up rather than out, away from farm and forest land by limiting expansion and focusing growth around the region's 44-mile MAX Light Rail Transit (LRT) line, along frequent bus corridors and in mixed-use urban centers. The TOD Program pursues the Growth Concept by providing public investments to developers to build more intensely and with higher attention to creating a walkable environment than the market would complete on it's own. A TOD will result in a higher share of travel from transit, walking and biking and a lower percent by an automobile.



Executive Summary

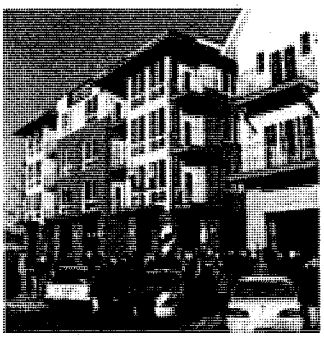
An entire industry has arisen dedicated to the concept of "Placemaking", which recognizes that an agglomeration of activities and amenities is a critical aspect of an urban experience. Placemaking is a term that began to be used in the 1970s by architects and planners to describe the process of creating squares, plazas, parks, streets, and waterfronts that will attract people because they are pleasurable or interesting. While widely discussed with anecdotal evidence, to date there has been little if any substantive analysis of the marginal impact of the amenities associated with an urban experience on achievable pricing. This study addresses the missing substantive evidence of the relationship between a range of urban amenities and pricing.

Successful urban environments represent a marketable amenity, the value of which is reflected in higher effective pricing for residential units. This higher pricing is necessary to support the intensive and costly development forms associated with more urbanized areas. As achievable pricing is one of the key impediments to realizing higher density residential development, increasing the supply of urban amenities in a district can be an effective strategy to encourage targeted development forms.

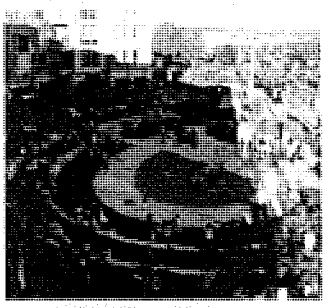
Development of a greater number of residential units within walking distance of a commercial concentration increases the viability of that concentration, attracting a superior tenant mix that then increases the premium for residential uses. This virtuous cycle of investment and reinvestment has been seen in many of Portland's successful commercial districts. The benefit of this type of development pattern accrues not just to new construction, but to the broader neighborhood as a whole.

Hedonic statistical modeling of 2006 home transactions proximate to various urban amenities revealed a range of price premium estimates for

recent home sales, all else equal. In general, we would consider the tenant types classified and evaluated in this study to represent desirable neighborhood amenities, and would expect them all to have a positive impact on values. The results of the study did not confirm this relationship for all categories of tenants surveyed, which may be explained by the limited range of the study. Calculations of price premiums at the extreme ends of the amenity range expressed above are likely not robust and likely are sensitive to statistical specification. For a number of amenity types the sample size was limited, reducing the reliability of the indicated results.



The results also varied depending upon the type of residential product. The relationship between the tenant types identified was almost universally positive for condominium units, which offer a greater degree of separation from some of the negative externalities associated with these types of uses. It must be noted, however, that the sample of attached home sales in the study was not large (148 transactions) and estimated values of urban amenities (model coefficients) were rarely statistically significant.



Even so, attached projects tend to address their parking needs on-site, and have a greater degree of security and separation from street-level activity. As marginal new development activity in urban areas is likely to take the form of condominiums, the relationship between urban infrastructure and condominium pricing is probably more important from a policy perspective than the more general impact on residential pricing.

The results of the study indicate that the proximate availability of a range of urban amenities have a substantive impact on achievable residential pricing. Financial viability has been consistently identified as the primary obstacle to achieving higher density urban development forms in many markets. As achievable pricing is directly related to project viability, this study indicates that a strategy to support and expand the urban amenity base in an area is supportive of realizing more urban residential development patterns.

The primary benefit of urban amenities is related to convenience, often expressed in savings in time and travel cost. The ability to reach a number of amenities within a pedestrian range is of particular value. The aggregation of theses services provides an urban experience, allowing for residents to increase their "dwell time" in the area. While our analysis indicates that a priority should be placed on major amenities such as a cinema and specialty grocer, these amenities require a minimum threshold of market depth not found in all locations. An alternative strategy to attracting a tenant such as a specialty grocer is to attract a smaller-scale tenant providing a similar range of services. A specialty grocer may provide for grocery, butcher, bakery, card shop and florist services. An aggregation of tenants providing similar services can provide a comparable amenity base.

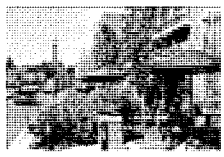
While amenities can add value, it should be noted that some tenant types can reduce values. Some of this is related to configuration, as parking conflicts appeared to impact residential values in areas with limited parking availability. As noted previously, this appears to primarily impact single family homes more than condominiums. A similar split impact is seen with bars and nightclubs, which can add a disamenity to single family residences within close proximity.

A range of urban amenities is a critical component of an "urban experience", which adds value to an area that can be realized in higher achievable pricing for residential development. Our study identifies a substantive impact on achievable pricing associated with a range of tenant types. If it is public policy to encourage more urban residential development forms, encouragement of an urban amenity base is directly supportive of this policy. Developing a more marketable urban experience assists both new development, as well as providing significant marginal value to existing residents.

051408-MPAC-04

New Research Findings:

Urban Living Infrastructure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MPAC Presentation
May 14, 2008

Metro Council asked:

"Would a different set of investments yield results faster?"

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Metro's Research Objectives

1. *To document if and by how much urban living infrastructure improves the **financial feasibility** of mixed use development.*

2. *To determine if public investment in urban living infrastructure is a **cost-effective strategy** to catalyze centers development.*

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Johnson Gardner Study

"An Assessment of the Marginal Impact of Urban Amenities on Residential Pricing" June 2007

1. *Does urban amenity matter?*
2. *Does the urban district or the urban amenity matter?*
3. *What specific urban amenities matter?*
4. *How valuable is the amenity?*

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The Bottom Line

Higher density development forms

→ *more **expensive** to construct*

→ *only viable in areas with relatively **high location premium***

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The Economics

- **Location premiums** are a function of marketable amenities
  - *Physical characteristics of the product itself (size, materials, etc)*
  - *Amenities such as views, access, schools*
  - *Locally available **urban living infrastructure***
- **Savings** in travel time & expense
  - *Allows people to spend more for other things (housing, food, retail, entertainment, etc.)*
- **Ability to walk to** nearby living infrastructure
  - *Increases "dwell time" in the area*
  - *Leads people to patronize nearby businesses*
- **Unique places** reduce direct competition

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Research Methodology

- Developer **Interviews**
- Literature **Survey**
- Empirical **Analysis**
  - Site visits to inventory centers
  - Hedonic modeling
- Expert **Review**
- Proforma **Modeling**

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Developer Interviews

- Ample anecdotal evidence
  - Urban infrastructure that has distinct and significant value to homeowners
  - Raises achievable pricing and also results in higher absorption rates and lower perceived risk
- Most valuable urban living infrastructure
  - Specialty grocer or cluster of smaller shops
  - Cinema/movie house
- Transit, such as light rail, is highly advantageous
- Proximity and design matter
  - Nightclubs and bars with a loud and late night clientele are not seen as a positive for units in close proximity, but can provide an amenity for a district as a whole.

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Urban Living Infrastructure Types Inventoried

FIGURE 3: DISTINCT URBAN AMENITIES IDENTIFIED

#	Observed Urban Amenity	Description
1	Bakery	Gourmet or organic bakery for on-site or off-site consumption
2	Bar or Pub	A bar, pub or tavern specifically for on-site alcoholic beverages
3	Bicycle Shop	A retailer of new, used, and specialty bicycles and repair services
4	Book Shop	Independent or specialty secular bookshop possibly with café
5	Boutique Shop	Specialty/boutique retailer, typically clothes, baby items, or personal care
6	Brewpub	Alcoholic beverages served with on-site beer and/or spirits made
7	Bistro	Bistro or small sit-down restaurant - desserts and coffee featured
8	Coffee/Espresso	Coffee and espresso drinks with some on-site pastry/food sales
9	Fitness Gym	Private membership fitness/training centers or gyms
10	Garden Store	Garden supply, flower sales and garden art
11	Cinema	Single-screen downtown marquee cinema
12	Music Shop	Local/independent music shop, typically non-mainstream music
13	Gourmet/Exotic Restaurant	Unique full-service restaurant with specialty/chef-driven cuisine
14	Spa	Full-service spa, typically offering massage, aromatherapy, etc.
15	Specialty Grocer	Grocers with mix of traditional, organics, specialty, and deli/prepared
16	Wine Bar or Shop	On-site wine consumption, extensive selection for off-site, limited food

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Empirical Analysis

Five Portland Metropolitan Area Urban Centers

- A robust selection of different urban amenities in the Portland metro area;
- A robust sample of both single-family and attached homes, new and resale;
- Urban and suburban locations in east and west metro area locations; and
- No unique physical or economic features that would be difficult to duplicate elsewhere (such as a large employer or large-scale retail center nearby)

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Urban Living Infrastructure
Adds Measurable Value to Housing

- Cinema Cafes
- Specialty Grocers
- Restaurants
- Book Shops
- Garden/Yard Art
- Fitness Centers
- Bike Shops

➔ *All generally add value to condominiums/urban style homes*
Single family homes may be impacted adversely by parking, noise, loitering near bars; bars and spas showed a negative impact on value

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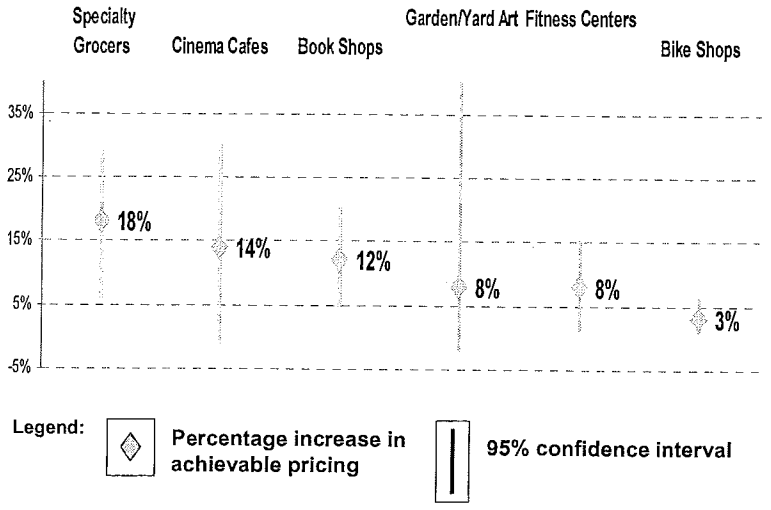
Urban Living Infrastructure
Adds Value to Homes



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Financial Proforma Modeling

- Adding urban living infrastructure to a center can make a **mid-rise** condominium project **feasible**
- Even with the urban living infrastructure premium, the prototype **high-rise** development remains **not viable**, although the gap is greatly reduced.

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Construction Costs by Type

PORTLAND METROPOLITAN AREA
Low-, Mid- and High-Rise Apartment and Condominium Development Construction Costs
2006 - Union Wages

Apartments	Units	Average Sq. Ft./Unit	Total Space	Project Cost	Cost/Unit	Cost/Sq. Ft.
Low-Rise	100	1,000	100,000	$9,711,000	$97,110	$97
Mid-Rise	100	935	110,000	$14,268,000	$142,680	$130
High-Rise	250	850	250,000	$37,480,000	$149,920	$150

Condo	Units	Average Sq. Ft./Unit	Total Space	Project Cost	Cost/Unit	Cost/Sq. Ft.
Low-Rise	100	1,000	100,000	$11,653,000	$116,530	$117
Mid-Rise	100	935	110,000	$15,695,000	$156,950	$143
High-Rise	250	850	250,000	$41,228,000	$164,912	$165

Source:R.S. Means, Inc. and Johnson Gardner, LLC

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Apartment Cost Characteristics

FIGURE 6.01

GENERAL COST CHARACTERISTICS OF RENTAL APARTMENTS

Building Type Land Value-S.F.	Land Cost	Construction Cost 1/	Total Cost	Cost/ Unit	Rent Threshold 2/
Low Rise (100 units @ 30 per acre)					
$7.00	$1,016,400	$8,254,350	$9,270,750	$92,708	$1.12
$75.00	$10,890,000	$8,254,350	$19,144,350	$191,444	$2.31
$200.00	$29,040,000	$8,254,350	$37,294,350	$372,944	$4.50
Mid-Rise (100 units @ 200 per acre)					
$7.00	$152,460	$12,127,800	$12,280,260	$122,803	$1.48
$75.00	$1,633,500	$12,127,800	$13,761,300	$137,613	$1.66
$200.00	$4,356,000	$12,127,800	$16,483,800	$164,838	$1.99
High Rise (250 units @ 500 per acre)					
$7.00	$152,460	$38,229,600	$38,382,060	$153,528	$1.85
$75.00	$1,633,500	$38,229,600	$39,863,100	$159,452	$1.92
$200.00	$4,356,000	$38,229,600	$42,585,600	$170,342	$2.06

1/ RS Means, with an additional 17.6% for other soft costs.
2/ Rent necessary for 8.0% return on cost w/ 35% operating cost ratio.

Source: Johnson Gardner

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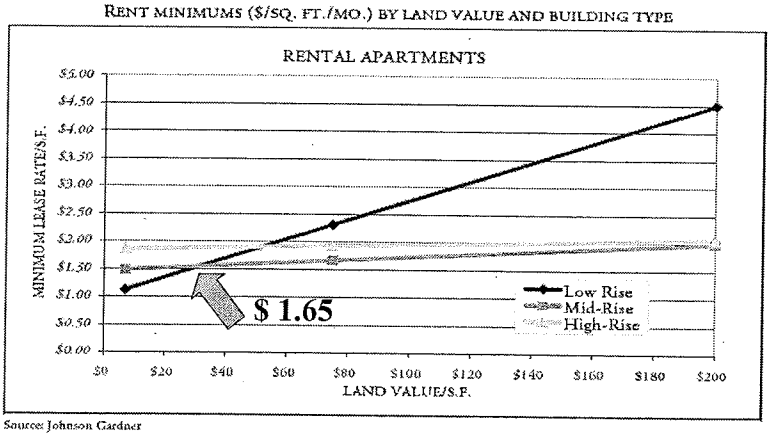
Break Point for Mid-rise Apartments

FIGURE 6.02

RENT MINIMUMS ($/SQ. FT./MO.) BY LAND VALUE AND BUILDING TYPE



Source: Johnson Gardner

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Condominium Cost Characteristics

FIGURE 6.03
GENERAL COST CHARACTERISTICS OF CONDOMINIUMS

Building Type Land Value-S.F.	Land Cost	Construction Cost 1/	Total Cost	Cost/ Unit	Price/SF Threshold 2/
Low Rise (100 units @ 30 per acre)					
$7.00	$1,016,400	$14,566,250	$15,582,650	$155,827	$188.42
$75.00	$10,890,000	$14,566,250	$25,456,250	$254,563	$329.21
$200.00	$29,040,000	$14,566,250	$43,606,250	$436,063	$620.33
Mid-Rise (100 units @ 200 per acre)					
$7.00	$152,460	$19,618,750	$19,771,210	$197,712	$239.07
$75.00	$1,633,500	$19,618,750	$21,252,250	$212,523	$274.84
$200.00	$4,356,000	$19,618,750	$23,974,750	$239,748	$341.06
High Rise (250 units @ 500 per acre)					
$7.00	$152,460	$56,688,500	$56,840,960	$227,364	$274.93
$75.00	$1,633,500	$56,688,500	$58,322,000	$233,288	$301.70
$200.00	$4,356,000	$56,688,500	$61,044,500	$244,178	$347.36

1/ RS Means, with an additional 18.75% for other soft costs.
2/ Pricing necessary for a 15% return on cost.

Source: Johnson Gardner

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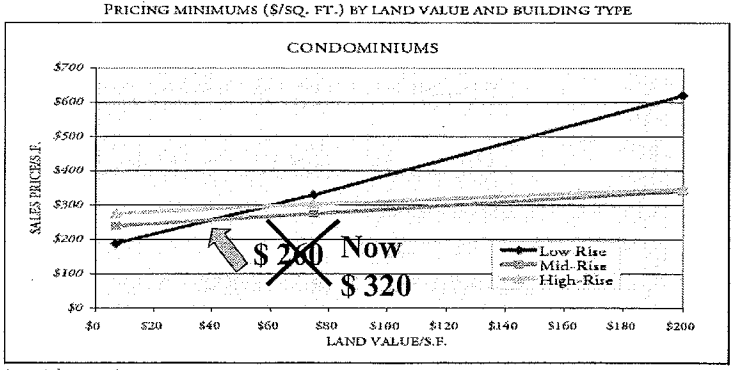
Break Point for Mid-rise Condominiums

FIGURE 6.04
PRICING MINIMUMS ($/SQ. FT.) BY LAND VALUE AND BUILDING TYPE



Source: Johnson Gardner

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Characteristics that Support a **Robust Urban Center**

- Good transportation infrastructure
- Existing commercial structures
- Proximate residential and employment densities
- Available developable parcels
- Active developer interest
- Active support from the jurisdiction

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Other Issues Impacting Viability

- Difficulty in construction (staging, conflict with existing uses)
- Relatively high soft costs associated with complex projects of limited scale
- Additional layer(s) of entitlement risk and bureaucracy
- Investors expect higher levels of return when there is increased risk in the project

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Recommended Program Strategies

- **"Proof of concept" investments -** supporting projects that test and hopefully demonstrate market support and achievable pricing for a targeted development form.

- **Investment in urban living infrastructure -** increasing the attractiveness of a center, thereby generating a marketable premium that would be reflected in higher achievable pricing.

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COMMUNITY
INVESTMENT
TOOLKIT

VOLUME 2

COMMUNITY INVESTMENT TOOLS

Innovative Design and Development Codes

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VOLUME 2

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Acknowledgments

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Administration

Robin McArthur, Regional Planning Director
Chris Deffebach, Long Range Policy and Planning Manager
Paulette Copperstone, Program Assistant

Project Staff

Miranda Bateschell, Project Manager, Associate Regional Planner
Malu Wilkinson, Principal Regional Planner
Megan Gibb, TOD/Centers Program Manager
Carol Hall, Data Resource Center GIS Supervisor

Public Affairs and Government Relations

Janice Larson, Creative Services Manager
Jeanne Galick, Graphic Design Specialist
Ken Ray, Senior Public Affairs Coordinator
Elizabeth Adams, Production Coordinator

Advisory Group

Kristen Belz, City Planner, City of Portland Bureau of Planning
Hal Bergsma, Principal Planner, City of Beaverton Community Development Department
Dan Drentlaw, Community Development Director, City of Oregon City
Julia Hajduck, Planning Manager, City of Sherwood
Katie Mangle, Planning Director, City of Milwaukie
Jeff Myhre, Principal, Myhre Group Architects

Local Partners

David Baker, Principal, David Baker Architects
Jillian Detweiler, Senior Land Development Planner, TriMet
Jennifer Dill, Professor, PSU School of Urban Studies and Planning
Dennis Egner, Chair of Education and Outreach, OAPA
Marguerite Feuersanger, Planner, City of Portland Development Services
Robert Galante, Redevelopment Director, City of Lake Oswego
Dan Johnson, Program Coordinator, Clackamas County Development Agency
Gil Kelley, Director, City of Portland Bureau of Planning
Ryan Marquardt, Assistant Planner, City of Milwaukie
Drew McCarter and **Patrick Wilde**, Gerding Edlen Development
Doug McClain, Director, Clackamas County Department of Transportation and Development
Phil Nameny, AICP, City Planner, City of Portland Bureau of Planning
Linda Nettekoven, Hosford-Abernethy Neighborhood Association
Marc San Soucie, Planning Commissioner, City of Beaverton

Consultant Team

Marcy McInelly, AIA, Project Manager, SERA
SERA/Urbsworks
Cogan Owens Cogan
Angelo Planning Group

Community Investment Toolkit, Vol. 2

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Toolkit

Regional choices for how we grow

In 1995 citizens of the region developed Metro's 2040 Growth Concept, a vision for how the region grows that is based on a set of shared community values identified through an extensive public process. These values have been reconfirmed over the years through public opinion research. The vision of the 2040 Growth Concept is to establish complete communities that include:

- safe and stable neighborhoods for families
- compact development that uses both land and money more efficiently
- a healthy economy that generates jobs and business opportunities
- protection of farms, forests, rivers, streams and natural areas
- a balanced transportation system to move people and goods
- housing for people of all incomes in every community.

The 2040 Growth Concept, an innovative blueprint for the future, is intended to guide growth and development. Ten urban design types are identified as the "building blocks" of the regional strategy for managing growth, as depicted on the map *(on page v)*. To ensure that existing neighborhoods remain largely as they are today, more intense development is called for in centers and along corridors. Regional and town centers provide commerce and local government services as well as urban amenities for neighboring residents. Corridors are major streets that are well served by transit.

Since the region endorsed the 2040 Growth Concept in 1995, updated population forecasts predict the region will grow even more rapidly than initially expected, bringing new opportunities as well as new challenges. More people and the accompanying needs for land to provide jobs and housing place a premium on the efficient use and redevelopment of urban land. Rising costs for public facilities and services further highlight the need for efficient use and reuse of the limited supply of land with existing access to urban services, including roads, sewers, transit and schools. An additional consideration is the aging of our population; as people get older, they often seek higher-density housing within walking distance of transit, retail areas and medical facilities. Metro's effort, "Making the Greatest Place," seeks to identify what we've been doing well in the region to achieve the vision of the 2040 Growth Concept, capitalize on our successes, and focus our efforts on where we need to do better.

Policy framework

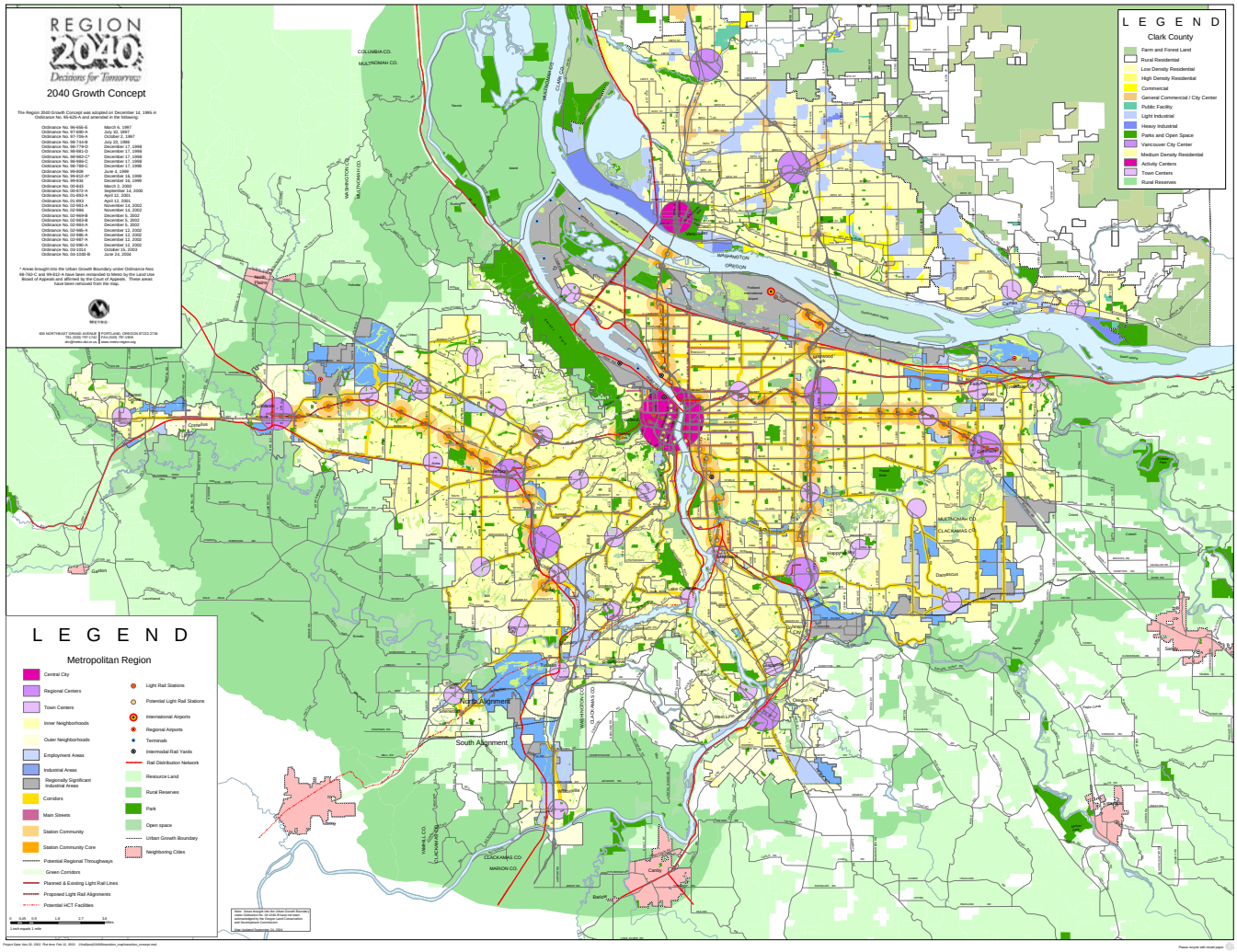
In 2006, the Metro Council and regional leaders developed a policy framework composed of four integrated elements that are intended to accelerate the achievement of the benefits envisioned in the 2040 Growth Concept. The policy elements are guided by principles stating that all regional growth and investment decisions should reinforce and support growth in centers, corridors and employment areas; that decisions to expand the boundary will balance urban needs with protection of agricultural and important natural areas; and that a collaborative approach is crucial to the successful implementation of the 2040 Growth Concept.

The four policy elements are:

1. Develop financial resources and other tools to support implementation of the 2040 Growth Concept.
2. Designate areas that will and will not be urbanized over the long term and coordinate growth with neighboring communities.
3. Base growth management decisions on urban performance.
4. Prioritize and invest in transportation improvements that support efficient development and strengthen the economy.

Investing in our communities

The first policy element is to focus efforts to stimulate investment in existing communities in a way that supports the regional vision. A key component is to develop strategies, partnerships and tools to best use the land in centers, along corridors and in



employment and industrial areas. There are many examples of successful public investment that has stimulated private development within the region and in our neighboring cities, including several communities around light rail stations, Lake Oswego's downtown and the South Waterfront area in Portland, to name just a few.

More than one million additional people are expected to live in the metro region in the next 30 years. Accommodating such growth while maintaining the quality of life residents expect will require substantial investment from the public and private sectors. Regional leaders have emphasized the importance of maximizing the land development potential in existing communities to help balance urban land needs with the importance of preserving land for the agricultural economy and retaining natural features.

The 2040 vision calls for growth to be concentrated in nearly 40 regional and town centers, along transit corridors, and in employment and industrial areas as an important strategy to maintain livable communities and support a strong economy. The benefits of developing in centers and along corridors include greater transportation choices, better air quality and more effective targeting and coordination of public investments. Mixed-use centers also maintain consistently high property values, create a sense of community and attract new businesses. Promoting redevelopment and well-designed residential development along major transportation corridors, which typically have good transit access and are often developed in low-density commercial uses, can provide similar benefits.

However, higher intensity urban development with the amenities that allow for an enhanced quality of life and redevelopment of underused urban land sometimes requires a higher initial investment than traditional greenfield and suburban development. Creative solutions are needed to help cities work with developers and lenders to achieve the types of development that enhance our communities as the region grows.

Toolkit for investing in our communities

Metro's Making the Greatest Place Initiative seeks to identify proven strategies and tools that can be used to stimulate investment in the region's centers, corridors, employment, and industrial areas to implement the 2040 Growth Concept. The strategies address:

- financial incentives
- urban design and local zoning and building codes
- employment and industrial areas.

The toolkit provides local governments, developers, nonprofit organizations, property owners and investors with important information, considerations and local perspectives for the various investment tools in the region. By highlighting the region's success stories, the toolkit shares these successful approaches across the region, demonstrates how these strategies are achieving results and serves as a guide for future investments. With technical assistance from Metro, this toolkit will help local partners overcome barriers to building vibrant downtowns and main streets and creating places for businesses to flourish.

The toolkit was developed through extensive research and collaboration with representatives from local governments, nonprofit organizations and stakeholder groups, as well as developers, investors and citizens through advisory committees and public forums.

Achieving the benefits envisioned in the 2040 Growth Concept relies on initiative by local leaders and governments. Metro and its partners will continue to build awareness of innovative and successful development strategies and work to provide technical assistance to local leaders and practitioners. Metro's technical assistance will help facilitate the use of new and existing fiscal tools and resources, modify local policies and broaden public awareness of these tools and policies and the potential benefits they bring for local community development. The toolkit is an integral component that complements this technical assistance. The toolkit supplies information and resources to help local communities achieve the benefits envisioned in the 2040 Growth Concept in a way that best fits their community needs.








Toolkit

Introduction

Innovative design and development codes: tools for investing in our communities

Innovative design and development codes provide tools to help promote vibrant communities throughout the region by reducing development costs for smart growth projects and providing the regulatory framework that enables the types of development that are desired and appropriate in different areas. Increasing public and private investments in our centers and corridors should be accompanied by new approaches to design and development codes. Each of the region's town centers and regional centers, main streets and station communities has a

Tools for investing in our communities

unique identity. For this reason, public regulation and investment tools need to focus on urban form and a sense of place, protecting what makes these areas special.

Mixed-use, pedestrian-oriented development projects built around special places typically require a much higher up-front cost, resulting in more risk to investors and developers regardless of impressive mid- and long-term returns. Design and development codes can unintentionally create additional barriers and financial costs to developers building projects in these locations. By reducing these barriers and creating innovative design and development codes that respond to the unique conditions of centers and corridors, local governments can provide the framework to reduce a project's financial gap and encourage desired developments in these areas.

Several innovative design and development codes exist in the region and across the country that enable efficient land use and support investment in centers and corridors. These tools focus on creating great places for people to live, work and play.

The model approaches for implementing the tools included in this toolkit are:

- transitions from suburban style development to walkable urban style places, including how to phase these changes over time
- code flexibility to support building design that fits in the existing neighborhood context and improve the relationship between buildings and areas of different scale
- managing parking to maximize and support urban form
- visualize zoning to improve policy decisions and facilitate developer and neighborhood understanding
- creatively involve neighborhood residents and community leaders in the planning and development process.

This toolkit highlights the use of these tools in the region and illustrates the issues and considerations that arise from their use. Each city and county in the Metro region faces different political, regulatory and financial situations and will need to assess which tool, model approach or combination can best stimulate investment in their community. Thus, the toolkit also examines the flexibility and applicability of each of the tools to the different types of cities and counties in the region.

It can be complicated to develop compact, mixed-use projects, particularly due to the high cost to achieve vertical mixed-use development in locations that do not have similar development types and the land values that support them. This can be compounded by design and development codes that prohibit certain types of buildings, create disincentives, increase costs and limit flexibility for development in centers and corridors that focuses on urban form and the characteristics that make these places special. The innovative design and development codes described in this volume of the toolkit can help reduce these barriers. Often several tools and model approaches need to be combined in order to achieve desired results. Furthermore, these approaches may need to be used in conjunction with financial incentives such as urban renewal, special tax credit programs and other strategies to achieve their full potential.

Metro provides several other technical and financial assistance programs that help overcome these barriers and offer assistance to local jurisdictions in developing innovative design and development codes. **Metro's Transit Oriented Development (TOD)** and **Centers Implementation program** has been providing both financial and technical assistance in various communities in the region. Metro's TOD/Centers program brings about the construction of "transit villages" and projects that concentrate a mix of retail, housing and jobs in areas around transit lines and in regional and town centers. Metro's TOD/Centers staff works with local government staff and developers to make complicated projects work, which often results in identifying and helping to resolve local design and development code barriers. Examples of projects that have utilized this program include North Main Village in Milwaukie and the Crossings in Gresham.

Metro's Livable Streets program, part of Regional Transportation Planning, has published three handbooks that provide practical step-by-step methods for designing safe and healthy city streets. This supports implementation of the region's 2040 Growth Concept by providing tools to better integrate street designs with nearby land uses and create an environment that is not only attractive but can slow traffic and encourage walking, bicycling and use of transit. The handbooks also provide information about designing green streets in order to limit stormwater runoff and protect stream habitat. These design guidelines help our local communities enhance livable streets in their centers, corridors and throughout their neighborhoods.

Metro's Nature in Neighborhoods program offers technical and financial assistance programs to restore and enhance natural features in communities which includes encouraging the implementation of innovative design and development. The program

Tools for investing in our communities

funds projects that connect citizens to their watersheds through hands-on restoration activities and environmental education. It also provides capital grants for projects that re-green and re-nature neighborhoods, and it provides educational information about nature-friendly development practices that benefit the environment and local businesses. **Integrating Habitats**, a design competition hosted by Nature in Neighborhoods in 2007 and 2008, called for innovative, visionary development practices that balance design excellence, ecological stewardship and economic enterprise. As a result, over 100 designs are available that illustrate ways to better balance development, human needs and the health of natural systems.

In a coordinated effort with public agencies and business organizations, Metro's **Regional Travel Options** program promotes and supports the transportation choices available in the region to reduce the number of drive alone trips. Metro's web site provides a guide to the many travel options available in the Portland-Southwest Washington metro region, including public transit, walking, biking, and ridesharing in a carpool or vanpool. **Drive Less/Save More** provides tips and tools to help save money on gas by reducing trips and driving more efficiently. This resource can reduce the number of vehicles on the road and therefore, cut vehicle emissions, decrease congestion, reduce the demand for parking, extend the life cycle of existing roadways and promote healthier communities throughout the region. This enables more compact, vibrant design and development particularly in the region's centers and corridors.

These successful examples led to the following recommendations to enhance investments in our communities and better achieve the goals of the 2040 Growth Concept for development in centers and corridors:

- Continue using these tools to encourage compact, mixed-use development and modify local regulations as needed.
- Increase the use of these tools as an inter-related package, particularly as illustrated by the model approaches and in conjunction with the application of financial incentives in order to maximize their effective use.

- Consider collaborating with other local governments, service providers, community leaders, private-sector organizations and other interested parties to explore statutory changes, state and regional regulatory changes or regional service programs that will make these tools work even better, particularly in the following areas:

  - Consider modifying Planned Unit Development (PUD) provisions in order to take advantage of the flexibility of PUDs in centers and corridors. Recommendations include making PUDs more applicable to smaller sites and allowing all types of housing and mixed-uses in these areas. In addition, consider applying PUD provisions by right to development projects in centers and corridors and select areas at the perimeter that are in need of better-designed transitions.

  - Assess the regional parking requirements in Metro's Urban Growth Management Functional Plan's Title 2 and determine if new regional requirements are warranted to further reduce barriers to redevelopment in areas served by transit. Some town centers in the region have found the local parking supply to be much greater than the demand. In addition, a consistent barrier to redevelopment is the high price of providing parking in areas with lower land values. Establishing a limit on the number of parking spaces can be an important tool to foster mixed-use development in areas with high land use values, viable buildings, and a strong transportation system.

  - Investigate the potential for implementing a quick response program in the region that addresses neighborhood concerns and issues regarding infill development. The program could offer a neutral party to provide design assistance, help resolve conflicts and develop better design solutions.

Toolkit

Innovative design and development codes

Transitions

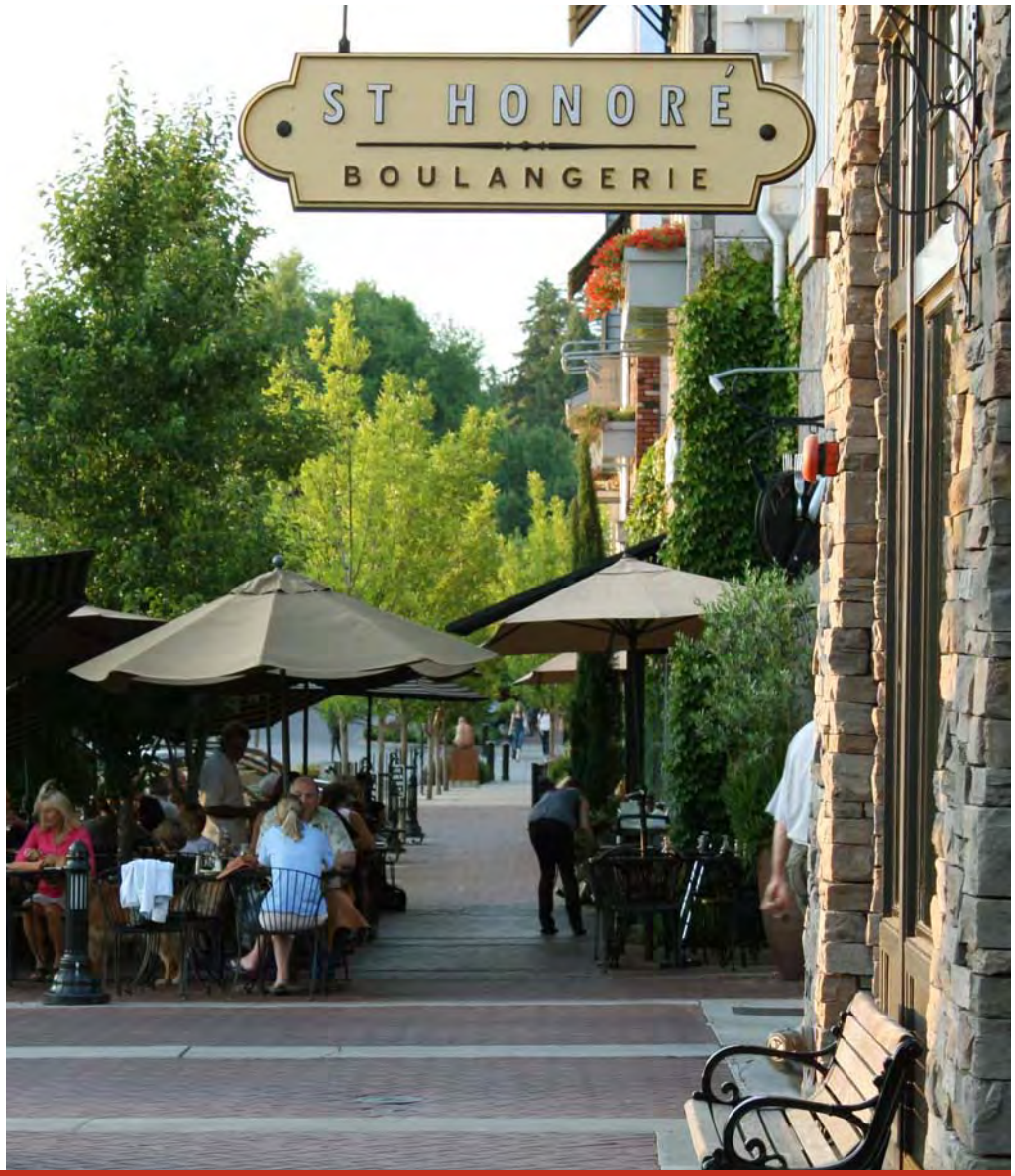
- Public realm transitions
- Density and use transitions

As city centers and corridors begin to change from more suburban development patterns to a more compact, urban, pedestrian-oriented character, cities and counties are struggling with the best way to gracefully achieve this physical transition. Issues arise as to how to increase densities over time, how to build transit-oriented design in infill areas and how to address the transition areas between more suburban and urban zones. Throughout the region, communities need to know how to best facilitate and accomplish this transition.

The various centers and corridors in the region have distinct identities, historic buildings and established development patterns that create main streets and commercial districts with a unique sense of place. For these areas to make the transition to higher densities and a mix of uses, the best approach is usually to expand upon the historic patterns of growth. However, a number of the region's designated growth areas are more suburban in nature, including light rail station areas and single-use districts like shopping malls. Making the shift from undifferentiated sprawl that is automobile-dominated and dependent on single-use strip-style development to more compact, pedestrian-friendly urban forms is a substantial shift in the appearance and use patterns of these places.

This chapter covers two different types of transitions experienced in communities. The first type is about physical transition: how to make the physical change from a single-use, low-density pattern to a mix of uses and densities. The second type is the transition that takes place over time: how to accommodate or phase in urban development. Both types of transitions are currently addressed by zoning. However, zoning is static, and it does not typically change in response to the market by allowing or requiring different land uses as the market evolves. Local governments can include provisions in their zoning codes that adapt to the evolution of the market.

The best solution to facilitate the transition to more urban and active streets and development patterns is to combine regulations with development incentives. This approach is powerful when combined with funding tools such as urban renewal and business improvement districts to leverage investments in the public realm that can help attract and shape development.



Ground-floor requirements and retail incentives have activated the downtown district in Lake Oswego

Photograph provided by SERA

Toolkit

Innovative design and development codes

Public realm transitions

Suburban environments typically lack higher levels of density that generate street-level pedestrian activity found in more urban environments. The region's centers and corridors provide a prime opportunity to transform auto-oriented landscapes into more pedestrian-scaled, urban environments with a vibrant mix of uses. Key to this transition is creating a network of active, walkable streets that are connected physically and have similar visual components. The public realm is the environment experienced by any visitor to a specific place, the area between private buildings including the street, sidewalks and any public amenities such as plazas or benches. Improvements to the public realm that complement private improvements help make great urban spaces that define a place while improving safety and encouraging redevelopment.

The nuts and bolts

Codes and regulations that offer more flexibility, adapt to the market, focus on design, and offer incentives help ease the transition in the public realm. However, these improvements to the public and private realm cannot be achieved simply through regulation. It is difficult to attract the desired higher density development and mix of uses that support more urban streetscapes until the market it is ready. Even with a codified long-term vision, permissive land use zoning and required ground-floor development, such a transition cannot often be supported economically in the short-term because an increase in land values is needed to drive dense, mixed-use redevelopment projects. This challenge of transforming commercial areas into pedestrian-friendly districts is heightened if cities lack the funds to invest in the public infrastructure of sidewalks and streets. Therefore, local governments should complement model code approaches with financial incentives in order to change the physical form of the buildings at the ground-floor, street and sidewalk level, which can build a foundation for long-term market growth.

How to use it:

Ground floor design and development standards: Standards can help shape pedestrian-friendly ground floor areas in new and redeveloped buildings. These often take the form of clear and objective requirements that guide how a site must be developed. Standards define allowed and prohibited uses as well as the basic parameters of the outside of the building, or the building shape. Typically they address some or all of the following: building height, setbacks, landscaping, lot coverage, floor area ratios, parking, building materials, building façades, semi-public spaces, entrances, ground floor façade transparency, weather protection, signage and lighting.

Existing use of the tool in the region: The City of Milwaukie applies ground floor design and development standards in its downtown. Washington County applies similar requirements in its transit station areas.

Ground floor active use provisions: Often local governments find that simply requiring active ground floor uses in specific zones or locations discourages development if the near-term market does not support such uses. In response to this problem, some centers within the region have begun allowing interim storefront uses. Other local governments have achieved success in combining incentives such as reduced parking requirements with design standards that encourage desired retail uses with a character appropriate to the local center or corridor.

Zoning codes that recognize the realities of the market and include provisions that support a long-term vision for an area or district provide a more informed approach. They can require spaces to be designed so that they can be adapted to active uses such as retail or commercial once the market is ready. These requirements seek to establish good "bones" for active uses including high ceilings, large floor plates, specific construction types and transparent faces of the building fronting on public spaces.

There is flexibility for local design preferences, but fire and safety requirements do impact the dimensions of these ground floor spaces. Specific ceiling heights must be met, with 12 feet and higher serving as the standard. Retail uses also require larger

Example approach

City of Lake Oswego

Ground-floor requirements and retail incentives

The City of Lake Oswego has successfully established active ground floor retail uses in its downtown district by making targeted public investments and leveraging their negotiating power. In 1986, the Lake Oswego Redevelopment Agency (LORA) adopted an urban renewal plan for the downtown district, making tax increment financing available for new downtown projects. LORA then negotiated with developers to require ground floor retail. The focus was on establishing traditional "boutique" type retail uses rather than service retail, such as hair salons banks and copy shops, which are encouraged above the ground floors of development or outside the downtown core.

Various incentives were also created to attract retail businesses to locate downtown. New retail uses locating in existing structures in downtown are not required to provide parking. Existing structures may also have new floors added without any additional parking requirements as long as the ground floor footprint does not increase. In addition, the city set design standards to create the desired downtown character and encourage ground floor retail uses. While the code does not explicitly prohibit non-retail uses from the ground floor, these standards help to foster an environment that is conducive to ground floor retail over other types of uses. For example, a minimum of 80 percent of exterior ground floor area abutting pedestrian ways must be a designated storefront with display windows and entry features. The design standards also require plantings, street furniture and art in order to attract shoppers, provide places for outdoor dining and social interaction and to facilitate the programming of events and activities such as concerts and farmers markets.

As development and redevelopment has occurred over the last decade, rents in the downtown district have subsequently increased to the extent that ground floor space is not as affordable for non-retail uses such as offices. In this way, market forces encourage non-retail uses to locate on the upper floors, while the ground floor is reserved for retail businesses that are typically able to pay higher rents.

Design standards create a desired downtown character in Lake Oswego

"Our codes help create a seamless pedestrian-oriented shopping experience at the street level. Required design elements help attract shoppers and facilitate social interaction and special events. It is integral not to skimp on quality, and design local streets as flexible rooms as these features add to the quality of life of downtown users."

– Robert Galante,
Redevelopment Director,
City of Lake Oswego

The nuts and bolts

footprints with specific depths of at least 25 feet in order to accommodate their operational and infrastructure needs. Additionally, requirements for fire separation and fire suppression should be coordinated with the building code.

Existing use of the tool in the region: The City of Portland has achieved success with pairing ground floor design and development standards with active use provisions. The city requires the ground floors of new buildings to be designed so they can be retrofitted later when the market is stronger while allowing an interim use to avoid empty storefronts.

Minimum floor area requirement: In areas served by transit, communities can support the public realm by setting minimum floor area requirements for active uses. Active uses can include household and group living, retail sales and services, schools and colleges, daycare facilities, industrial services, community services, medical centers and religious institutions. Areas with well-designed streets and sidewalks and a mix of active uses that are well served by transit can support a higher level of density as automobile trips are replaced by transit, bicycle and walking trips. Minimum floor area requirements paired with ground floor active use and build-to lot line requirements ensure that development supports an improved public realm.

Existing use of the tool in the region: The City of Portland applies minimum floor area requirements in tandem with ground floor active use provisions in the Central City District as well as the Gateway Regional Center and the Hollywood Town Center.

Bonus floor area: Incentives are powerful tools that can be applied to achieve desired forms of development. Within targeted areas, floor area bonuses may be offered for a variety of desired features such as residential uses, mixed-use projects, retail uses, sustainability measures or affordable housing, among others. As opposed to regulations that require certain features, this approach works with the market to provide incentives attractive to developers within a targeted area. If developers propose projects with the desired features, they are eligible for a larger floor area that can translate into higher potential profits.

Existing use of the tool in the region: The City of Portland has established a retail use bonus option, among other bonus floor area options, for the Central City Plan District. This tool has also been used in conjunction with the ground floor active use requirements as part of a regulatory framework to reinforce the continuity of active ground-level uses throughout the Central City to support a vibrant pedestrian-oriented urban district.

Flexible parking requirements: City codes in the region already contain minimum parking standards based on development type. To create an incentive for desired types of development, cities can allow flexibility in these requirements based on factors such as access to transit, presence of nearby complementary uses, expected demographics or auto ownership rates, or the implementation of programs to reduce the demand for parking. Providing parking is often the greatest single cost to developers for projects located in centers and corridors. By reducing this cost, cities can provide an incentive to developers to build projects in these or other designated areas.

Cities can give permitting authorities the discretion to reduce the number of required parking spaces based on the factors listed above or establish more specific criteria to allow reductions to the minimum allowed outright under the code. Similarly, cities can allow on-street parking spaces to count toward off-street parking requirements. To specifically address the need for more active uses and higher quality retail uses, local governments can remove parking minimums for active ground floor retail uses or allow existing buildings to be expanded without any increase in required parking.

Existing use of the tool in the region: The City of Lake Oswego has successfully used flexible parking requirements in conjunction with design standards as an incentive to attract retail businesses to the downtown.

Keep in mind

- **Public investments:** Infrastructure investments made to create an attractive public realm and pedestrian-oriented streetscapes are powerful tools whose high associated costs may be justified given their potential ability to attract developers to centers and corridors. They provide a means for local governments to negotiate for attractive mixed-use buildings. Financial tools such as urban renewal and local improvement districts help fund these investments. Likewise, infrastructure investments needed to serve the redevelopment in these areas should be incorporated into local capital improvement programs and system development charges (SDCs) in order to finance these public projects.

- **Legal issues:** Some local governments have required developers to complete public space improvements for redevelopment projects in infill areas. This requirement can create a barrier to development in centers and corridors that already have higher development costs. It can also provide an incremental approach to infrastructure improvements and may result in an incomplete system of improvements in the public realm. More so, it is difficult to determine which remodels or redevelopments should be required to pay for improvements to the public realm. Likewise, the larger public shares these public spaces and the benefits of an improved public realm. For these reasons, the approach of requiring specific development projects to subsidize these improvements has faced legal challenges. If these improvements to serve growth are calculated within SDCs, all development shares the benefits as well as the burdens.

- **Market flexibility:** It is important to provide incentives such as waiving parking requirements or providing floor area bonuses in areas targeted for compact, mixed-use development where the market cannot yet support the desired development patterns. In areas where additional floor area may not provide an adequate incentive, local governments can determine locally appropriate incentives such as streamlining the approval process for building permits in order to be more effective. Likewise, accompanying regulations should include several code options of varying stringency to remain effective in a changing market (e.g. active use provisions). These options make it possible for any local government to target this approach to its local market and enforcement preferences.

- **Public-private partnerships:** Communities can leverage urban renewal and development agreements as powerful tools to attract the desired types of development and achieve public realm improvements. Regulations and incentives alone may not lead to the type of desired downtown development and mix of uses. Negotiated developer agreements have the potential to provide the most leverage and can be the primary tool used during an initial downtown redevelopment phase. They should be combined with design standards in order to perpetuate the intended aesthetic and create an atmosphere that is desirable to retail uses. Urban renewal can also give local governments the power to negotiate such agreements with developers. Through tax increment financing, a local government can provide financial incentives and make public investments to attract desired development projects and additional public amenities.

- **Communicating development capacity:** Bonus floor area provisions can hide the true total development capacity of a site. This can cause problems with the public when a developer applies for bonuses allowed by the code and as a result the project exceeds allowed building envelope parameters. Setting a maximum height or floor-area ratio that cannot be exceeded even when all bonuses are added helps to avoid this problem.

Example approach

City of Portland

Ground floor requirements

To reinforce the continuous pedestrian activity along major transportation corridors throughout its Central City Plan District, the City of Portland established a zoning code provision to support the development of active ground floor uses and maintain a healthy urban district. The provisions of the code are designed to support the development of active uses, including lobbies, retail, residential and commercial uses.

Design standards encourage the development of ground floor spaces that can accommodate a number of different types of use and can be retrofitted over time in order to avoid empty storefronts. These regulations include height and building depth requirements that ensure spaces can accommodate single or multiple tenants. Street facing façades are required to include windows and doors or be structurally designed to allow the addition of windows and doors when the space is converted to active uses. In addition, ground-floor spaces are required to meet construction type and fire, life and safety requirements.

In addition to the provisions for active ground floor use, Portland has established other regulations and incentives along transportation corridors served by transit to encourage a higher level of activity and intensity. For example, minimum active floor area regulations require that when a site is within 200 feet of a streetcar alignment, active uses must occupy at least half of the floor area. These requirements are also in place in other plan districts in the city targeted for transit-level densities.

Furthermore, sites in the center of downtown that commit at least half of the site to retail space can qualify for a bonus floor area. Bonus floor area is earned in a 1-1 ratio for each floor area of retail space beyond the threshold. Any space dedicated to retail use under this provision must be preserved long term. This is accomplished by recording the use of the provision in a covenant between the property owner and the City that is attached to the property's deed.

This combination of different strategies to achieve desired forms has proved more successful than the previous Required Retail Opportunity Area code, which was overly prescriptive, inflexible and difficult to implement.

Design standards encourage active ground floor use, City of Portland
Photograph provided by Michael Mathers

Design standards encourage the development of ground floor spaces that can accommodate a number of different types of use and can be retrofitted over time in order to avoid empty storefronts, while still encouraging compact mixed-use development.

Putting it together

Local governments should use a holistic approach to applying these tools in order to implement a model approach and achieve desirable results for transitioning the public realm. Regulation alone cannot ensure results toward a center's objectives given the role that the market plays in determining land values and subsequent development proposals. Financial and regulatory incentives take these economic realities into account and attempt to make development in designated centers more attractive from a financial perspective.

Tips for implementation

- Determine the largest stumbling blocks to development in the area and develop incentives to help overcome these and bridge lower land values.
- Develop design standards and guidelines to shape a vision for development over the long-term that can guide future regulations and incentives.
- Develop an approach that combines multiple regulations and incentives to activate ground-floor spaces over the long-term.
- Require ground floor designs to be adaptable so that they can be retrofitted to active uses as the market develops.
- Develop a more equitable long-term approach to funding improvements in the public realm. Consider funding opportunities such as SDCs, urban renewal, and improvement districts.
- Determine the extent and nature of the transportation network serving a targeted town or regional center. Areas must be transit rich in order to support higher densities of the retail or commercial uses that will activate the street at the pedestrian-level.
- If transit resources are not available, partner with regional transit authorities to improve existing resources or target the area for additional resources.
- Consider establishing an urban renewal district as this designation allows a city or county to use a powerful financing tool to facilitate the physical transition of suburban areas to thriving town and regional centers.
- If utilizing urban renewal, use this power to leverage additional requirements from developers in a development agreement.

The use of a developer agreement will help increase employment and housing units in the Clackamas Regional Center

Photograph provided by SERA

Toolkit

Innovative design and development codes

Density and use transitions

As centers and corridors grow and transition to more urban patterns of development, they face challenges with integrating mixed-use projects. Some of the regions's centers and corridors are struggling to integrate residential uses into auto-dominated, single-use districts in order to achieve more vibrant communities. Higher development costs are also associated with these types of projects since they require more complex construction than single-use, low-density developments. Given this higher cost of development and low land values that do not yet support higher densities in some of the regional centers, financing gaps often remain. This is a challenge that cities throughout the region are trying to understand and overcome.

The nuts and bolts

By simply rezoning to allow compact mixed-use development, and not taking additional steps to help encourage new development patterns, cities may still experience development without higher densities or a mix of uses. As a result, a large amount of multi-family housing may be developed, leaving little land to assemble for retail or employment development once a market has developed. Zoning codes that simply require mixed-use development often fail because they are not correlated with the market and do not reflect what can be built at a specific point in time.

New approaches have attempted to create mechanisms in local development codes that phase expectations and establish triggers or thresholds in order to make the codes more responsive to the market. For example, once a certain land value exists, higher levels of density are required; or in a single use retail area, once residential uses become feasible, housing is required. This tool is particularly helpful in encouraging the redevelopment of select sites with non-conforming uses that would not redevelop otherwise. These new code approaches, when paired with plan districts, urban renewal areas, and development agreements are some of the more effective tools that have been used to address these issues related to density and use transitions.

How to use it:

Non-conforming use provision: To attract redevelopment on a smaller, site-specific scale, cities can amend their zoning ordinances to adopt non-conforming use provisions. These code provisions allow a property with an existing auto-oriented use that would no longer be permitted in most centers and corridors to be continued if the property is redeveloped in exchange for increased density, a greater mix of uses, and high design standards. Recognizing and retaining the value of auto-oriented uses, including auto services and drive-throughs, is an effective strategy as long as it is paired with regulations that assure that the design fosters an urban mix and intensity of uses and form. This innovative approach recognizes that the redevelopment and design of the site may be more important than the allowed uses. This code-based approach can be implemented through development standards for base zones, plan districts or overlay zones for centers and corridors. This allows additional flexibility and provides incentives for redevelopment that do not currently exist in most designated town centers and corridors in the region. All jurisdictions can use this incentive to help redevelop any non-conforming auto-oriented or retail uses that are commonly prohibited in regional and town centers.

Existing use of the tool in the region: The City of Portland has successfully used this tool to leverage the market demand for non-conforming uses (such as bank drive-throughs), in order to achieve higher intensity mixed-use projects in its Plan Districts.

Development agreement: Development agreements are voluntary legal agreements between a city and a developer. Agreements are negotiated on a project-by-project basis. Local governments are able to negotiate specific public benefits such as investments in the public realm, creation of new open space, permitted densities or uses, responsibility for providing infrastructure and services, and maximum height and bulk for proposed structures. In exchange, developers receive increased certainty that their proposal will be approved if they provide the agreed-upon features.

Development agreements can include a mix of incentives and requirements to reach desired outcomes. These agreements can provide a higher level of specificity and "teeth" for the implementation of development plans and improvements than plan and code language can achieve. However, there must be consistency and support in the vision and framework of the local comprehensive plan and development code for the terms being forged in the development agreement. Development agreements and intergovernmental agreements are applicable at various scales.

Development agreements are powerful tools to address the transition of large suburban sites into communities that are more urban in nature. For example, a development agreement can require that the developers of a property provide a desired mix of uses. However, if the market does not yet exist for certain uses, the public entity can allow some initial development to occur while requiring the developer to conduct a market study at specified intervals to determine when additional use requirements and future development standards should be applied.

Existing use of the tool in the region: Clackamas County has seen some success in using a development agreement to insist on a desired mix of uses in the recent redevelopment of the Clackamas Regional Center from a suburban mall to a regional center. The county had more leverage in its negotiations given the urban renewal financing already in place.

Keep in mind

Financial incentives: Local governments with urban renewal authority will be in a better position to negotiate favorable development agreements. Having urban renewal financing in place can afford municipalities more leverage with property owners.

FAR considerations: Floor area ratio (FAR) is a formula that most codes use to indicate total development capacity on a site. It can be very useful in comparing development capacity and to quantify and negotiate incentives and bonuses with developers. However, in the interest of making codes easier to visualize, FAR can also be represented with building envelope parameters such as setbacks, height and site coverage. Codes can express development capacity in both ways, making them easier for everyone to use.

Market dynamics: Allowing redevelopment of non-conforming uses such as auto-serving businesses and drive-throughs within areas targeted for more compact development takes advantage of market dynamics. Communities can use this as an incentive to attract redevelopment projects and private investment. If these uses are prohibited in more zones throughout the region, sites with existing drive-through facilities, for example, will become more valuable, particularly on streets with high traffic volumes and good visibility. Regulations requiring a higher FAR on the site are needed for this approach to work, creating a mutual benefit to the developer and local community. These minimum FAR levels and required residential uses need to be tailored to the specific community and its market.

Achieving mixed-use: In most centers and corridors, amending regulations to allow a mix of uses in conjunction with providing incentives that take advantage of market trends to attract desired development is the best approach. However, there are sites or areas where requiring a mix of uses may be appropriate. Local governments can use regulations and development agreements to require a mix of uses as the local market matures. In some cases it is important to preserve land for higher intensity, mixed-use development, waiting until the market evolves rather than allowing development to occur at a lower intensity. Examples of these types of places include critical sites next to transit routes or at the 100 percent corner of a center or corridor, meaning a focal point of a center or corridor that is surrounded by a mix of active uses. In these cases, prescriptive requirements for a mix of uses or for a certain number of residential units may be appropriate.

Cost: Non-conforming use provisions are cost-effective tools for communities that do not have urban renewal. Development agreements or the use of urban renewal may require a larger public investment. Local governments that can combine these tools will have the greatest ability to affect the transition from suburban to urban form.

Identifying transit opportunities: Transit is key to achieving the suburban to urban transition. Areas that are well served by transit can support a higher level of density since automobile trips are replaced by non-auto trips and land for parking is freed up for development. Therefore cities and counties should identify opportunities and sites for transit facilities in local center and corridor plans. Working with TriMet and Metro in this planning process will help determine the most effective locations and ways to integrate these facilities into the local fabric. This will help ensure these areas can function as vibrant centers and corridors.

Example approach

Hollywood and St. Johns Centers

Non-conforming use provision

In most town centers, a new or redeveloped drive-through facility would not be permitted. In the Hollywood and St. Johns Plan Districts the City of Portland has sought to encourage the redevelopment of sites with existing drive-through facilities by allowing them to continue as a non-conforming use as long as new redevelopment meets minimum FAR levels and residential uses. The intent of these plan district standards is to provide some flexibility for redevelopment and avoid the loss of a potential project due to the value associated with maintaining drive-throughs since they are a non-conforming use.

The FAR requirements provide for the more intense development with an urban character appropriate for a town center. These standards also allow the city to ensure drive-through redevelopment projects remain consistent with the overall intent of the center or district plan. Portland initially included a "sunset" provision for use of the drive-through regulations in the Hollywood Plan District. However, the sunset provision was later removed from the regulations.

In the Hollywood District, a full block with a Washington Mutual Bank (and drive-through) is being redeveloped into a mixed-use project that will include a Whole Foods Grocery, housing, structured parking and a bank with drive-through facilities. The drive-through provision was critical to this development as the bank saw this as a key business feature. Since they are utilizing the drive-through provision, the development is required to have an FAR of at least 1.5-to-1 and must include 25 percent residential uses. Plans for the development reflect an FAR of closer to 3-to-1. Additionally, the residential component allowed the developer to use the bonus building height provision, which brought the maximum allowable building height to 65 feet, rather than 45 feet.

Existing bank drive-thru use (above) being redeveloped in the Hollywood District (right) using Portland's non-conforming use provision

Image provided by Gerding-Edlen

The intent of these plan district standards is to provide some flexibility for redevelopment and avoid the loss of a potential project due to the value associated with maintaining drive-throughs since they are a non-conforming use.

Putting it together

Model code approaches that are flexible to the market and establish phased development requirements encourage redevelopment today while remaining consistent with the long-term vision for centers and corridors. This tool is particularly helpful in encouraging the redevelopment of select sites with non-conforming uses that would not redevelop otherwise. These new code approaches, when paired with financial incentives and development agreements, are some of the more effective tools to obtaining redevelopment that transitions in density and use over time.

These approaches do not require the setup or management of extensive programs or a significant amount of financial resources. Any local government can make slight modifications to its local development codes to offer these incentives and phased requirements.

Tips for implementation

- Target the application of non-conforming use code provisions throughout or within specific areas of local centers or corridors depending on where the vision calls for more development or focused redevelopment.
- Conduct stakeholder meetings to explore whether the opportunity to retain a drive-through or other auto-oriented uses as part of a redevelopment project would be attractive as an incentive.
- If non-conforming uses are hampering development in a particular center, identify all existing facilities, research how they are categorized under current code regulations (permitted, prohibited, legal non-conforming use, etc.), and evaluate the strength of the market for these existing facilities. Then identify the desired uses and minimum FAR for the sites based on current regulations and future aspirations.
- Create non-conforming use provisions that allow redevelopment if those desired development standards are met.
- Provide a clear record, or map, of the location of existing facilities or sites that are eligible to take advantage of the non-conforming use provisions.
- When able to use developer agreements in areas facing use and market transitions, require the inclusion of market studies in order to better respond to the market while maintaining requirements to meet the long-term vision.

Example approach

Clackamas County

Development agreement

In order to achieve the goals in the 2040 Growth Concept of developing the Clackamas Regional Center area as an urban regional center, the county is transforming the suburban mall into a mixed-use development with an urban form. The Clackamas Regional Center (CRC) area is projected to increase current employment and housing units to twice their existing levels. To achieve this large-scale transition of existing development patterns, the county augmented a plan and zoning district with developer agreements, urban renewal financing, agreements between the mall owner and TriMet, and plans for light rail transit. If used independently, these elements would not enable the scale of change that is envisioned.

Given that the mall and its surrounding area were in an urban renewal area, the County formed a development agreement in 2005 with the mall owner, General Growth Properties (GGP), for redevelopment of the property. The county committed through the agreement to provide parking and site improvements using expected funding from the urban renewal area. In return, the developer committed to building new commercial space and planned infrastructure projects. In addition, GGP committed to perform annual market studies to determine when the local market is ready for residential uses in the CRC. The county identified housing as an integral component to the long-term success of the urban regional center. Thus, once certain market conditions are identified, GGP is required to develop the residential component of the regional center's plan.

The county recognized that another key to achieving a vibrant urban center was providing regional transit. A partnership with TriMet resulted in the planning and design of a Clackamas Regional Center Station and Transit Center serving as the southern terminus of the proposed I-205 light-rail corridor route. Building off its pre-existing right to land and operations on mall property, TriMet formed an agreement with GGP for a 100-year lease of four to five acres for the planned MAX station and transit center. Costs for ensuring that the parking structure could be developed with a future second deck were split between GGP, TriMet and the county. GGP retained the air rights over the parking structure with the potential to develop a second floor of parking that would connect to an adjacent office or hotel development.

Clackamas Regional Center is being transformed into a mixed-use development with urban form

Photography provided by SERA

The county committed through the agreement to provide parking and site improvements using expected funding from the urban renewal area. In return, the developer committed to building new commercial space and planned infrastructure projects.

Resources

Public realm transitions

For more information on the example approaches, visit or contact:

Lake Oswego Redevelopment Agency
City of Lake Oswego
380 A Ave.
Lake Oswego, OR 97034
503-635-0235
Lake Oswego Community Development Code, Section 50.11
http://www.ci.oswego.or.us/plan/consolidated%20code/final/

City of Portland, Bureau of Planning
1900 SW Fourth Ave., Ste. 7100
Portland, OR 97201
503-823-7700
http://www.portlandonline.com/planning/
Central City Plan District, City of Portland Zoning Code, Chapter 33.510
http://www.portlandonline.com/shared/cfm/image.cfm?id=53363

Density and use transitions

For more information on the example approaches, visit or contact:

City of Portland, Bureau of Planning
For the Hollywood Plan District, Chapter 33.536, visit:
http://www.portlandonline.com/shared/cfm/image.cfm?id=53372
(See Section 33.536.210.D for regulations on Drive-Through Facilities)

For the St. Johns Plan District, visit:
http://www.portlandonline.com/shared/cfm/image.cfm?id=53424
(See Section 33.583.210 for regulations on Drive-Through Facilities)

Clackamas County Development Agency
9101 SE Sunnybrook Blvd.
Clackamas, OR 97015
503-353-4400
http://www.clackamas.us/transportation/renewal/
Clackamas County Comprehensive Plan, Chapter 10: Clackamas Regional Center Area Design Plan
http://www.co.clackamas.or.us/transportation/planning/comprehensive/10crc.htm

For more information on financial incentives for centers and corridors, including those listed above, please request

Metro's Community Investment Toolkit, Volume 1: Financial Incentives
Metro Planning Department
600 NE Grand Ave.
Portland, OR 97232
503-797-1839

Toolkit

Innovative design and development codes

Contextual design

- Code flexibility
- Transition zones

As the region's centers and corridors begin to transition from more suburban to urban forms, a mix of scales can result. A mismatch in urban scale can have a substantial negative impact on privacy, livability, real estate values and neighborhood character. Addressing neighborhood concerns in areas of redevelopment and transition can create an additional challenge. Most of the tools commonly used to address neighborhood concerns about a new development project sacrifice project design or density or result in dissatisfied neighbors. The key to creating high-

quality communities throughout the region is to develop graceful relationships between buildings and zones of different scales.

These relationships are particularly critical in corridors and centers and along edges adjacent to residential neighborhoods. If effective transitions are not made between buildings and zones of different scale, communities will risk losing the support of adjacent neighborhoods for intensifying development in centers and corridors. Conventional zoning functions fairly well in single-use zones. It is in more dynamic mixed-use zones where traditional zoning fails to regulate building form in a manner that eases transitions.

Traditional approaches to zoning apply a single allowed building scale uniformly across a specific area. Developments either meet minimum density requirements or they are not permitted. Zoning precludes flexible solutions such as different densities or approaches to height, bulk and massing (an approach to building design to reduce its apparent bulk by dividing it into smaller components) that would address the edge of the zoned area in order to respond to the context of the surrounding areas. As a result, redevelopment projects in centers and corridors face higher levels of scrutiny and site-specific design negotiations to ensure integration with surrounding areas, increasing costs to the project.

This chapter covers two approaches to achieve more attractive development relationships that improve the quality of centers and corridors as well as the surrounding neighborhoods. The first approach is building more flexibility into regulating codes in order to allow contextual responses that are more sensitive in their design to the existing forms in the neighborhood. The second approach is to use transition zones to create more gradual transitions in building form to ensure more attractive edges where centers and corridors meet single-dwelling neighborhoods.

New construction built to form-based code standards, City of Hercules, California

Photograph provided by Pacific Municipal Consultants

Toolkit

Innovative design and development codes

Code flexibility

One issue city planners face in establishing design and development codes is how to determine the appropriate amount of architectural controls. Oregon Statewide Planning Goal 10: Housing requires local governments to provide clear and objective standards for needed housing. Planners, designers and local residents recognize that more flexible development standards usually produce superior development while current implementation of the state required clear and objective (less flexible) standards prevents bad design but rarely encourage place-specific, context-sensitive design solutions. However, communities rely on clear and objective regulations because they are easier to administer and are recognized as more "fair." The resulting codes are rigid and do not allow much

The nuts and bolts

variance in designs. Instead they prescribe blunt solutions for a vast range of development sites that would benefit instead from contextual responses. Codes that are flexible and allow a contextual response by offering alternatives achieve more appealing and suitable compact, mixed-use projects. Alternative code approaches, particularly form-based and menu-based codes, offer better opportunities for increasing flexibility as well as development capacity.

How to use it:

Form-based codes: Form-based codes provide a method for regulating the physical form of development with clear and objective standards that allow flexibility and variation in the final built product so that designs can respond to the context. Elements such as building envelope (the outside area of the building), key dimensions, siting, and the relationship to adjacent buildings and the sidewalk are specified to a high level of detail in the code. Architectural styles are not prescribed, with the exception of the listing of allowable and prohibited materials and the location of signs. The intent of this strategy is to achieve a variety of architectural styles with structures appearing as if they evolved over time. To further achieve this goal, building requirements are sometimes waived for civic sites in order to provide greater flexibility for special architectural statements.

Recognizing that uses will change over the lifetime of a building, form-based codes de-emphasize density and use regulation in favor of controlling the built form. The code favors a mix of uses and housing types. It also recognizes the importance of the design of the public realm and the influence of individual buildings in shaping the streetscape.

Form-based codes often use street types to determine the physical design of buildings and shape well-defined spaces. The street is the organizing principle behind the code in order to create higher-quality environments as experienced by pedestrians. This approach helps ensure that building development and design standards create a clearly defined street hierarchy. Thus, the building type and design should be directly related to the type of street it is facing. For example, buildings on smaller-scaled local streets should have different uses, setbacks, heights and frontage elements than buildings on larger-scaled streets that serve the broader region.

Another central tenet of the form-based code approach is that changes in building bulk, height and massing are gradual and take place at the back of the lot. Increases in height generally do not exceed one story, stepping up a half-block at a time. If building heights exceed this standard, dimensions for setbacks, stepbacks and design are specified to ensure privacy and adequate transition. This stepping effect usually takes place over several blocks, so this approach may not work in many corridors, which generally include one or two blocks on each side of a main street.

The form-based code describes the appropriate transition for each block using clear and objective language as well as graphics, bypassing the need to oversee transitions on a case-by-case basis. As further described in the section on visualizing zoning,

form-based codes also represent a more visual alternative to conventional land use regulations, creating flexibility in the code and serving as a communication and policy-making tool.

Form-based codes replace existing zoning codes and can be mandatory or optional offering several implementation options for local governments. A form-based code can be integrated into the existing code, applied as a "by right" designation to selected zones and cross-referenced to existing code provisions. It can also function as an optional parallel code system within a separate chapter that has unique provisions not cross-referenced to other parts of the code, making this an available option in designated zones. Form-based codes can also take the form of floating zones that are triggered by an application to rezone a property.

Form-based codes are often confused with design guidelines. However, they are not discretionary. While they offer flexibility like design guidelines, they do so by offering choices between objective standards rather than by offering multiple ways of meeting an aspirational guideline.

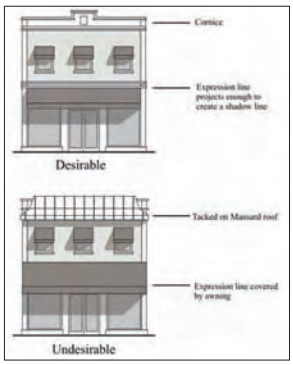
Form-based codes cannot be transported from another jurisdiction without customization. As context-sensitive codes, they must be tailored to the specific built environment and local efforts. Form-based codes can be created for infill areas if they start from a complete understanding of existing development patterns and building form. Such an inventory must be part of the work effort to develop a form-based code.

Existing use of the tool in the region: Form-based codes have not been widely implemented in Oregon. Several cities in California and around the country have successfully integrated form-based codes into existing codes, with Petaluma and Hercules being the most commonly referenced.

Example approach

City of Hercules, California

The city is achieving varied building styles and creatives responses to the architectural guidelines.

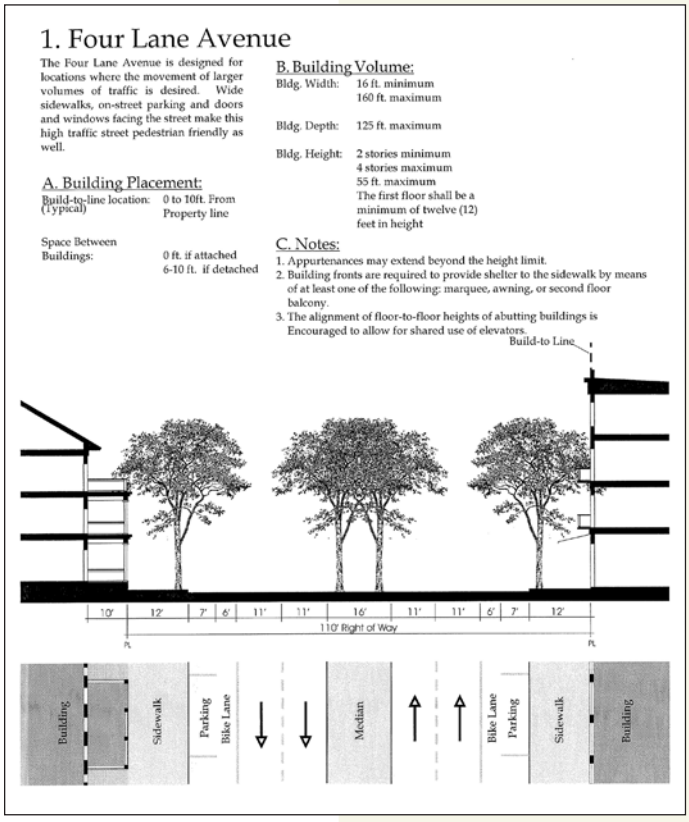


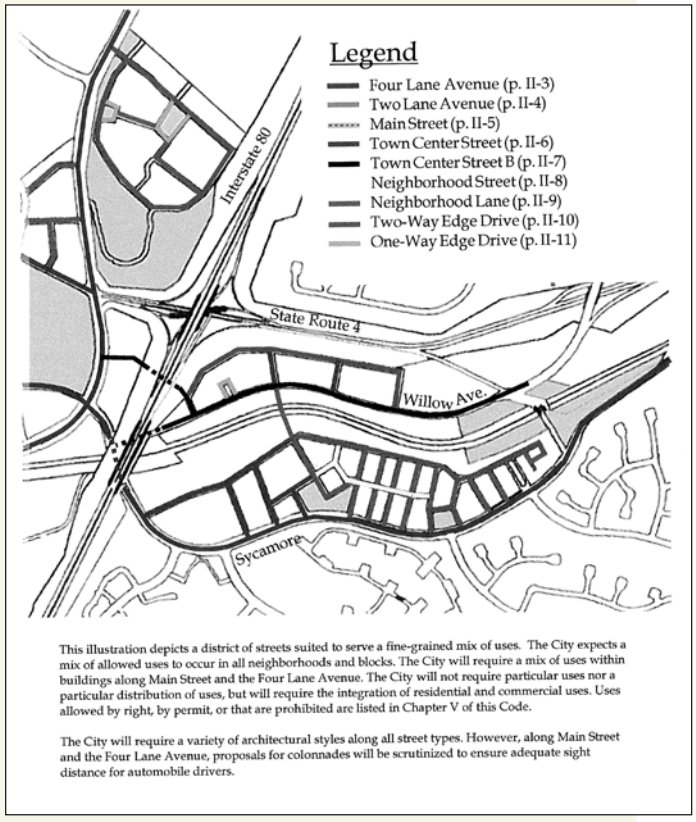
Form-based codes

The City of Hercules, California, recently adopted a new design code with the intention of fostering smart growth development. The code, while highly specific in terms of physical form (by regulating building envelope, key dimensions, siting, and relationship to streets, sidewalks, and adjacent buildings), retains flexibility in uses. The code does not prescribe architectural styles but does prescribe a minimum set of basic design parameters.

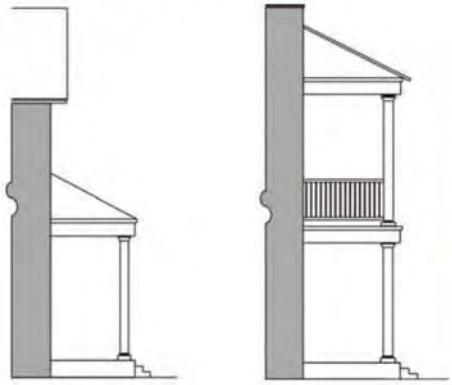
Users of the code consult the regulating plan and determine the classification of the street in front of their parcel. Then they cross-reference the code relating to the street type to determine the applicable land development regulations. The code is sub-divided into four districts and eight distinct street types. Where two street types meet, the order in the hierarchy determines the code. Build-to-line requirements and building frontage requirements are waived for certain sites such as civic facilities in order to provide greater flexibility.

The new code has been successful, with a total of 300 units built and construction underway on the main street area of the Waterfront District. Developers have responded to the code with attractive projects that foster a mix of uses. New homes blend in with existing housing. The city is achieving varied building styles and creative responses to the architectural guidelines.





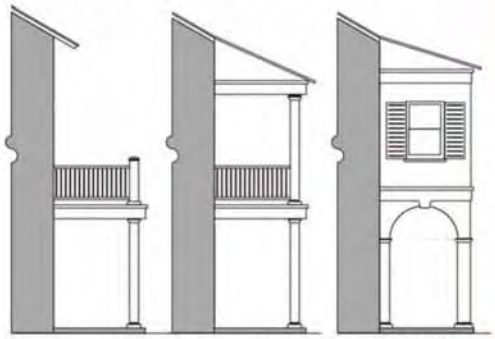
C. Front Porches



Depth = 8 ft. minimum
Length = 25%–90% of building front

- Front porches may have multi-story verandas and/or balconies above.
- Front porches shall be forward of the build-to line but shall not extend into the right-of-way.
- Front porches must be open, un-air-conditioned parts of the buildings. No more than 75% of the floor area of a porch shall be screened if the porch extends forward of the build-to line.

D. Colonnades/Arcades



Depth = 8 ft. minimum from the build-to line to the inside column face
Height = 10 ft. minimum clear
Length = 75%–100% of building front

- Columns shall be a maximum of 6-in. wide in front of shop-front windows.
- Open multi-story verandas, awnings, balconies, and enclosed useable space shall be permitted above the colonnade.
- Colonnades shall only be constructed where the minimum depth can be obtained. Colonnades shall occur forward of the build-to line and may encroach within the right-of-way, but shall not extend past the curb line.
- On corners, colonnades may wrap around the side of the building facing the side street.
- Colonnades and arcades are not permitted on the four-lane avenue.

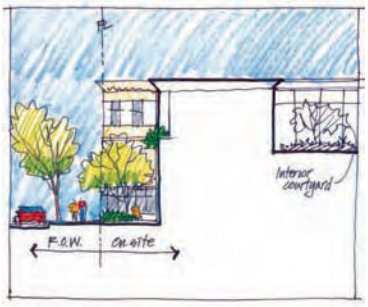
Excerpts from the City of Hercules' form-based code detailing street types and architectural standards

The nuts and bolts

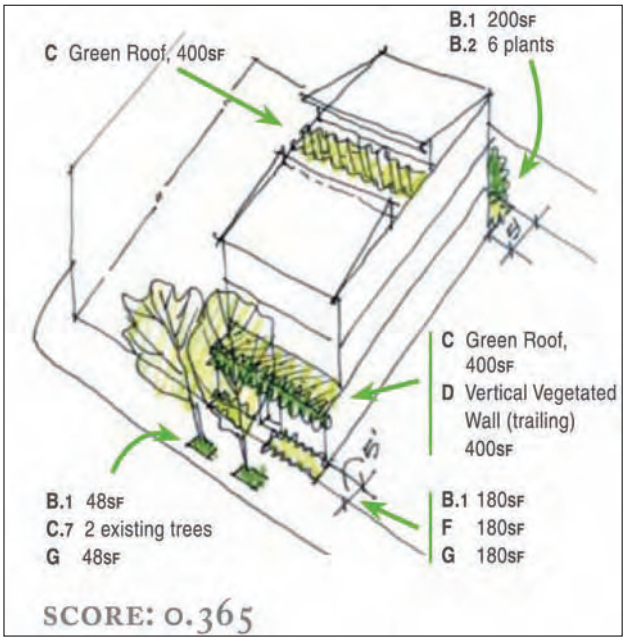
Menu-based point system codes: Menu approaches provide more flexibility in achieving code intent and site design that responds to the local context. They include code choices for the developer that can be selected based on the context of the site. The intent of the code is stated and several strategies are listed that will meet this objective, each with an associated point value based on its ability to achieve the code objective as well as other local goals of sustainability and place-making. Points are accrued by combining a range of design elements. A certain overall point value must be reached in order to meet the requirement. This strategy would be particularly successful along the region's corridors or in its centers to allow contextual responses to very different natural and physical environments.

Existing use of the tool in the region: Seattle, Washington, has experienced success with its menu-based code approach to its landscape requirement. It replaced mandated percentages of open space with a list of landscaping options. The system, targeted at new development in commercial areas, retains flexibility for developers while ensuring sustainable landscapes that create visually distinct places and help create an identity for these neighborhoods.

In this region, there are no examples of this type of menu-based point system being assigned to design alternatives. However, the City of Oregon City uses a menu approach for its garage standards defining multiple design standards that provide good design at reasonable costs. The provision requires a minimum number of elements to be included in the design of garages for homes on corner lots and through lots. Options include dormers, recessed entries and front balconies. Depending on the number of design elements met, a greater percentage of street-facing façade or an increased extension in front of the street-facing façade is allowed.



Examples of how points are calculated for landscape requirements using Seattle's Green Factor menu-based point system



Example approach

City of Seattle, Washington

Menu-based point system

Green Factor, the City of Seattle's landscape requirement, was developed as part of an attempt to green the city's neighborhood business districts. Any new development in neighborhood business districts with multiple dwelling units or a certain amount of commercial uses or parking spaces is required to have the equivalent of 30 percent of the parcel vegetated. The Green Factor is intended to increase the amount and quality of urban landscaping in dense urban areas while allowing increased flexibility for developers to efficiently use their properties.

Green Factor provides a list of possible site landscaping options from which an applicant can choose. Each option is assigned a specific point value. Calculations are then made using a spreadsheet available on the city's web site that multiplies the number of plants or the square footage by its point factor. By either increasing the number of plants or the square footage of vegetated land, one can accomplish the aggregate required green factor. Bonus points can also be awarded.

The approach, based on similar codes in Europe, supports a landscape strategy that encourages sustainability and increases green space in the city. Previously, the landscaping requirement mandated a percentage of open space on a development site, but this did not ensure that the resulting landscaping would necessarily be green or sustainable. The code change was designed to improve the "extent and quality of landscapes" while increasing flexibility for those seeking to meet open space requirements.

The approach, based on similar codes in Europe, supports a landscape strategy that encourages sustainability and increases green space in the city while increasing flexibility for those seeking to meet open space requirements.

SEATTLE×green factor

FINAL VERSION 3-9-07

		enter sq ft of parcel			You need at least 0.300
	Parcel size (ENTER THIS VALUE FIRST)*	1		SCORE	-
	Types of Area**		Square Feet	Factor	Total
A	**Vegetation planted with a soil depth of less than 24"**				
1	Lawn or grass pavers or ground covers	enter sq ft	0	0.2	-
2	Plants and shrubs 3' and higher at maturity	enter number of plants	0	0.3	-
B	**Vegetation planted with a soil depth of more than 24"**				
1	Lawn, grass pavers or other plants less than 3' tall at maturity	enter sq ft	0	0.7	-
2	Shrubs taller than 3' at maturity - calculated at 16 sq ft per plant (typically planted no closer than 18" on center)	enter number of plants	0	0.3	-
3	Tree canopy for "small trees" in SDOT's Street Tree Planting Schedule or equivalent canopy spread of 15' - calculated at 50 sq ft per tree	enter number of plants	0	0.3	-
4	Tree canopy for "small/medium trees" in Street Tree Planting Schedule or equivalent canopy spread of 20' - calculated at 100 sq ft per tree	enter number of plants	0	0.3	-
5	Tree canopy for "medium/large trees" in Street Tree Planting Schedule or equivalent canopy spread of 25' - calculated at 150 sq ft per tree	enter number of plants	0	0.4	-
6	Tree canopy for "large trees" in in Street Tree Planting Schedule or equivalent canopy spread of 30' - calculated at 200 sq ft per tree	enter number of plants	0	0.4	-
7	Tree canopy for preservation of "exceptional trees" or trees with trunk diameter exceeding 24" at four and one half feet above the ground. calculated at 250 sq ft per tree	enter number of plants	0	0.5	-
8	Permeable paving that drains only itself. It must be at grade. - calculated per square foot	enter sq ft	0	0.6	-
C	**Green roofs** - 4" minimum soil depth at time of planting	enter sq ft	0	0.7	-
D	**Vegetated walls**	enter sq ft	0	0.7	-
E	**Water features (fountains) or rain gardens** (where allowed by SPU)	enter sq ft	0	0.7	-

The nuts and bolts

Menu-based design codes: Oregon law requires cities and counties that establish housing growth targets to provide clear and objective standards for design codes for those residential needs. The resulting non-discretionary site plan review track provides a fast and reliable option, with predictable review and approval timelines. However, use and building form are highly prescribed and often no option is made available for adjustments or variances to make the project fit the local context. This can pose a challenge for compact mixed-use projects.

Cities and counties can deal with the tension between clear and objective regulations and more flexible discretionary review by offering developers a choice. Similar to a menu-based point system approach, menu-based design codes offer several design approaches that can be used to meet design standards. Paired with development standards, these design standards are administered as part of the site plan review process. Unlike design guidelines, they are not discretionary. All new structures and renovations within a targeted area are required to meet these standards.

Each design standard includes an intent statement explaining the goal to be accomplished as well as approaches or methods that can meet these objectives. These are accompanied by elements or techniques that provide detail for meeting the goals and objectives. In addition, graphic resources within the code include photos and 3-D diagrams to help explain the elements and further clarify what meets the design standards. In return for meeting the standards, applicants' projects are reviewed administratively, providing a time and cost savings to the developer while also ensuring that the design intent of the targeted area is met.

Existing use of the tool in the region: The City of Canby is proposing a design and development standard ordinance for its central business district. Other local governments such as Hillsboro or Washington County offer a two-track review process with clear and objective standards and discretionary design guidelines. A menu-based approach may be preferable in certain areas given the graphic nature of the code and the flexibility it allows. The City of Hayden, Idaho recently implemented a development and design standard ordinance similar to the one being contemplated in Canby.

Canby, Oregon is proposing flexible, graphic-oriented design and development codes for its downtown

Example approach

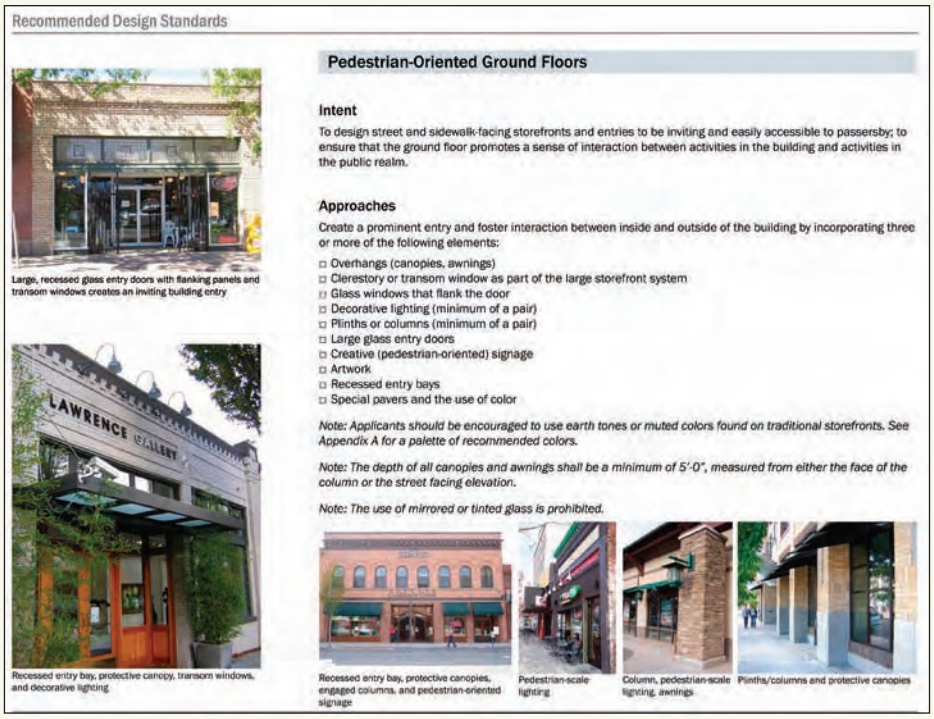
City of Hayden, Idaho

Graphic menu-based design code

Seeking to implement its vision for a vibrant downtown, the City of Hayden, Idaho, formed an urban renewal district and developed a strategic implementation plan for the community's downtown revitalization. The implementation plan includes development and design standards that provide a palette of design-related approaches and tools to raise the quality of the design along the city's main street.

A graphic development code was created to require key standards such as scale, density, and height while offering a menu of clear and objective approaches to achieve design standards. All new construction and renovations of existing structures within the downtown are required to meet all development and design standards. A two-track process was also offered to anyone who chose to respond even more creatively to the design standards and demonstrate how they were meeting the intent.

While not innovative in its two-track process, Hayden's design standards provide a more graphic and flexible framework for achieving the city's vision of a vibrant and attractive downtown. Various design themes are addressed in the standards. Each theme is further explained through a design intent statement that describes the objective. Design approaches are then presented with accompanying graphics to detail methods that can be applied to meet intent. Applicants are required to include a certain number of design elements from the menu presented in order to achieve the stated design intent.



A page from a recently adopted flexible development and design standards ordinance, City of Hayden, Idaho

Hayden's design standards provide a more graphic and flexible framework for achieving the city's vision of a vibrant and attractive downtown.

Keep in mind

Management: Rewriting local codes to incorporate the above approaches will require an upfront effort. In addition, some of the approaches require some discretion and ongoing management by staff. If employed, these more in-depth staffing efforts should be directed at centers and corridors, as they are more dynamic areas that require greater flexibility for site-specific redevelopment. Form-based codes and graphic development codes may be more appealing to local governments if buildings that meet specific standards of the code are allowed outright rather than requiring a discretionary review process. Likewise, menu-based approaches may offer a similar advantage since decisions are not discretionary but instead based on the total point value or the inclusion of one of the options provided in the design standards.

Menu-based design standards may also work well for smaller cities that do not have the resources to overhaul their existing zoning code with a form-based code or to administer a code that requires a higher level of discretion than existing objective zoning standards.

Standards: New codes must be consistent with Oregon laws governing land use, providing clear and objective standards that are quantifiable. Form-based codes, menu-based codes and graphic development codes all accomplish this goal. When implemented into local codes, care should be given to express development requirements as clearly as possible while not creating overly perscriptive standards.

If building style guidelines are too specific in a form-based code, built results can appear overly homogenous. Limiting the inclusion of specific architectural elements and building materials, and focusing instead on how buildings relate with the context of the surrounding neighborhood, will help reduce this feeling of uniformity.

In addition, form-based codes focus on the built form and do not necessarily require or prioritize the consideration of other planning elements such as environmental features, housing choices, or economic development. Local governments should carefully consider these other factors when writing a form-based code to ensure the new design and development requirements support the other goals of the community.

Better buildings: Adding flexibility into the process can result in more attractive buildings. Likewise, integrating design principles into codes through graphic media can ensure that the intent of the codes is more clear. Universal design elements result in creative project designs that can be more site-specific by allowing applicants to respond to intent, rather than prescriptive guidelines. To ensure this flexibility in form-based codes, the intent of the code as well as standards for variances and exceptions should be clearly explained using both text and images. Otherwise, an unusually high burden falls on the developer requesting the variance to prove the project still meets the intent of the code.

Putting it together

As additional investments are made in the region's centers and corridors, graceful transitions need to be created at the edges of these areas. Form-based codes and codes that allow applicants to choose from a menu allow context-sensitive design solutions in and around centers and corridors. By building this flexibility into regulating codes and by enabling architectural responses to the existing community design, cities and counties can realize more attractive transitions that improve the quality of centers and corridors as well as the surrounding neighborhoods.

Tips for implementation

- Develop a menu-based approach or a form-based code to offer applicants multiple options for achieving design objectives.
- Use form-based code techniques to emphasize the design of the public realm, provide high quality environments for pedestrians, and set specific standards for achieving a gradual transition between areas of differing urban form.
- Consider the time and expertise (either staff or outside consultant) required to customize and develop a form-based code.
- Write clear and objective standards for these new code approaches.
- Craft clear intent statements explaining the goal to be accomplished, and provide graphics such as photos and 3-D diagrams to illustrate the types of development that meet the intent statement.

An example of a transition between an active corridor and the surrounding single-family residential neighborhood, Belmont District, City of Portland

Toolkit

Innovative design and development codes

Transition zones

The implementation of gradual transitions in building form, which ensures more attractive edges where centers and corridors meet single-dwelling neighborhoods, is integral to supporting vibrant communities throughout the region. The required density established at the edge of a center, corridor or transit station area may be abruptly different from and incompatible with the surrounding areas. Despite this difference or as a means to reduce this difference, allowed building heights inside the center or along the corridor may be too low for mixed-use buildings. Compounding this problem is zoning in centers and corridors that only allow multi-dwelling housing types and surrounding neighborhoods that only allow single-family housing types. This pushes the multi-

The nuts and bolts

family housing towards rental housing. This serves to increase the incompatibility and tension with adjacent single dwelling residents, increasing the disparities between different zones rather than integrating them.

Currently many local governments use a case-by-case review of transition areas to address height transitions between new, higher density developments built near lower-density existing areas. Conditions of approval are applied to ensure the development uses a combination of transition elements outlined in the municipal code. These approaches include using open areas, natural vegetation or fences to separate and screen new structures from adjacent parcels; orienting windows away from adjacent uses; building roadways to separate the project; or applying gradual density changes. While these measures may provide the city with some discretion in the design of a building, they translate into lost development capacity and are not necessarily ideal measures to achieve attractive transitions.

Transition zones can improve the relationship between buildings and zones of different scale, reduce design issues and achieve the compact mixed-use development envisioned in the region's centers and corridors. Creating graceful transitions in building form will also help build support for infill and redevelopment projects from adjacent neighborhoods and maintain support for the region's vision for growth. The model code approaches explained below can also help centers and corridors, and the area surrounding their edge, integrate a range of housing types in order to better achieve a smooth transition in building form.

These transition zones can offer more flexible codes that respond to the local context at the edge of the centers and corridors. They also allow nuanced design approaches that can help create more graceful transitions between varying densities, uses and heights. Code standards that focus on a more gradual transition of building heights at the boundaries of different zones provide an important tool to ease infill development in established neighborhoods.

How to use it:

Cottage clusters: Even with trends in housing showing that household size is decreasing, single-family housing overwhelmingly remains the preferred housing type. A new model of smaller single-family homes is emerging in the form of cottages clustered around a common green space. This presents a new and attractive approach to increasing the density within existing neighborhoods while maintaining the single-family housing character and ownership opportunities. Allowing this type of development in single-family zones only requires minor amendments to an existing zoning code. Currently, this development type violates most communities' minimum lot sizes and setback requirements for side and rear yards.

Given the smaller size of the homes, more efficient use of the land, and lower maintenance costs, small lot detached homes offer a more affordable product. As a result, cottage clusters increase the diversity of market options within a community and give cities the ability to retain younger couples, small families, and empty-nesters in the residential market. Cottage ordinances can greatly affect the ability of builders to target certain market segments and offer an opportunity for some to enter the market.

Example approach

City of Bainbridge, Washington

Cottage cluster provision

Some cities in Washington and Oregon have adopted Cottage Housing Development code provisions to allow the development of several small, detached cottages on a site that would normally be developed with fewer large homes.

Cottage Housing Development codes are not multi-dwelling or overlay zones but instead provide another form of single-family development. In the City of Bainbridge, cottage housing is allowed conditionally in all single-family zones as detached dwellings as opposed to condominiums on a common lot. The code requires that cottages be less than 1,000 square feet in living area and limited in height. At 2,500 square feet, lots are allowed to be smaller than standard single-dwelling lots. Parking must be clustered and separated from open spaces rather than being provided at each individual cottage. Cottages must also be oriented around a landscaped common area that is central and serves as a gathering space. Developments are limited to a dozen units so as to maintain a sense of community. With careful attention to the design of units, open spaces and landscaping, cottage clusters could blend very well into the surrounding neighborhoods of older, detached homes.

Cottage cluster model code, LMN Architects

"I think it's a significant trend, better rather than bigger, quality over quantity, it's something people have been waiting for. It takes more work, details and supervision but – like the old pre-1940s craftsman homes with mantels and casings – they are homes that get a premium price."

– Jim Soules, Cottage Company, LLC

The nuts and bolts

With careful attention to the design of units, open spaces and landscaping, these developments can blend well architecturally into the surrounding neighborhoods of older, detached homes. Communities also look more favorably upon this type of project if, as throughout Washington state, they are an ownership product, providing homes on individual legal lots whose residents have a long-term investment in the neighborhood.

Given the economics of land cost, single-dwelling neighborhoods, particularly at their edges with centers and corridors, are optimum locations for cottage clusters. The economic edge for cottages is the low land cost per unit, which cannot be achieved in multi-dwelling residential zones where land is more expensive. Along with cottage clusters, allowing accessory dwelling units (ADUs) and duplexes on corners in single dwelling zones helps achieve a gentle transition from the edge of centers and corridors and provides additional housing choices.

Existing use of the tool in the region: Within the Pacific Northwest, projects such as the Greenwood Avenue Cottages in Shoreline and the Third Street Cottages on Whidbey Island, both in Washington, have demonstrated that these small cottages can fit into existing single-dwelling neighborhoods while increasing density levels. In the more immediate region, The Cottages at Hastings Green in Portland has been a successful cottage cluster project. However, it was developed as condominiums since the setbacks and lot size did not comply with city zoning. The project consists of 23 detached bungalows owned as condominiums located in Southeast Portland. The project was completed in 2004 and has been recognized as a superior form of infill development given the focus on high-quality design and construction as well as an emphasis on community through site design. All local governments in the region allow accessory dwelling units in single dwelling zones. In Portland, duplexes on corners are allowed in certain single dwelling zones.

Density transfers: By allowing the transfer of all or a portion of the permitted density to a contiguous site, density transfers can also facilitate more graceful transitions between zones of different scale. If used, the transfer must be recorded in a covenant in the deed for the property. Another effective way to transfer density is to permit greater flexibility in how density is distributed throughout a subdivision or specified district such as a center or corridor. This approach allows flexibility on the density of an indi-

vidual site as long as the district or subdivision's overall density target is met. Developers could use this portion of the district or subdivision ordinance to ease the transition from more compact urban development to single family neighborhoods or more suburban development without the additional expense and time associated with additional review.

Planned Unit Development (PUD) provisions provide another way to transfer density within a development site. As a provision, PUDs offer a mechanism for projects that demonstrate certain public benefits to pursue more creative and innovative development than allowed under existing zoning regulations. PUDs provide a less complicated alternative than transfers of density and can be maintained over a longer term. However, current PUD provisions are not the best tool to achieve this transfer of density for several reasons. In most communities, eligible sites must be a minimum of five acres to be eligible for the provision. Most redevelopment sites in centers and along corridors are smaller than this and do not qualify. Some local governments' PUD ordinances preclude building for-sale units or units for commercial use. Since PUDs do not allow development by right and require a public hearing, even if the applicant meets all these restrictions, there is no certainty that an application will be accepted. All of these factors extend the time for approval and therefore drive up the cost associated with seeking a PUD.

To reduce the challenges and take advantage of the flexibility of PUDs in centers and corridors, PUD provisions could be altered to apply to smaller sites and to allow all types of housing and uses. In addition, PUD provisions could be applied by right to centers and corridors and areas at the perimeter that are in need of better-designed transitions.

Existing use of the tool in the region: Portland has enjoyed limited success with the transfer of density. New Columbia, an award-winning mixed-income housing project, was able to use the city's revised land division code provisions for density transfers. This tool helped achieve a graceful transition between the medium density, multi-dwelling zoned site and the surrounding single-family residential neighborhood. The City of Oregon City facilitates transitions through its subdivision code. Areas of lots within a subdivision are allowed to be up to ten percent less than the required minimum lot area of the applicable zoning designation provided that the entire subdivision meets on average the minimum site area that is required by the underlying zone.

Example approach

New Columbia

The project's design sought to reintegrate the area with the adjacent neighborhood.

Density transfers

New Columbia, located in North Portland, is a federally funded (HOPE VI) revitalization project of an existing 82-acre public housing site into a mixed-income housing community. The project's design sought to reintegrate the area with the adjacent surrounding neighborhood by extending the grid of existing streets, matching the historic patterns of development in the area and providing a range of housing opportunities for a range of incomes. The site is zoned R2, allowing about 17 dwelling units per acre, while the surrounding neighborhood is zoned R5, with one unit per 5,000 square-foot lots.

Neighborhood support for the project was crucial, especially since the development represented a twofold increase in density and in the number of subsidized housing units that had previously occupied the site. To avoid an abrupt and unwelcome lack of transition at the edge of the site, the project's urban designers took advantage of the City of Portland's recently adopted Land Division Code to facilitate a transfer of development density.

This transfer served to achieve a gradation of density from the edge to the center of the development. At the edge of the site, density was slightly higher than that of the surrounding areas, but buildings were designed to mirror the setbacks and height of the R5 housing across the street. Density was shifted to more appropriate locations within the interior of the site, with the transition spread out over several blocks from the edge of the single-family neighborhood to the center of the development. An important factor in accomplishing this type of transition was the significant size of the site.

Through a density transfer, New Columbia achieved a gradation of density from the center to the edge

Plan provided by the Housing Authority of Portland

Buildings were designed to mirror the setbacks and height of the existing housing across the street Photography provided by SERA

The nuts and bolts

Stepbacks: In addition to overall building height, some ordinances address the height of the street wall, allowing projects to step-back with subsequent stories so that the apparent scale is not as great but the density can be higher. Additional height and density may be allowed only to the extent that the building's upper floors are distributed in a way that adds significantly to the sense of slenderness to the buildings. For example, upper floors should be smaller than midsection floors, which should be smaller than the base. Setbacks are another tool that can be used to increase the separation between buildings as building height increases, increasing solar access and air circulation in order to make a smoother transition in building forms.

Stepbacks and height limits can be used in combination, reducing height limits and increasing setbacks to ease the transition between higher and lower density zones for buildings in a "transitional zone." Stepbacks have been used for mixed-use projects in town centers and across the street from established single-family neighborhoods. However, development capacity on sites can be reduced unless the stepback is accompanied by higher density allowances elsewhere on the site.

Stepbacks can also complicate building design as well as increase the potential for moisture intrusion, which poses a liability concern. Requiring stepbacks will raise the overall cost of designing and developing the building, thus potentially affecting financing.

Existing use of the tool in the region: Stepbacks are identified as a tool to help transition between uses in the Hollywood Plan District in the City of Portland.

Example approach

Hollywood Town Center

Stepbacks

The Hollywood Plan District includes specific standards for a transition in building height when commercial zones are abutting or across the street from low and medium density residential zones. The Hollywood Plan District also includes standards for a transition in height when a commercial site where height bonuses are being used is across a street from a less intense commercial zone.

The Hollywood Library and Bookmark Apartments mixed-use development, although designed before these standards were officially adopted, was developed to comply voluntarily with these guidelines for height transitions. The site is located near the edge of the Plan District between two commercial zones. Different height limits were allowed in each of the two zones, and thus the design used stepbacks to bridge the two districts' development types.

The resulting design and development have not been viewed as a total success. From the development point of view, capacity was lost due to the stepbacks, which was not fully recovered. From the perspective of the immediate neighbors, the building's massing (the different components of the building) is out of scale with existing development and the stepbacks are not viewed as an attractive design feature.

Stepbacks on the Bookmark Apartments, Hollywood Town Center, City of Portland

The site is located near the edge of the Plan District between two commercial zones, and thus the design used stepbacks to bridge the two districts' development types.

The nuts and bolts

Mixed-use development standards: It is important to establish the correct density and height in centers and along corridors. Too often code standards for building heights have been set without understanding the design needs of mixed-use buildings. As a result, storefronts and living areas in these buildings are not accommodated, which creates a barrier to desired types of development. In addition, municipal planning codes and locally adopted building codes can interact in such a manner that they unintentionally push buildings toward lower ceiling heights.

A study conducted in San Francisco determined that taller ceiling heights on both the ground floor and upper stories of existing older buildings in that city contributed to the appealing appearance of neighborhood commercial streets, a positive pedestrian experience and a healthy retail market, making them the some of the most vibrant neighborhoods in the city. Through three case studies of allowable ceiling heights in different neighborhoods, the report examined the resulting impact of their code on the potential for infill and the design and experience of buildings and neighborhoods. As a result, to allow taller floor-to-floor heights in mixed-use buildings, the City of San Francisco amended its code to increase allowable heights in all mixed-use areas. The amendments include raising the height limits and requiring a minimum ground floor ceiling height. In addition, San Francisco created new provisions for an extra five feet in some residential-only zones to encourage walk-up townhouses raised a few feet from grade.

Existing use of the tool in the region: In the region, many jurisdictions apply maximum building height limits of 30 to 35 feet in lower density residential zones and building heights from 40 to 65 feet or greater in higher density residential, mixed-use or commercial areas in centers and corridors. Some jurisdictions in the region already acknowledge that different uses require different floor-to-floor heights, such as 15 feet for ground floor retail uses. In addition, some cities have indicated the number of floors allowed in specific zones to further clarify the intent of the height requirements and allow contextual design responses to specific uses.

CASE STUDY 1

40 FOOT EXISTING ZONING

Example approach

City of San Francisco, California

Height study

In 2004, David Baker, founder and partner of David Baker + Partners in San Francisco, wrote an article for a local non-profit think tank researching existing height limits in the city and their effect on storefronts and ground floor activity. Looking at 40-foot, 50-foot and 65-foot planning code height limits, Baker suggested simple adjustments that could be made to the code to achieve the "highest and best" interior building spaces and exterior pedestrian realm. He found that the municipal planning code and the building code (UBC) interacted in such a manner that they unintentionally pushed buildings toward lower ceiling heights. For example, given the minimum allowable floor-to-ceiling heights of the UBC, adding five feet to 40-foot height limits in the planning code would allow higher quality spaces. He concluded that the requirements of the municipal code and the building code should be aligned in order to increase the quality of the environment within new buildings and around them.

Looking at 40-foot, 50-foot and 65-foot planning code height limits, Baker suggested simple adjustments that could be made to the code to achieve the "highest and best" interior building spaces and exterior pedestrian realm.

Baker advocated for allowing extra-tall ground floor spaces to make mixed-use development comfortable from the street and taller ceiling heights to make upper stories gracious and comfortable. To accomplish this objective, Baker argued that the planning code should be amended to regulate not just the total height of buildings but also the allowable number of floors. This could be accomplished by either requiring minimum ceiling heights that are taller than the building code currently allows or by setting a maximum number of floors allowed within a given building height. Baker acknowledged that if the number of floors that could be built were simply reduced the total density of new buildings would also be reduced, resulting in an increase in housing costs and development on the periphery of the city. Thus, he recommended increasing height limits while allowing the same number of stories as currently allowed. At the very minimum, he recommended that minimum ceiling heights be set on the ground level given its impact on the quality of the public realm.

David Baker height study Images provided by David Baker + Partners

Keep in mind

Development capacity: Allowing new building types and flexible design alternatives in zones of transition can ensure that development capacity is retained in centers and corridors while development responds to the context of the adjacent neighborhoods. Furthermore, offering incentives or the ability to transfer additional densities from another site can actually increase development capacity and attract redevelopment. By allowing transitional densities at the edges of centers and corridors, cities can increase capacity by zoning their regional or town center for higher levels of density.

Housing choices: Using cottage housing provisions and the transfer of density encourages a broader range of housing types to include small homeownership units. It is critical that cottage housing provisions create ownership opportunities. This can be done as condominiums, but preferably as separate lots to maintain ownership of the land with the unit. This can provide new and affordable housing opportunities for the single-family market and also help win the support of the surrounding neighborhood.

Local application: Cottage housing and stepback codes are relatively easy to implement. Transferring density is significantly more complicated. Transfer of density to a more appropriate location within the same site does not work for smaller sites given the size constraints. Unfortunately, most infill sites available for redevelopment along corridors are smaller in scale. One approach that may be particularly appropriate for corridors would allow a transfer of density from one site to another along a corridor, or from a corridor to a center. There are no known examples of this type of density transfer since the proposal is controversial and complicated to put in place, although the City of Portland has considered an FAR transfer within its Central City Plan District and it has been implemented at the subdivision level. If improved, Planned Unit Development provisions could also offer a smaller-scale alternative.

Transition implementation: As a proactive tool to ease infill development, transition height standards are most effectively addressed up front in the planning process or as part of crafting code standards for specific geographic areas such as town centers or corridors. Through the planning process, urban designers, planners and neighborhood groups can identify the specific edges where there is potential for an abrupt difference in building heights and focus height transition standards to those particular areas. Developers are more likely to support transition height standards if they are assured that building heights consistent with the transition standards will be allowed by right.

Putting it together

Allowing greater intensity and maximizing development capacities within centers and corridors supports the vision of the region's 2040 Growth Concept. In many cases, the current zoning does not allow for the necessary transition between these areas of compact urban development and surrounding single-family neighborhoods. Tools that create better relationships between buildings and zones of different scale, such as cottage cluster ordinances and density transfers, provide alternative approaches to ease these transitions while maintaining development capacity.

Tips for implementation

- Identify areas where the transition between densities and types of development can take place.
- Consider "soft" intensification of areas just outside of centers and corridors through a combination of cottage clusters, accessory dwelling units and duplexes on corners.
- Consider tools that will help move the density closer to the core of a regional or town center.
- Design appropriate transitions that take into account existing and future development.
- Decrease lot size requirements in order to allow homeownership opportunities for cottage cluster development types.
- Create graceful transitions between corridors and centers and their adjacent single-family zones over several blocks where it is possible.
- Consider allowing density transfers from one site to another along a corridor, within a specified district or from a corridor to a center.
- Consider adopting density transfers into zoning codes so staff can administer them. Clearly map where the transition is to occur and where the density can transfer to within the adopted code to avoid case-by-case conflicts.
- Density transfer programs can be complicated to implement in smaller jurisdictions or those where developable land outside core areas is more plentiful.
- Carefully consider the architectural and financial issues raised by setbacks as well as current land values in the area to determine whether or not requiring stepbacks will serve as a disincentive to development.
- Coordinate with building codes to ensure they do not compromise preferred ceiling heights for vibrant retail and/or floor-to-floor heights for residential units as allowed in the planning code.

Resources

Code flexibility

For more information on the example approaches, contact or visit:

Hercules Planning Division:
111 Civic Drive, Hercules, CA 94547 • 510-799-8200
http://www.formbasedcodes.org/images/CentralHerculesFBC.pdf

Menu-based code in Seattle, Washington:
Seattle Green Factor http://www.seattle.gov/dpd/Permits/GreenFactor/

Graphic menu-based code in Hayden, Idaho:
Department of Community Development and Planning • 208-209-2021
http://www.hayden.govoffice.com/index.asp?Type=B_BASIC&SEC={B0DCB8B6-AE6F-46EB-942D-D154DB140FE0}

Oregon City residential design standards, Section 17.20:
http://www.orcity.org/community-develop/planning/New_Code/documents/17.20ResDesStd_000.pdf

For more general information on form-based codes, visit:
Smart Growth Online: http://www.smartgrowth.org/library/byldrtype.asp?typ=5'
Form-Based Codes Institute: http://www.formbasedcodes.org/
Local Government Commission:
- "Overcoming Obstacles to Smart Growth through Code Reform" http://www.lgc.org/freepub/PDF/Land_Use/sg_code_exec_summary.pdf
- "Form-Based Codes: Implementing Smart Growth" http://www.lgc.org/freepub/PDF/Land_Use/fact_sheets/form_based_codes.pdf

Transition zones

For more information on the example approaches, contact or visit:

Hollywood Plan District – Chapter 33.536:
http://www.portlandonline.com/shared/cfm/image.cfm?id=53372
See 33.536 for Height Transition Between Residential and Commercial Zones
See 33.536.235 for Transition Between Commercial Zones

New Columbia:
http://www.hapdx.org/newcolumbia

Cottage housing development code:
http://www.cottagecompany.com/cczoning.html

The David Baker height study:
http://www.dbarchitect.com/images/dynamic/articles/attachment//its_the_ceiling_heights.pdf

For more information on cottage housing, visit:
http://www.mrsc.org/subjects/planning/cottagehousing.aspx

Innovative parking design,
City of Lake Oswego
Photograph provided by SERA

Toolkit

Innovative design and development codes

Managing parking to maximize urban form

Parking largely shapes the region's centers and corridors. The amount of parking provided, its design, and its location affect whether local development results in good urban form in these areas. The regulation and management of parking in centers and corridors can also impact whether these areas experience desired levels of private investment. Parking concerns, both real and perceived, present a major issue for many cities and counties.

Cities and counties throughout the region have modified their codes to encourage compact development consistent with the regional vision expressed in the 2040 Growth Concept. Small-scale regulatory changes that help facilitate shared

The nuts and bolts

parking and increase the flexibility of parking requirements in centers and corridors have reduced built parking and provided incentives for developers to develop compact, mixed-use projects in centers and corridors. These approaches have helped remove barriers to building compact, mixed-use projects in some of the region's centers and corridors. However, not all local governments have seen this vision realized in recent projects.

Minimum parking standards often remain too high for these walkable, mixed-use places and can inhibit new development as the high costs of parking drive up the overall cost of development. Requiring private property owners to provide parking spaces on every lot in centers and corridors is a significant burden and is also detrimental to urban form. At the same time, requiring structured parking is cost prohibitive until land values throughout the region support the compact, mixed-use development that has been envisioned through the upzoning of centers and corridors. The design of some of these parking garages has also had negative impacts on the overall environment of some centers and corridors. However, lowering parking minimums or establishing parking maximums in these areas can increase neighborhood concerns about the potential negative impacts associated with providing less parking.

Establishing a balance that recognizes the concerns of neighborhoods, yet encourages development, is a difficult task. Even if such a balance is attained, developers often face requirements from lenders for parking levels that supersede local parking supply requirements. Lender requirements are based on their estimation of the supply necessary to achieve profits, which is generally calculated from a national average and not local conditions.

A complete solution usually requires the application of both locally tailored parking management strategies and regulations to ensure that parking does not detract from the urban form and supports investment in the region's centers and corridors. Parking supply and demand is a subtle science: there is no such thing as the "right" ratio, and simply providing additional supply to meet a perceived demand is an expensive and never-ending proposition. Many cities and counties are realizing that a longer-term solution is to better understand and manage their existing parking supply, reduce parking demand and provide parking consistent with compact urban form. However, it is common for different divisions within the government to divide the responsibilities for managing and regulating parking supply creating an additional challenge to achieving the right local balance and approach to parking.

If regulations and strategies for managing parking can effectively address parking needs, valuable land in the region's centers and corridors can develop into active mixed uses that enhance the quality of life and design of these areas. Decreasing the amount of land needed to meet parking requirements can encourage more residential and commercial investment at the building, neighborhood and city level, encouraging development in centers and corridors while reducing congestion and increasing public transportation options.

How to use it:

The first step is to understand precisely how much parking is necessary by quantifying the existing supply, both public and private, and the local demand. Once this is understood, management strategies can be employed to efficiently supply parking. Parking management strategies can include centralized parking facilities such as parking garages and lots. They can be built and operated by a public entity or through a public-private partnership. Centralized facilities often enable the elimination of surface parking lots and curb cuts that erode the walkable fabric of mixed-use neighborhoods. Centralized facilities also enable a "park-once" alternative for commercial areas that can reduce on-street congestion.

Providing public centralized parking structures is a tipping point in positively impacting urban form through parking regulations and management. If local governments realize that given their land values they cannot expect developers to provide structured parking and provide parking as a public resource, they can fundamentally change the way centers and corridors are designed. Having centralized parking allows jurisdictions to lower their parking requirements as they are being met off-site. This, in turn, means that they can allow higher Floor-Area-Ratios (FARs) and achieve continuous street frontages. Continuous street frontages are an important component of a pedestrian friendly environment.

Parking management strategies can also include parking benefit districts, which do not necessarily have centralized facilities but meter on-street parking. Those districts or corridors that experience a high demand for parking can capitalize on this demand by dedicating revenues collected to cover the costs of managing the parking district, as well as neighborhood transportation and streetscape improvements, structured parking, and demand management programs. Effective parking management can help distribute parking consumers within and away from prime parking areas while demand management can lower the overall need for parking spaces by promoting transit use, carpooling and other alternative modes of transportation.

It is important to balance the management of supply and demand with parking regulations. Regulatory changes incorporate a wide range of approaches. They present a cost-effective way to change the ground rules for parking and reduce the cost of its provision. Regulations can be applied to ensure that required parking ratios do not result in excessive parking supply and do not hinder development in the region's centers and corridors. Cities and counties can adopt parking maximums that limit the total number of spaces that can be provided. Another approach is to reduce parking requirements by enabling residential projects to "unbundle" parking. By separating the cost of a parking space from the cost of a residential unit, consumers can make different choices. This can also help to reduce the cost of housing and the demand for parking.

Regulations paired with parking management strategies take a dynamic and thorough response to parking concerns in the region. This cohesive approach to providing parking can enhance the opportunity for compact development in our centers and corridors as less land area is required for parking and, therefore, available for development or redevelopment.

The nuts and bolts

Parking supply inventory: Prior to establishing a parking management strategy or amending regulations for a downtown, center or corridor, it is imperative to understand the current supply of parking in these areas by taking an inventory. By conducting this type of parking supply study, local governments can quantify the true existing use and identify which parking management strategies need to be implemented to meet both existing and future demand.

At the beginning of the process, stakeholders should be interviewed to determine the perceived parking needs and problems. Engaging local stakeholders is integral in assessing what the resulting inventory means for the local community and facilitating policy discussions regarding potential parking solutions.

When conducting the parking supply study, both public and private parking spaces should be surveyed in order to gauge the full extent of available supply and develop an integrated approach to meeting the need. Occupancy, duration and turnover should be assessed as part of the survey to establish a better understanding of the parking market throughout the day. Community staff with minimal training could accomplish simple counts, or transportation consultants could conduct a larger, more comprehensive study.

The results of the inventory will provide integral information about the local parking supply and use. It will help determine how many spaces are needed and identify where there are under-used spaces that could be shared. According to Rick Williams Consulting, a good benchmark for occupancy is 85 percent for regular peak hour occupancies, at which point parking management strategies should be implemented to bring peak usage below that level. This type of survey will collect the information needed for management strategies that integrate time restrictions and parking fees for using existing spaces more efficiently.

A survey will also help local governments understand how well local zoning requirements that dictate parking supply match the demand. This information can serve as the basis for amendments to parking minimums or the establishment of parking maximums.

Parking inventory studies are more suitable in limited geographic areas, such as downtown areas, that are highly accessible, whereas these studies might not be as successful in solely auto-based areas. In areas with a complete network of local and arterial streets as well as transit, issues with parking are more localized and easier to study. In areas lacking a complete network and in areas with limited on-street parking, it is more difficult to measure and assess spillover parking.

Existing use of the tool in the region: The cities of Beaverton and Hillsboro recently conducted a parking inventory and study funded by a grant from the state Transportation and Growth Management program.

Example approach

City of Beaverton

Parking inventory

The city found that the high cost of structured parking was inhibiting downtown development. Thus the city wanted to understand precisely how much parking was needed and whether the current surface supply was adequate.

A Transportation Growth Management grant from ODOT and the Department of Land Conservation and Development funded a parking inventory study focused on the Old Town area. The study involved local stakeholders which included daily users of the system. A one-day capacity, utilization and turnover inventory was conducted between 9 a.m. and 6 p.m. It determined how many on- and off-street parking spaces were being occupied every hour and how long those spaces were occupied by individual vehicles.

Beaverton learned that instead of not having enough parking, the city actually had excess parking with only 41 percent of available parking used on average. In response to this finding, specific management strategies were identified and recommended for implementation:

- designating a city parking manager with specified responsibilities
- eliminating time restrictions in city-owned off-street facilities to encourage greater use of public parking lots by business employees and longer-term visitors
- allowing longer-term stays for on-street permit parking outside the core commercial area for employees and residents while establishing short-term only parking rules in the core commercial area for customers
- developing new way-finding signage to direct visitors to off-street locations, initiating higher rates and fines in areas with consistent high rates of use to induce higher turnover
- working with lenders to explain the supply and lack of need for higher ratios of parking.

Regulatory changes were also made: parking minimums were eliminated for commercial development in the core to reduce the costs of development and the proliferation of parking lots in downtown Beaverton. Likewise, the minimum off-street residential parking requirement was reduced to 0.75 parking spaces per unit. Work is in progress to encourage more shared parking agreements. Recognizing that current land values may not be sufficient to attract the desired type of development, Beaverton also proposed a phasing strategy that would allow lower density commercial development to proceed while facilitating higher-density development over time. For example, a 0.60 FAR project with structured parking might start at 0.30 FAR with surface parking and then transition over time.

Since stakeholders were involved from the start, the management plan received strong public support and unanimous approval from the City Council and Planning Commission through a series of resolutions adopting the parking management recommendations.

"Our downtown parking study emphasized observation of actual parking usage. We learned that we currently have a surplus of surface parking, leading us to relax our outdated parking requirements for downtown development. Now we can focus more attention on good buildings, good streetscapes and good businesses and residences and less on acreage of asphalt for parking."

–Marc San Soucie,
Planning Commission,
City of Beaverton

The nuts and bolts

Structured parking: By using less area to provide parking, garages open up valuable land for other uses. If the public sector can construct centralized parking garages, they can increase Floor-Area Ratios (FARs) and encourage compact redevelopment in centers and corridors making a large-scale impact on the urban form.

Given the measurable impact on surrounding development, most cities and counties want adequate structured parking in their centers and corridors but have the following questions regarding implementation:

- Where to site the parking structures?
- How to design parking garages to mitigate any negative impacts?
- How to fund the construction of parking garages?

Careful attention must be paid to the location and design of both surface and structured parking. Although more convenient and accessible if located in front of buildings, parking facilities should be sited behind buildings to reduce their adverse visual impacts. It is integral to have buildings fronting the street to create inviting entrances that are more pedestrian-friendly.

Innovative design approaches for parking structures are also essential in order to ensure that blank walls do not become the dominant feature of the streetscape. Parking structures can be designed to function as part of an urban landscape. For example, garages can be wrapped with a mix of uses such as retail and office maintaining a continuous street frontage. Garages should also be of an appropriate scale to integrate with surrounding urban forms. When built, the structure should illustrate the lessons learned from David Baker's height study (discussed in the transition zones chapter) and allow minimum floor heights that are pedestrian-friendly and conducive to retail needs particularly on the ground floor. If parking structures are not yet feasible, surface parking should be designed with landscaping around its edges and clearly marked pedestrian connections through the lot to the buildings.

Once parking structures are constructed, it is important to get the pricing correct. The conventional approach in the region is to provide free curb parking. However, on-street parking directly competes with parking garages in meeting demand. Strategic pricing strategies that vary parking costs between different areas can influence consumer choice and help ensure that the valuable public resource of parking is used efficiently and effectively, thus the price of parking in a garage should be lower than the price of on-street parking along the primary commercial arterials. Likewise, parking can be free in more desirable areas except during certain hours of the day with peak usage. A more complex and expensive system can also be developed to vary the prices of on-street parking from one street to the next. This can be further managed by implementing "real-time" pricing in order to make available a certain percentage of parking spaces at all times.

Existing use of the tool in the region: The cities of Portland and Lake Oswego have achieved some success in requiring garages to be lined with mixed-uses. Outside of this region, the City of Boulder, Colorado has received several design awards for the architecture of its municipal parking garages. The parking management agency has wrapped garages in mixed-use structures that are integrated into the downtown both in scale and appearance.

Reducing/removing parking minimums: One of the most cost-effective and short-term ways to improve the impact of parking on urban form is to reduce or remove inflexible parking minimums through a code amendment. Minimum parking requirements can promote inefficient land use and create costs that discourage development in urban areas with higher levels of density and greater land values. By removing the impediment of providing parking at levels more appropriate for suburban, auto-oriented locations, cities and counties can reduce the cost of development and make their centers and corridors more attractive to redevelopment. By removing parking minimums, communities also promote improved urban form. Without being required to provide surface parking, property owners can develop to the edge of their sites building a continuous façade that provides an attractive and urban streetscape.

Codes should be amended to allow for the reduction or removal of parking minimums in areas that are targeted for higher densities in order to attune the zoning language with the vision of growth. Locational and demographic factors can also impact parking demand and justify reduced parking requirements. For example, if a project is well served by local transit and offers amenities to users of alternative transportation modes, there will be a lower parking demand from consumers and the local government can reduce parking requirements on the site.

To encourage desired development types in centers and corridors, reducing parking requirements must be balanced with demand management strategies in order to reduce overall vehicle use and the need for parking. In exchange for a developer commitment to transportation demand management programs such as supporting carpooling, offering subsidies for transit or furnishing bike facilities, a local government can reduce the minimum parking requirements on the site. Fee-in-lieu programs should also be established in order to allow reductions to the minimums in exchange for payment by the developer into a municipal parking or traffic mitigation fund. These fees can help finance public parking structures.

Existing use of the tool in the region: In order to encourage more efficient land use patterns and protect the environment, cities and counties throughout the region adopted new parking minimums for different types of development. The City of Portland has found additional success in removing parking minimums for any development located within 500 feet of a frequently served transit line in all districts of the city.

Parking minimums were eliminated for commercial development in the core of downtown Beaverton

The nuts and bolts

Parking maximums and parking caps: Cities and counties can also revise zoning ordinances to adopt parking maximums. Maximums limit the total number of spaces that can be constructed at any one site. Maximums can complement parking minimums or they can stand alone. A variation on this approach is a parking cap or parking freeze that sets the total number of parking spaces allowed for all development within a particular district.

District-wide parking caps provide flexibility by introducing transferable parking entitlements. Thus parking can be transferred or sold to another development if not used on site. This allows local cities and counties to control the parking supply while letting developers whose projects need less parking benefit by selling their parking spaces or negotiating for shared parking agreements for their employees or customers. Conversely, developers whose projects need more parking can purchase rights.
Under parking maximums or caps, developers may worry about obtaining financing for projects and the long-term marketability of property. However, if all developments within a district and similar development types throughout the region are subject to the same restrictions, the playing field is leveled among developers.

Parking maximums and parking caps are not appropriate at all locations. Appropriate locations include districts with viable transportation options where property values support mixed-use, transit-oriented development. These locations also need to have tenants and residents that are attracted to pedestrian-friendly services and retail rather than to areas and uses with a surplus of parking.

Existing use of the tool in the region: Title 2 of the Regional Urban Growth Management Functional Plan provides the option of implementing customized parking maximums based on local conditions or providing different maximums through a variance considered on a site-by-site basis. Most communities have not varied from the Functional plan requirements to apply local maximums. The City of Portland has set a maximum for new office and retail development downtown at one parking space per 1,000 square feet. This maximum is an entitlement that developers can either build or transfer to another development. Transferable parking entitlements create more flexibility and pose a potential for profit that attracts major developments to the downtown core. Within the Northwest region, the City of Seattle has also achieved some success with implementing parking maximums. Currently, Seattle allows a maximum of one parking space per 1,000 square feet of downtown office space, and the city is considering extending this maximum to other areas outside of downtown.

Example approach

City of San Francisco, California

Unbundling parking

Facing an increase in residential units and structures within the downtown, the city has crafted an innovative parking regulation approach. It has paired parking maximums with separating the cost of providing parking from the other costs of residential development in order to decrease the overall supply and demand.

The city is eliminating minimum parking requirements for downtown housing and looking to reduce minimums in transit corridors throughout the city. A by-right maximum of one space per four units was also established with additional parking allowed if more affordable units are built. The maximum parking ratio allowed is three spaces for every four units with one space per unit allowed for units with two or more bedrooms. Developers are also allowed to use valet or stacked mechanical parking to efficiently manage space.

A project by SOMA Studios has unbundled the cost of parking from the sale of units

Photograph provided by David Baker + Partners

Another important element in the city's strategy is unbundling, or separating, the cost of parking from the sale of units. Developments in the downtown commercial district of San Francisco with more than 10 units must "unbundle" parking from the housing units. Parking is rented or sold separately, rather than automatically included with the purchase price or rental fee of a unit. This decoupling of the cost of parking and housing allows the market to determine the true cost of each based on demand. This, along with the city's parking maximums, encourages and supports public transportation and helps increase housing affordability. A homebuyer can save up to $50,000 on the price of a condominium by choosing not to buy a parking space. Alternatively, residents can purchase a parking space and lease or rent it out. Mandated bicycle parking and spots reserved for car-sharing programs facilitate car-free living and reduce the overall demand for parking.

After initial resistance to the new requirements, developers have realized they can sell parking spaces for more money when they are unbundled from the cost of the unit. Developers are also seeing increased interest from condominium buyers attracted to lower housing costs who are willing to live without a parking space. Furthermore, unbundling parking freed up space for high-quality amenities, adding value to the project. Space that would have been dedicated to parking was instead used for a childcare center and 19,000 square feet of neighborhood-serving retail that included an organic market.

"Buyers aren't obligated to buy a parking space, and developers don't have the incentive to build spaces they can't sell."

– Joshua Switzky, City Planner, San Francisco

The nuts and bolts

The City of San Francisco, California, has eliminated parking requirements for downtown housing and established a by-right maximum of one space per four units. A bonus of additional parking is granted if more affordable units are included in the project. Influencing the San Francisco parking maximums was a national study on the impact of parking requirements on housing affordability by Todd Alexander Litman of the Victoria Transport Policy Institute. Litman found that one parking space increased a unit price by 12.5 percent and two spaces increased the cost by 25 percent. The San Francisco Planning Department concluded that an additional 16,600 households could afford a single-family home if there were no parking requirements, a 20 percent increase in households that could purchase a home. Parking maximums and the elimination of minimum parking requirements altogether has increased opportunities for affordable housing. In addition to increasing affordability, developers are able to include additional units to the project using the money saved from parking.

Unbundling parking: To use a residential parking maximum approach, unbundling parking from residential units also needs to be incorporated into local codes. The code can enable unbundling by right in specific areas or as a condition of approval. It is generally done in compact walkable areas with access to transit service. Where this has been done, developers have realized they can capture a premium on parking that is priced separately from residential units. In addition, there is additional interest from buyers who do not need parking spots and are attracted to lower housing costs. Parking can be unbundled by the facility managers when they rent the building spaces or by developers when selling the building. These costs can be itemized in lease agreements. Lower prices may be passed on in the form of discounts to those renters who use fewer than the average parking spaces. If developers rent the parking spaces rather than sell them as deeded property, then owners are unable to deduct mortgage interest payments from their taxes.

Existing use of the tool in the region: Within the region, the unbundling parking approach was used at the Buckman Heights project located in a close-in eastside Portland neighborhood. The site is located less than a block from transit and within easy walking distance of various employment centers. The developer was able to reduce the parking required and the demand by using a range of strategies including unbundling parking costs. Currently, parking costs vary from $15 to $30 per month depending on whether the space is surface or covered. The project was finished with 58 parking spaces with a ratio of 0.40 spaces per unit. The project was built before Portland eliminated parking minimums for sites within 500 feet of a high-frequency transit line. The Civic, another residential development project in Portland, contains 24 housing units that do not have parking and offers its residents a rental car-sharing arrangement. This tool has also been applied in San Francisco in compact mixed-use districts with great success.

Example approach

City of Austin, Texas

Residential benefit districts

In response to concerns about spillover parking in residential neighborhoods near retail corridors, educational facilities and transit centers with limited parking supplies, a residential parking benefit district was established in Austin, Texas as a pilot program in 2005. The Mobile Source Outreach Assistance program of the Environmental Protection Agency funded the pilot program. The initial benefit district was established in an area with a zoning overlay that aimed to increase residential density.

By metering on-street parking, the benefit district transformed spillover parking into an opportunity instead of a concern. It directed revenue into the neighborhood to construct streetscape enhancements to improve the pedestrian environment as the number of residents within the district increased while using fewer city resources for maintenance and enforcement. The strategy of the program was to reduce the number of people parking and ensure that the neighborhood benefited from those who did park there. To make sure that the neighborhood was supportive of the program, interested neighborhoods had to apply for designation. Residents within a designated parking benefit district are allowed to sell parking permits, creating an additional incentive.

Parking is metered either with traditional parking meters or with pay stations at the periphery of the neighborhood. Revenue is then accrued in a Capital Improvement Project (CIP) fund and put toward improvements that promote walking, cycling and transit use, including sidewalks, curb ramps and bicycle lanes. In addition, parking meters encourage drivers to use alternative modes of transportation by promoting the alternatives through signage. The neighborhood has the opportunity to meet with city staff on an as-needed basis and inform them and the City Council regarding their preferences for future improvements to be funded by parking revenues.

Parking meters serve a dual function collecting revenue for the capital improvement district and advertising alternative modes of transportation, Austin, Texas

The strategy of the program was to reduce the number of people parking and ensure that the neighborhood benefited from those who did park there.

The nuts and bolts

Parking benefit districts: Another alternative that addresses parking supply, demand and pricing issues is parking benefit districts. Benefit districts are centralized in their administration but do not usually have centralized facilities; rather, they meter on-street parking and dedicate revenues collected to neighborhood transportation, parking and streetscape improvements. Improvements can include the placement of utility wires underground, regular street and sidewalk cleaning, installation of benches, improvements to crosswalks, striping, parking enforcement, traffic calming measures, street trees, better lighting and other amenities. Earmarking revenue to directly benefit neighborhoods and giving them input into how funds are spent generates support rather than eliciting concerns over paying for parking that used to be free.

Parking benefit districts also address potential capacity problems through market pricing of on- and off-street parking as well as funding demand management programs. For example, revenues from parking meters can provide commuter passes for downtown employees. This option can be less expensive than building an additional parking garage. Parking benefit districts have been set up most commonly in downtown business districts. Benefit districts have also been used successfully in residential districts as a way to address spillover parking that affects residential neighborhoods adjacent to vibrant, active areas such as centers and corridors.

Sometimes, parking benefit districts have used phased approaches to implementation, rolling out a district over several phases particularly in residential areas. In the first phase, informational meetings can be used in neighborhoods where spillover parking has been identified as an issue, as well as in neighborhoods or business districts that may have expressed interest in such a program. Publicizing these efforts helps gain interest and resolve public concerns. In the second phase, select interested neighborhoods or central, high traffic areas to be included in the benefit district. At this stage, local staff coordinates with residents of the community and business owners to determine the location of meters, maximum times on meters and how to promote any available alternative transportation options. Finally, parking benefit districts can be implemented through the installation of parking meters and public outreach regarding alternatives to driving and parking.

Existing use of the tool in the region: Downtown areas within the region employing parking benefit districts include Beaverton, Hillsboro and Tualatin. However, some of the most advanced benefit districts come from the California Bay Area. San Diego and Pasadena, California, have established successful downtown business parking districts. The City of Boulder, Colorado, has also instituted a very successful parking benefit district. The City of Austin, Texas has piloted a residential parking benefit district that allows neighborhoods to select whether to participate in the program, translating high demand for parking in an area into a benefit to be realized instead of a drawback.

Example approach

City of Boulder, Colorado

Comprehensive, phased parking approach

Boulder's downtown business district developed an integrated approach combining restrictions on parking with aggressive demand management to counter a shortage of parking. A special district, the Central Area General Improvement District (CAGID), was established.

The Central Area General Improvement District's objective was to provide parking on a district-wide basis while maintaining a desirable, walkable, vibrant downtown.

In the downtown, there are no parking requirements for non-residential uses. If developers choose to build less parking, they can purchase permits for public lots, which offers a less expensive option to building parking on-site. These public lots are constructed and operated by CAGID. They are funded with general obligation bonds with the debt being supported primarily by parking fee revenues and taxes paid by property owners.

Boulder began by building surface lots and transitioning to structured parking as the downtown grew and revenues were generated. Now all the garages are mixed-use, and the zoning code specifies design requirements for wrapping parking in pedestrian-oriented uses up to a certain depth on the first and second floors. The city has won several design awards for their 15th and Pearl Street garage which is a five-story garage wrapped with four separate structures that largely hide the garage from street view. The garage's design increased costs with an average of $18,000 spent per parking space for a total of 700 parking spaces.

CAGID also seeks to manage the overall demand for parking in the district, recognizing this approach is less expensive than continuing to build new parking supply. They dedicate on-street meter revenue to provide all downtown employees with a free universal transit pass which reduces the overall need for parking downtown. Forty-two percent of employees use alternative modes of transit freeing up spaces for visitors and customers. All downtown parking meter revenue, which exceeds $1 million a year, is transferred from the city general fund to CAGID.

Award-winning mixed-use garage in downtown Boulder, Colorado

CAGID has also established neighborhood permit parking initiatives to prevent spillover parking from commuters trying to avoid parking charges downtown. Commuters can buy on-street parking permits. These are limited to a certain number per block, and restrictions are enforced with sophisticated methods to ensure low average occupancy rates. The program is designed to be revenue neutral as commuter fees subsidize lower annual resident fees.

Keep in mind

True cost: The true cost of parking is currently hidden and borne by the general public and developers. Making the cost of parking more transparent and shifting the burden to users changes behavior. Unbundling parking can be a successful tool in revealing the true price of parking to consumers and influencing their choices. Parking demand may subsequently be reduced as the cost of parking exceeds what some consumers are willing to pay. Modifying city codes to require the unbundling of parking would create an incentive and not a barrier to development, particularly in centers and corridors. In addition this may be a more equitable response to managing parking supply and demand. Linking prices with consumption can lead to more rational decisions and opportunities for reducing vehicle ownership, which will in turn lead to more walking and transit use.

Lowering costs: Lowering the requirements for providing parking and separating parking from the price of housing creates significant savings for development projects. This can translate into more affordable housing and more mixed-use development in targeted areas. With lower parking requirements and lower parking costs, there is an increased ability to develop in an infill area. In response to lower parking requirements and costs, a long-vacant one-acre lot in downtown Beaverton was finally developed as a mixed-use project. The City of Hillsboro had a similar experience with a one-acre site by the MAX line where the developer, armed with data to support less parking, was able to make the project financially feasible once the parking requirements were lowered. Parking benefit districts also lower costs to individual development projects by providing funding for parking structures and programs for managing parking supply and demand in centers, corridors and transit station areas.

Public involvement: Quantitative information from parking study inventories is helpful in addressing questions and perceptions about the local parking supply. It is essential to involve stakeholders early in the process if there will be any changes to regulations or management policies. It can be even more helpful to engage community members through the process of evaluating the existing supply and assessing existing and future demand. The results will provide clear and quantifiable numbers to serve as the basis for policy discussions. Involving stakeholders throughout the process will help build support for formulating and implementing specific parking policies that support the findings of the local parking inventory.

Local management: Conducting an inventory of the supply is an essential first step to quantify the true extent of the local problem, facilitate community involvement, and build the framework for changes in city codes and policies. Data gathered through parking study inventories can help quantify the existing supply versus demand, as well as strategies for future consideration.

Strategies that seek to manage the parking supply or demand entail a certain level of investment from local governments to determine how to fund capital investments and how to implement and manage programs long term. Regulations provide a cheaper approach to addressing parking concerns for localities without the capital resources to implement parking programs. That said, the regulatory approach still requires amendments to the code, which must have political and public support. Preparing an inventory of the supply can help overcome opposition by providing concrete numbers to make the argument for code changes.

Some parking management strategies, particularly centralized facilities and "real time" pricing, may require capital investment upfront and funds for long-term management and maintenance. These costs make this approach more realistic for local governments with significant resources or access to financial incentives. However, jurisdictions may consider less costly approaches such as setting rates higher in more dense, active areas and setting lower rates (or eliminating rates) in adjacent areas.

Funding: A significant benefit of parking districts is the revenue collected, which can be directed toward bond payments for centralized municipal parking garages or other local transportation infrastructure improvements. Charging for parking not just during working hours but also on the evenings and weekends can further increase this revenue. This strategy avoids the need to use general resources to make debt service payments.

Lender requirements: Lowering parking requirements will not necessarily change strict lender requirements. Lenders recognize that parking can be a critical component of new development and can require a developer to deliver parking spaces beyond that required by the city. Local governments should work with developers to provide information about the local parking supply and the consistency of regional parking standards to lenders unfamiliar and uncomfortable with the local requirements.

Incremental approach: If local governments do not have the capacity to implement parking regulations and management approaches, or if they have lower land values that preclude structured parking, an incremental approach with a phasing strategy can be applied. This approach will allow suburban communities to allow lower density development to proceed while laying the groundwork to facilitate higher density development over time.

An essential first step is conducting a parking inventory of existing supply and demand. Following this initial step, local governments can reduce parking requirements for centers and corridors and then implement management programs in order to use the existing supply of parking more efficiently. Parking benefit districts can be established to address concurrent concerns regarding potential spillover parking. One or more pilot neighborhoods can be established, and as neighboring blocks see the visible results of the district they can elect to be included in the program. In addition, cities and counties should consider the potential for revenue collection in order to fund demand management programs, local improvements and centralized facilities in later phases of the implementation of a comprehensive parking regulation and management approach.

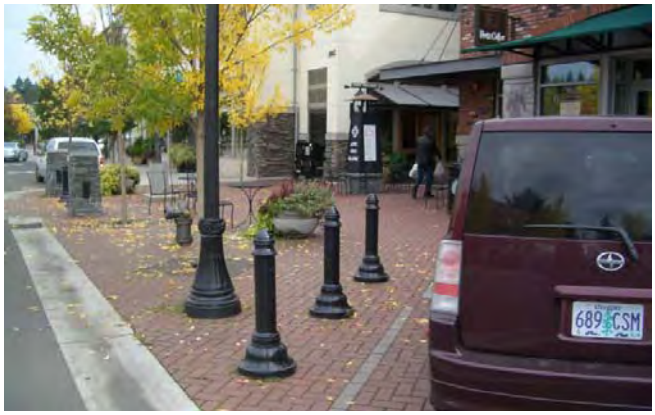
Finally, local governments should examine how to reduce the cost to developers of providing parking through amendments to regulations such as unbundling parking or employing other city incentives or subsidies. Local governments should also analyze how and where to construct public parking garages to facilitate higher density development.

Putting it together

Modifying parking regulations to reduce parking ratio requirements, allowing or requiring the unbundling of parking and increasing shared parking opportunities in centers, corridors and transit station areas helps remove financial barriers to development in these areas. Coupled with parking demand and supply management programs, local governments can promote more affordable housing opportunities and enable development consistent with more active mixed-use, multi-modal communities.

Conducting an inventory of parking supply and demand is an essential first step in order to quantify the true extent of the problem, counter perceptions and understand the local nuances of parking use. Parking supply studies can also facilitate community involvement and build the case for changes to city code and policies as well as new management programs. Demonstrating that lower parking requirements are supported by local supply and management programs can also help convince lenders to change their parking standards. This allows additional infill opportunities in centers, corridors and transit station areas and more compact development patterns consistent with the vision of the 2040 Growth Concept.

Techniques that make consumers aware of the true cost of parking are relatively new. Yet these approaches, combined with approaches that implement time and price variables, may have higher rates of success in changing parking behavior because they allow users to make individual economic choices. Simply providing additional supply to meet perceived demand is not a sustainable practice, but linking price with consumption can lead to more rational decisions and a reduced demand for parking.



Tips for implementation

- Quantify the existing supply through a parking study to develop accurate local data and develop recommendations for city policies and management strategies based on the results.
- Develop phasing strategies for parking management to work toward the long-term goal of higher density even if the market does not currently exist.
- Build public support for the recommendations to ensure an engaged constituency that will stay involved long-term.
- Implement strategies that collect parking revenue in order to fund on-going supply and demand management programs.
- Earmark parking revenue funds to directly benefit the local neighborhood; invite their input in how funds are spent.
- Allow neighborhoods to elect to be a parking benefit district to ensure residents support the program.
- Modify codes to allow or require the unbundling of parking to increase the supply of affordable housing.
- Reduce parking minimums to decrease development costs associated with providing parking.
- Set aside staff time to write and approve code amendments to ensure that recommendations are implemented.
- Manage local parking supply by distributing users through price variations and time limits for different areas.
- Partner with developers to explain local parking requirements to lenders and highlight successful developments in the region with less parking.
- Pair these strategies with existing and planned transportation infrastructure improvements in order to build a strong multi-modal transportation network and assure long-term success in managing parking.

Resources

For more information on the example approaches to parking management strategies, contact or visit:

City of Beaverton
Planning Services Division
Beaverton City Hall, CDD—second floor
4755 SW Griffith Drive, Beaverton, OR 97005 • 503-350-4037

City of Austin
Neighborhood Planning and Zoning Department
PO Box 1088, Austin, Texas 78767 • 512-974-2856
www.ci.austin.tx.us/parkingdistrict/default.htm
www.epa.gov/airnow//2006conference/wednesday/Larsen.ppt

City of Boulder, Colorado, Parking Program
www.downtowndevelopment.com/pdf/DowntownBoulderCategoryIIIS.pdf

The Non-Profit Housing Association of Northern California
www.nonprofithousing.org/actioncenter/toolbox/parking/unbundling.html

For additional resources to manage parking to maximize urban form, visit:

The Boston Metropolitan Area Planning Council
"Sustainable Transportation Toolkit: Parking"
http://transtoolkit.mapc.org/Parking/index.htm

Donald Shoup, author of *The High Cost of Free Parking*
http://shoup.bol.ucla.edu/

Environmental Planning Agency
"Parking Spaces/Community Places: Finding the Balance through Smart Growth Solutions" www.epa.gov/dced/pdf/EPAParkingSpaces06.pdf

State of Maryland: Governor's Office of Smart Growth
"Driving Urban Environments: Smart Growth Parking Best Practices"
www.smartgrowth.state.md.us/pdf/Final%20Parking%20Paper.pdf

Victoria Transport Policy Institute
"Parking Management: Strategies, Evaluation, and Planning"
www.vtpi.org/park_man.pdf

Municipal Research and Services Center of Washington
"Downtown Parking Solutions"
http://mrsc.org/Subjects/Transpo/Tpark/transsolut.aspx

Redwood City Community Development
PO Box 391, 1017 Middlefield Road, Redwood City, CA 94064-0391
650-780-7379
http://www.redwoodcity.org/cds/redevelopment/downtown/parking.html

An example of using 3-D tools to help a community visualize zoning and make policy decisions.

Photograph provided by Fregonese Associates

Toolkit

Innovative design and development codes

Visualizing zoning

Complicated, multi-faceted codes and planning documents can be difficult to explain to developers and the general public, making it challenging to articulate a clear vision for future growth that can be rendered in built form. Urban design plans, form-based codes and illustrative code guides, along with the advent of new 3-D video and visualization technology, is changing this dynamic. These tools have been applied to areas as small as a site, block or street, to areas as large as 2,000 acres. Clearly the potential of these tools is just beginning to be understood, but the need for them is obvious: when used they can facilitate more informed decision-making and a greater level of excitement and awareness of the planning process.

The nuts and bolts

Often urban form is not understood until a development application is presented. This creates a problem when neighborhoods, developers, architects and city planners clash over unexpected results at the approval stage, which is usually too late in the process to effect meaningful change. Providing a clear picture of a code's intent can smooth project approvals and be used to create better codes. The ultimate goal is to make existing, new or amended codes easier for developers and designers to understand what is expected, easier for neighbors and the public to engage in the process of review and easier for staff to administer.

Compounding the need for better understanding of urban form is the complexity inherent in compact, mixed-use areas. Conventional, land use-focused codes are not focused on or explicit about desired urban form in these areas. These types of codes do not illustrate what types of buildings, streets or open space are desired and how these connect. Instead, the focus is limited to what land uses are allowed in which areas. Furthermore, they use abstract, difficult-to-understand formulas such as Floor Area Ratio (FAR) and do not translate these formulas into potential urban forms. There are newer, more innovative codes that focus on the form communities want to achieve and, as a result, enhance understanding among the various stakeholders creating a smoother public input and review process. New visual tools have also proven extremely helpful in translating existing codes, involving the public more effectively and guiding infrastructure investments and improvements.

How to use it:

Urban design plans: An urban design plan is an urban form-focused planning effort intended to transform the vision for an area into reality. It is usually comprised of equal parts planning, urban design, investment strategy, development and design code, and action items. Since it deals with all the aspects of an area, from public improvements to private development, an urban design plan can bring together property owners, neighboring residents and public infrastructure providers while providing a better understanding and more predictable sense of how new development will be built. Urban design plans are particularly useful for areas where local governments want to target investment, such as centers and corridors, because it brings all the aspects of planning, placemaking and infrastructure improvements together at the same time.

Urban design plans can serve as the bridge between planning and its translation into the local municipal code. Urban design plans can test existing or proposed zoning code provisions by illustrating their character and scale in order to ensure the zoning code text will support desired urban forms. Similarly, their strength at articulating a cohesive vision offers a more flexible implementation of objectives that still meet the vision. This is particularly important if unanticipated market trends occur or public funding availability becomes limited.

Once developed, an urban design plan can be used to guide infrastructure investments and improvements by different departments within the local government. Involving departments such as parks and public works will help inform the design of areas within their control making design and planning solutions more comprehensive and proposed improvements more likely to be implemented. Internal coordination can link planning efforts with specific capital projects and funding sources.

Example approach

City of Portland

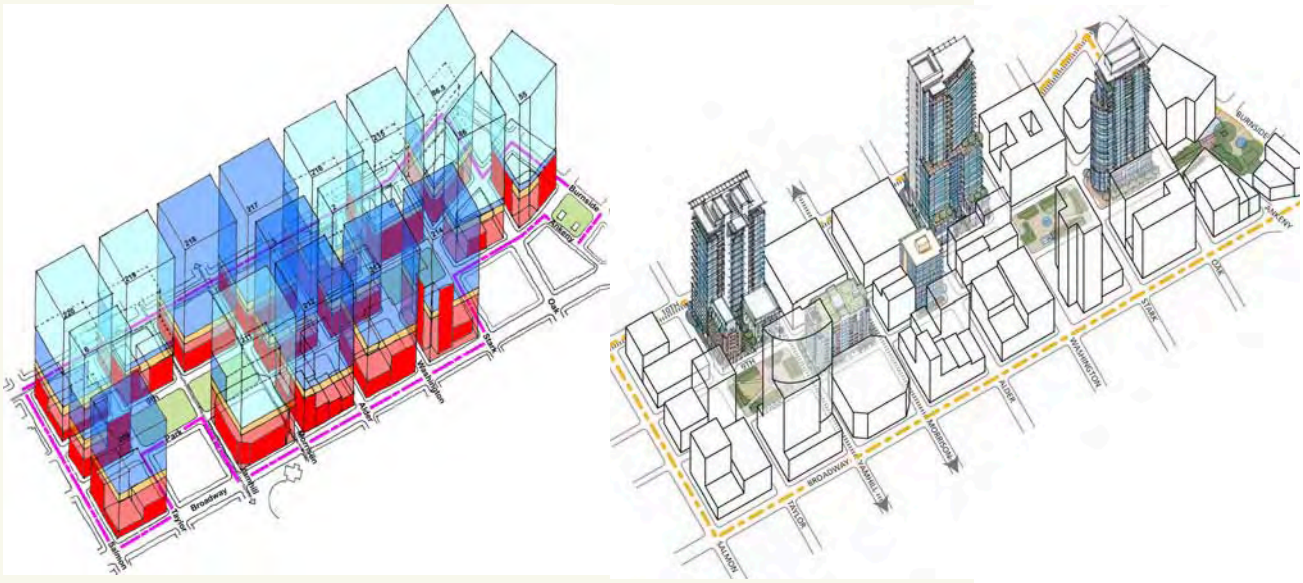
Urban design plan

In 2001, the city initiated a process to develop an urban design plan for the area between the Central City's North and South Park Blocks. The Midtown Park Blocks Urban Design Plan provided a framework for translating the ideas of an outside panel of experts in real estate investment, downtown retail and urban design into specific actions. This framework included an investment strategy, a retail investment agenda, historic preservation guidelines, a new set of design guidelines and new street standards. As a result of the plan, the city decided to retain existing buildings and incorporate small-scaled open spaces and green street design to link the North and South Park Blocks.

A follow-up project, the 2002 West End Plan, updated zoning and development standards to complete the district vision. As a result, the plan influenced a property owner to rethink his approach to historic buildings that he owned and to work with the city to dedicate a strategic block of his property for a public park. Some of the plan funding even came from the property owner. The city's urban design group, a division of the bureau of planning, subsequently produced the 2004 Park Avenue Vision.

The city's planning bureau has been extremely successful in linking long-range planning efforts to capital improvements carried out by other city departments, as well as coordinating the separate projects of parks, environmental services and traffic bureaus to achieve a larger vision. This plan, for instance, linked the Park Block 5 site improvements with new street standards and streetscape improvements for the area.

The city's planning bureau has been extremely successful in linking long-range planning efforts to capital improvements carried out by other city department in order to achieve a larger vision.



Urban design plan for the Midtown Park Blocks, City of Portland Images provided by SERA

The nuts and bolts

The scale at which analysis is performed for an urban design plan can make a difference in the success of the outcome. Urban design plans for a neighborhood center of a large city or for a downtown in a small city would have the most success as the scale of these areas is similar, generally less than 1/4 mile square. Plans prepared for larger areas face the challenge of developing a compelling and cohesive vision that can be maintained over time. Additionally, they require higher levels of coordination with more stakeholders. A plan prepared at the correct scale will be more comprehensible and discrete and therefore have a greater chance of successful execution.

Similarly, urban design plans need to work from a vision that looks far enough into the future to spark the public's imagination, yet close enough in time that actual projects can be identified and implemented. Most urban design plans look at a vision that will be implemented over a span of 20 years. An urban design plan often culminates in a highly public process such as a charrette, design workshop or expert panel, which can help create additional long-term support and advocates for its implementation.

Existing use of the tool in the region: To date, the City of Portland has developed several urban design plans and seen varying levels of implementation. These include the Pearl District, South Waterfront and the Convention Center/Lloyd District. Many of Portland's urban design plans include a number of separate projects to be carried out over time by different bureaus, but coordinated by an urban design vision and investment strategy. The city's bureau of planning has been very strategic in directing planning efforts toward infrastructure investments, capitalizing on investment opportunities and ensuring that capital improvements are consistent with an overall district vision.

3-D modeling: 3-D tools are frequently used in an urban design plan as the basis for analysis. Although they cannot substitute for the in-depth design analysis and collaborative process engendered in such a plan, 3-D visualizations are very helpful to communicate the vision of an urban design plan. These 3-D tools are frequently used to test and illustrate concepts and support the in-depth design analysis and collaborative process. The use of 3-D tools can be more easily and widely disseminated than prior hand-drawn efforts given the tool's capability for a web-based interface. There are a variety

Figure 1. Base Heights


Figure 2. Tower impact on Open Space

Figure 3. Maximum height massing showing no additional impact on initial line of impact

3-D shadow studies for the Portland Art Museum, City of Portland. Images provided by SERA

of tools that utilize new 3-D drawing software such as SketchUp and Flash. The tools include 1) 3-D models that measure development capacity on a site, block or district scale; and 2) 3-D models combined with video to create virtual flyover views of proposed plans and codes.

Any municipality could use these tools for different types of planning processes. During the brief period of time the software (such as SketchUp) has been available, the 3-D technology has been employed for a wide range of projects. They have been used at the scale of a downtown to that of an urban expansion area, and at all points along the planning timeline from a concept plan to a master plan. A common reason to use these tools is to engage participants in the planning effort and create excitement. These models can also help test adopted development code requirements and inform proposed code changes to ensure they support the desired development types and patterns envisioned by a community.

Example approach

City of Hillsboro

3-D model

The City of Hillsboro has used a variety of visual tools to communicate key land use components of a concept plan for approximately 2,000 acres south of Hillsboro. They included a visual preference survey and a simple 3-D model. Alpha Community Development, a consultant to the city, developed one of the more innovative tools: "South Hillsboro: The Movie." This virtual flight through the future South Hillsboro provided a 3-D computer simulation model featuring sustainable neighborhoods, a thriving town center, and tranquil open spaces. Videos created with Google Earth and SketchUp software incorporated the concept plan into high-resolution aerial photographs of South Hillsboro, allowing exploration by the client and the public of what is on the ground now and what could occur.

"The 3-D model and video allowed people to 'fly over' parks and schools, 'walk' through town centers and get a better understanding of the 'urban fabric'."

–Ric Stephens, Lead Consultant, Alpha Community Development

The nuts and bolts

During comprehensive plan updates, proposed zoning can be illustrated providing staff planners, property owners, developers, planning commissioners and the public with a clear idea of what is allowed versus what is being proposed. The software can be set up to allow easy modifications so that alternative zoning proposals can be considered. Very simple, quick models can also be created to illustrate allowed or proposed height, FAR and site coverage. With more analysis and some site and building designs, models can show development capacity that results after other factors are accounted for, including bonuses, parking, landscaping, access and other requirements.

Existing use of the tool in the region: To illustrate a concept plan for a 2,000-acre urban expansion south of Hillsboro, the city produced a virtual flight using 3-D models and video. Portland is currently exploring how GIS and 3-D modeling tools can be combined for updates to its Central City Plan and Comprehensive Plan in order to evaluate how current zoning can be modified to produce better urban design.

Building prototypes: Building prototypes start with a 3-D base model and then add more detail into the model to describe an actual building type that can be replicated or adapted for different zoning and urban design contexts. Simple building prototypes are 3-D models molded to show massing, orientation, floor levels and even simple architectural components, such as openings and roof shapes. More complex building prototypes can also be built with photorealistic buildings placed into a photograph of the actual site in order to demonstrate "before" and "after" views of potential redevelopment. Building prototypes can also be linked to a design analysis, such as a shadow study, or a financing or market feasibility analysis.

The greatest advantage of 3-D building prototypes is that they allow the user to test actual development proposals as well as the parameters of existing code. Prototypes of development that integrate information about parking, height and use requirements can be paired with economic information such as rent, lease or sales prices or the costs and fees associated with construction to generate an interactive and easily understood model of the associated costs and risks of a specific proposal. This interactive model is easier to understand and explain than the spreadsheets typically associated with a pro forma analysis. Three-dimensional building prototypes also allow users to explain how changes in the pro formas are reflected in changes to the built form.

Existing use of the tool in the region: Prior to enacting amendments to its multi-dwelling zones, the City of Portland undertook an effort to document specifically why new multi-dwelling developments were not meeting city objectives for design quality. A prototypes study developed several housing types to illustrate solutions for common infill design challenges while providing building types that would meet city regulations and be feasible from a market perspective. Outside of the region, El Centro, California, used 3-D photorealistic building prototypes to illustrate preferred building types on a block-by-block basis in a downtown setting. These building prototypes were linked to financial information to determine whether the preferred building types were feasible in the plan district.

Example approach

City of El Centro, California

3-D building prototypes

In October 2007, the Southern California Association of Governments (SCAG) provided funding and planning services to support a Downtown Master Plan for the City of El Centro. The effort, led by a consultant, included a series of 3-D visualization components.

A Visual Preference Survey was used initially to identify community preferences regarding architectural style, land uses, building scale and setbacks, parking areas, surface finishes and other design elements. Results led to the development of six building prototypes that reflected existing structures downtown: 1) two-story mixed use residential; 2) four-story mixed use residential; 3) mixed use rehabilitation; 4) two-story mixed use office; 5) four-story mixed use office; and 6) restaurant and hotel.

A Tipping Point Analysis then analyzed the financial feasibility of the preferred building prototypes, focusing on the interaction between the regulatory system and the market. The model (a large spreadsheet) considered a range of code factors such as parking, height and use requirements, area construction costs, and fees. A key finding of the study demonstrated that many desired building prototypes were not feasible in the downtown area because of current zoning regulations, with off-street parking requirements as the biggest single barrier. In addition, the study determined that cost-effective building prototypes downtown would need a floor area ratio (FAR) of 2.5 or higher, more than the current zoning limit of 1.5 FAR.

The city adopted the Downtown Master Plan and has committed to amending the code in 2008.

A key finding of the study demonstrated that many desired building prototypes were not feasible in the downtown area because of current zoning regulations.

3-D visualization components identified community preferences and demonstrated financial feasibility, El Centro, California Images provided by Fregonese Associates

Example approach

City of Portland

"The housing prototypes are part of a focus on promoting desirable *design, rather than simply regulating against 'bad' design. Instead of a 'thou shalt not' approach, the prototypes provide solutions and highlight design that builders* can *do to achieve better infill design."*

– Bill Cunningham,
Infill Design Project Manager,
City of Portland
Bureau of Planning

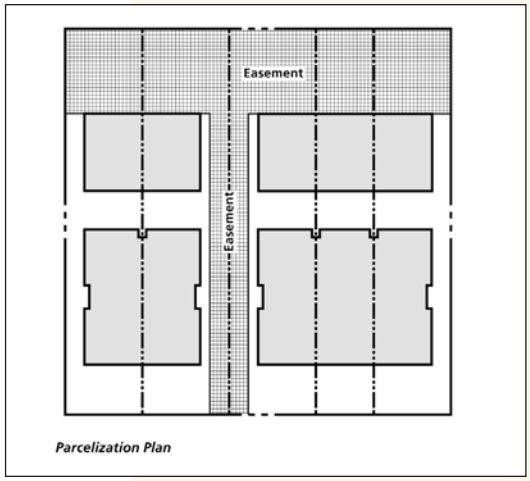
Multi-dwelling building prototypes

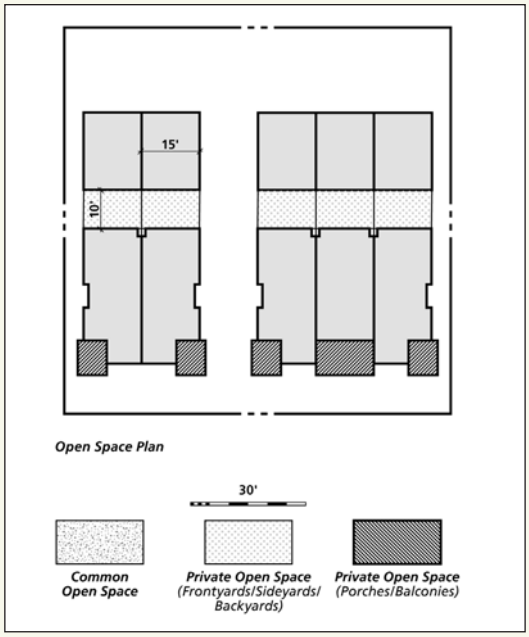
In 2004, prior to enacting amendments to its multi-dwelling zones, Portland undertook an effort to document specifically why new multi-dwelling development was not meeting city objectives for design quality. It was also initiated to provide examples that would contribute positively to the neighborhood context.

The city commissioned a consultant team to develop a collection of housing prototypes to illustrate solutions for common infill design challenges. The challenges included balancing parking needs with pedestrian-friendly design and providing usable open space while achieving density goals. The prototypes were required to be suitable for common infill site configurations, meet city regulations and design objectives, and be feasible from a market perspective. Typical sites from different parts of the city were selected for testing, including from the streetcar-era neighborhoods west of 82nd Avenue and from the area east of 82nd Avenue.

The housing prototypes used dimensioned plans, 3-D models (including models showing the prototypes in context) and photographs of desirable housing examples from in and outside the region. Informed by the prototype study, code amendments were adopted in 2005 to promote the resulting design types. These amendments included code changes to support pedestrian-friendly street frontage, facilitate rear parking, facilitate courtyard housing and alternative housing arrangements, minimize impervious surface area and provide additional flexibility for reducing front building setbacks.

In 2006, the *Portland Infill Design Guide: Housing Prototypes, Multi-dwelling Zones* was produced to serve as a resource to developers, designers, city staff and the general public to broaden awareness of the design types and code amendments.





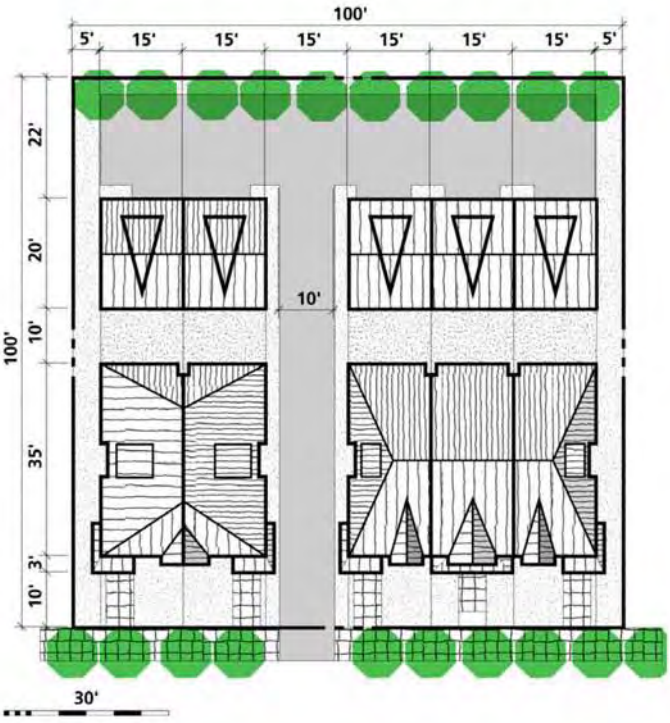
Illustrations from the Portland Infill Design Guide: Housing Prototypes, Multi-dwelling zones, City of Portland

Contextual Rowhouses

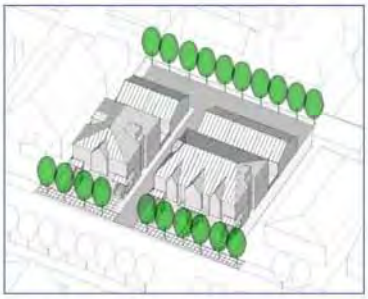
100' X 100' Site, R2 Zone

Prototype **1c**

R2 Zone | 10,000 SF Site | Inner Neighborhood | **Contextual Rowhouses**



Site Plan



Site Axonometric View

- 5 rowhouse units (1,050–1,300 sq.ft each).
- Massing intended to blend with surrounding single-family context.
- Parking in detached garages to the rear of each unit, accessed by alley easement.
- Small private gardens between each unit and the garages.
- Additional square footage is possible if living space is added in a full third story or above garages.

Precedents

Neighborhood Context

The nuts and bolts

Urban form focused codes: As described in the contextual design section, a form-based code moves away from being a land use-focused code toward a simpler, more urban form-focused approach. A form-based code dictates urban form through development standards that are linked to a regulating plan. This regulating plan is similar to a zoning map, but places less emphasis on land uses and more emphasis on the building shape, street design and neighborhood character in each zone. Due to this emphasis, form-based codes are an extremely effective way to visualize zoning. Implementing form-based codes can greatly reduce discussions focused on the meaning of zoning terms and arguments over how to interpret code language. Pictures are clear and easy to understand leaving discussions to focus on how places appear rather than how they are regulated.

Form based codes are vastly different from most conventional codes. During development and adoption, significant time and budget will need be set aside to train staff not only on the content of the code but also on how to interpret the urban design and architectural principles of the document. Staff authority to make some case-by-case judgment and an understanding of urban design and architecture is critical. A number of cities that have adopted a form-based code have also had success in using a "town architect" to administer their new code. A "town architect" is essentially a staff person or outside consultant who manages the more discretionary aspects of the code.

Existing use of the tool in the region: Form-based codes have not been widely implemented in Oregon. Several cities around the country have successfully integrated form-based codes into existing codes with Petaluma and Hercules, California, being the most commonly referenced.

Code guides: Local governments looking for an economical "quick fix" for a complex code that already exists, or for an interim step prior to amending or rewriting their code, can also create an explanatory and visual guidebook. The purpose of this guide is to demystify the zoning code for the benefit of users, primarily for neighborhood representatives but also for designers and developers. In addition to providing user-friendly graphics of the types of buildings and forms that result from different zoning regulations and overlay requirements, these documents provide information about how to determine what may be built on a specific site or where a specific use may be located.

Existing use of the tool in the region: There are no examples within the region of code guidebooks. A very successful example outside the region is the City of New York's user-friendly zoning guide that is made available to all elected officials and members of community boards. The guidebook provides a comprehensive graphic outline of the entire content of the city's complicated and difficult-to-use zoning code.

Example approach

City of Petaluma, California

Form based codes

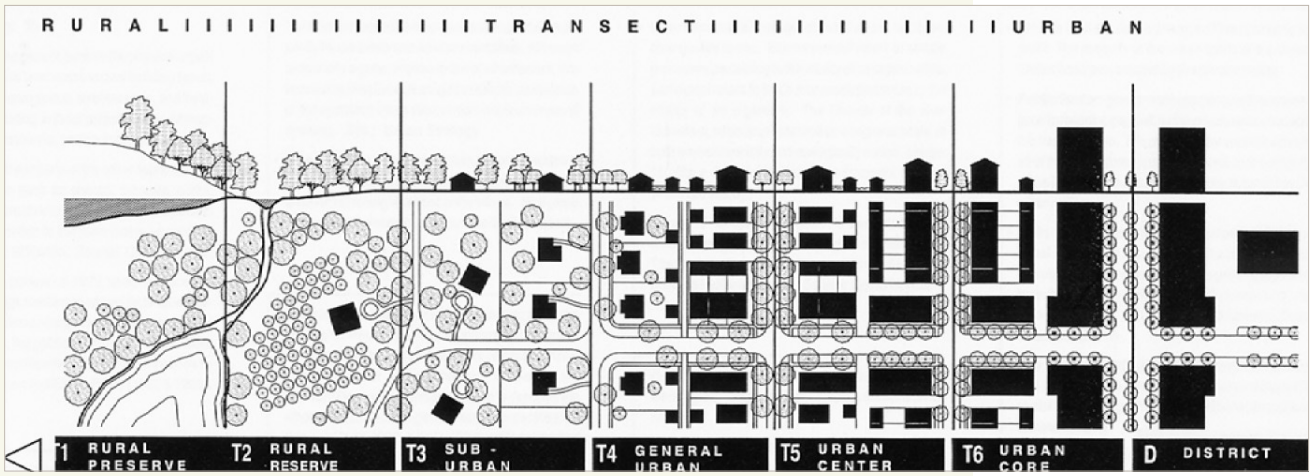
The City of Petaluma developed a form-based code for 400 acres of underutilized land in and near its downtown. As a form-based code, the Petaluma Smart Code goes beyond conventional zoning's focus on use to address urban form. The code prescribes urban form components such as block sizes, site coverage, building frontage, spatial relationships and other physical features. It coordinates the design of the public realm with the design of private buildings.

Building placement and street façades are regulated based on eight frontage types. By allowing a mix-and-match approach for the different components (frontage types and site coverage, for example), the code allows several different approaches for any site. At the same time it ensures more predictability, because every component is illustrated and defined. The focus of the code is on the scale and character of the components and how they connect to one another and affect the pedestrian environment rather than on architectural style.

The City of Petaluma's code is modeled on the SmartCode developed by Duany Plater Zyberk which is meant to be customized locally. The City of Petaluma used the SmartCode to develop their code, which incorporates zoning, subdivision regulations and certain urban design standards into one document.

"The Petaluma Smart Code is doing exactly what it was meant to do when it was adopted. It brings predictability to the community so they know what to expect and they've been happy with the outcome."

-Matt White,
President of Basin Street Properties



Transect from form-based code, City of Petaluma, California

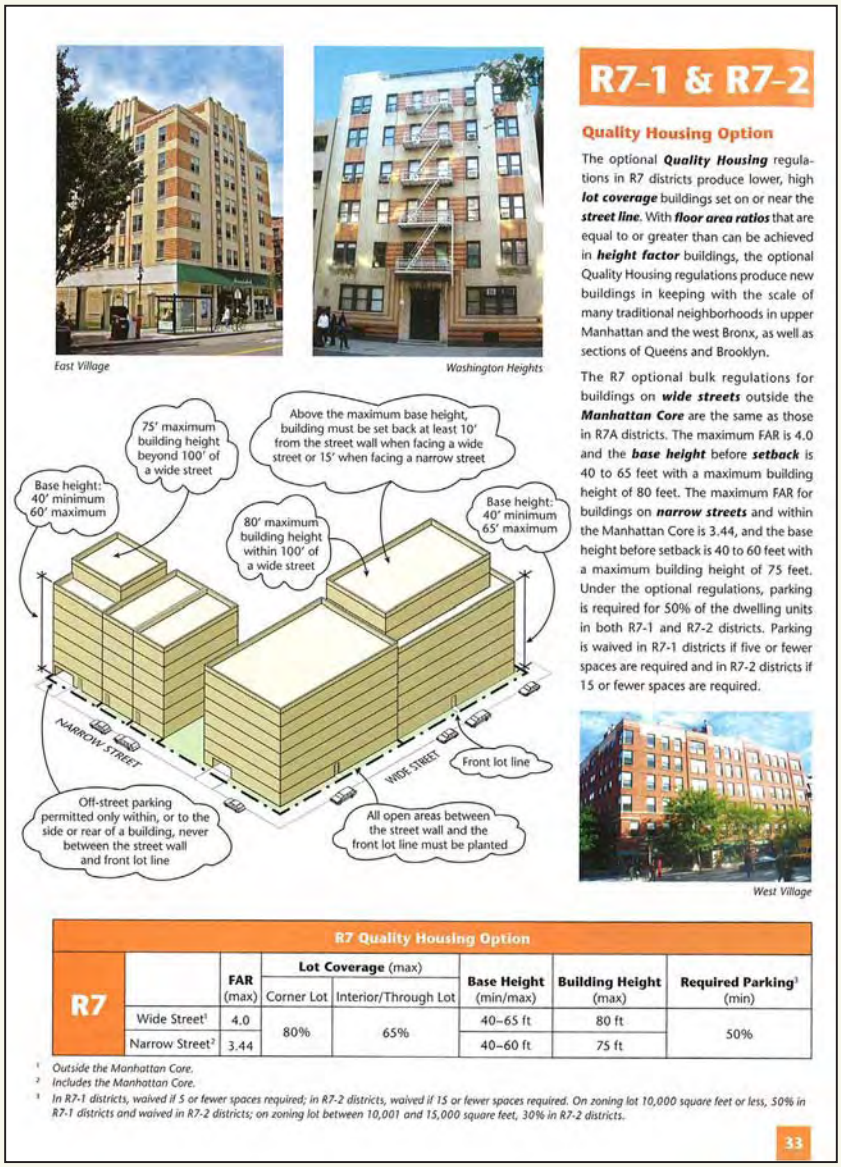
Images provided by Duany Plater-Zyberk + Company

Example approach

City of New York, New York

Visual zoning handbook

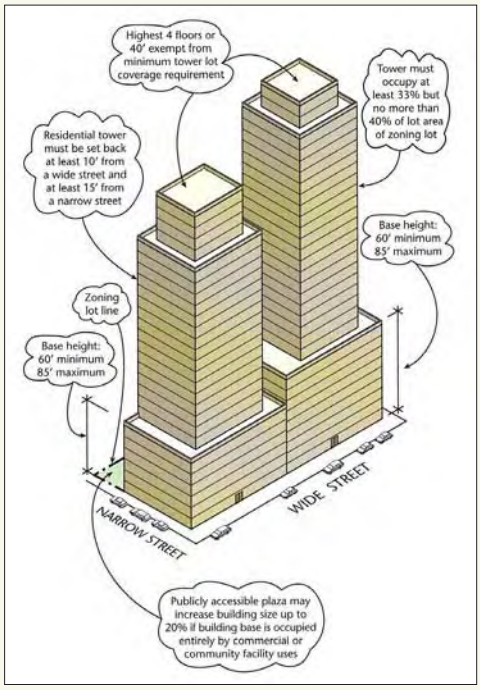
The New York City Department of Planning designed a manual that translates its complex and antiquated zoning code into accessible, user-friendly 3-D renderings of sites throughout the city. The guide summarizes regulations for each zoning district, pairing photographs and illustrative graphics with concise explanations to illustrate the typical building forms they are likely to produce. For each district, the dimensions of new buildings permitted by zoning are also described including the overall square footage as determined by the floor area ratio (FAR). This is accompanied by example zoning analyses that illustrate the way in which the use, bulk and parking requirements of a zoning district further guide the development of a typical building in that district.



Excerpt from the New York City Zoning Handbook, New York Department of City Planning

The handbook also includes an illustrated glossary of planning and zoning terminology as well as a guide to the existing zoning ordinance. It explains how the ordinance's text is organized, how to read zoning maps, how to determine what may be built on a specific site, and where a specific use may be located. This section also outlines online resources for the zoning text, amendments and maps. The guidebook details recent changes and updates to the zoning code and clearly describes new special districts that have enhanced zoning to preserve and promote certain uses and qualities.

The 2004 edition is an update to a 1973 handbook, originally created to inform neighborhood leaders about the zoning ordinance. The handbook is 139 pages long and costs $24. It may be ordered online through the City Planning Department web site listed at the end of this chapter. The book is also available in public libraries and at the Department of City Planning bookstore. It is distributed to elected officials and all community boards to assist them in their land use review process.



"Zoning should be intelligible to all New Yorkers, not just to land use specialists and zoning experts. It is our purpose to make zoning more accessible – to help New Yorkers understand the basic concepts of zoning and how to apply them. The handbook can be helpful to both the novice and the professional but it should not be used as a substitute for the Zoning Resolution itself. When in doubt, consult the Zoning Resolution. Above all the handbook is intended to help the citizens of New York understand and participate in the planning process." – NYC Zoning Handbook

"The multi-volume Zoning Resolution is like hieroglyphics, known only to the priests of zoning. Opening the Zoning Handbook is like discovering the Rosetta Stone."

– Prof. Ross Sandler, director of the Center for New York City Law at the New York Law School in Manhattan, as quoted in *New York Times*

Keep in mind

Public involvement: Flexible visualization tools can engage the public, property owners, developers, and staff early in the design process and generate plans that reflect realistic development potential. When such tools are used to engage stakeholders early in the process, they smooth subsequent project approvals as everyone is more informed about what to expect from the planning effort. Using building prototypes and related tools can also be very useful in developing a common language of clear-cut design elements for common building "types." According to City of Hillsboro planning staff, the South Hillsboro video was a very effective tool for engaging citizens in the concept planning process.

When using these visualization tools to better communicate with the public careful consideration must be put into the content of the resulting products. It can be relatively simple to produce 3-D models that show development allowed by Floor Area Ratio, site coverage and height. However, the resulting massing can create unnecessary alarm for adjacent neighbors and the public. Construction limitations, parking requirements, property ownership and other factors that limit development must be factored into the presented product in order to reflect realistic development potential. This level of effort may seem like a disadvantage, but 3-D modeling tools provide far more definitive visual information about the development of a site or neighborhood than has ever been possible before. Therefore the level of effort needs to be commensurate with the benefits to be realized.

Building prototypes and photo visualizations can also look too "finished," giving the impression that decisions about building design have been set even though the project is in the planning stage. Some plans have achieved the right balance by combining sketchy-looking building models with photo examples of architectural options. These methods should be paired with improved public communications to discuss the content of the development code. Such an investment into building understanding and support up front will save time later when the code is applied to specific projects.

Local management: New tools require a certain level of skill which, if not available locally, will entail a certain cost to outsource. Urban design expertise is necessary, either on city staff or through outside consultants. Local governments often engage outside urban design or charrette specialists to conduct a high-profile public event with staff following up with amendments to the code. Other cities have focused on adding urban design expertise to their planning or community development departments in order to conduct more urban design in-house.

3-D modeling requires a high-level of skill with computer applications, or the capacity to receive training to use programs such as GIS and SketchUp as well as interactive fly-over models that use Flash and other multimedia programs. Smaller cities may have a hard time staffing such efforts and may need to seek consultants.

Depending on the complexity of the existing code or size of the municipality, a code guide, code amendments or code rewrite could entail a substantial effort. Likewise, the benefits of using an interactive visual tool will also need to be offset by any concerns over the expenses involved. Google SketchUp software is relatively easy to learn and inexpensive. However, it is more effective when combined with other software, such as Photoshop for photorealistic models or Flash for video simulations. This addi-

tional software will cost more and require more extensive training. Using GIS data to develop SketchUp models also requires additional software and training. While it may take some time and resources to make these changes and build internal capability to use these tools, they improve the understanding and application of local codes, both internally and with the public.

Visioning: Combining 3-D techniques with an urban design plan can help create a compelling vision. Visual codes and guides can also be used to analyze parks and open spaces and the street network in terms of the larger urban regional framework. This includes looking at the transition of urban form from high-density centers and corridors to single-dwelling residential districts and to the rural edge, as well as analyzing the physical and visual linkages between spaces in relationship to the larger neighborhood or district context. Using these tools to better integrate different land use components, it sets the foundation for linking funds from different bureaus for public infrastructure investments.

Scale: In addition, when using any of the 3-D or video tools, views can be adjusted to provide different perspectives of future development such as a fly over perspective or a pedestrian perspective. Most examples of the 3-D video flyover tool, as it is currently used, are found within newer communities rather than in existing regional or town centers or corridors. However, the benefits of using this tool in infill areas are substantial: they can show the relationship between the proposed project and its surroundings and illustrate how new development will be integrated with existing buildings and open space. However, making sure proposals "fit" into an existing neighborhood requires more detailed design on a building-by-building level. This amount of design may not be feasible for a large study area.

Priorities: Using visual techniques can help communities define a clear vision for an area and identify compelling priorities for public investment. However, the priorities should not remain static if the market shifts dramatically. An example is allowing non-conforming building uses to redevelop as long as urban form, density or other objectives are largely met. Another example is allowing the jurisdiction to work with existing property owners to phase in improvements over time.

Development economics: The integration of visual and economic tools provides an interesting approach to evaluate the viability of infill and redevelopment. It also improves understanding among citizens, planners and decision makers regarding the correlation between zoning code requirements, real estate economics and project design. Financial feasibility for a project can change quickly with shifts in land values, construction costs, zoning requirements and other factors. A development economics analysis tied to the building prototype tool can test the financial feasibility of specific building types by integrating these different regulatory and market factors. As a result, codes can be modified to support desired development types that are also financially feasible.

Putting it together

New visual tools have proven extremely helpful in translating and amending existing codes, in more effectively involving the public, and in guiding infrastructure investments and improvements. Model approaches can better explain codes to developers and the general public and articulate a clear vision for future growth that can be rendered in built form. They visualize what types of buildings, streets and open spaces are desired and how these connect. They focus on the desired urban form and create design and development codes that support those development types. As a result, visual tools can enable well-designed compact, mixed-use development in the region's centers and corridors.

Tips for implementation

- Focus urban design plans in areas with existing capital improvement budgets and partner with other city departments and agencies.
- Engage members of the public and the government with visual tools.
- Use visual tools to lead broad, long-term visioning exercises to determine policies and regulations as well as to conduct analyses for specific proposals.
- Develop internal staff capability in software necessary to make use of visual tools.
- Make resulting visualizations accessible via the Internet to increase the public's access to tools and facilitate public outreach processes.
- Present products from these tools in accordance with their intended use; if they are being used as a tool to help guide the analysis and evolution of a potential project, do not make them look too finished.
- When possible, integrate economic and visual tools to provide information about the viability of projects.
- Consider developing guides with visual depictions and explanations of how local zoning is implemented to broaden awareness of the code as an interim step to rewriting or amending a code.
- Make sure any manuals and visualizations that are created are widely accessible in order to enhance their ability to inform the public, planning commissioners and developers.
- Prepare local staff for the implementation of any new codes and educate them in the new visual language and framework of the code.
- Consider hiring a town architect to help administer the more discretionary elements of a form-based code.

Resources

For more information on the example approaches, contact or visit:

City of Portland
Bureau of Planning
1900 SW Fourth Ave., Ste. 7100, Portland, OR 97201-5380
503-823-7700
Midtown Park Blocks Urban Design Plan
http://www.pdc.us/pdf/dev_serv/pubs/dev_midtown_planningstudy.pdf

City of Hillsboro
Planning Department
150 E. Main St., fourth floor, Hillsboro, OR 97123
503-681-6153
planning_dept@ci.hillsboro.or.us
http://www.southhillsboro.net/public.html

New York City Department of Planning, Central Office
22 Reade St., New York, NY 10007-1216
212-720-3300
http://www.tenant.net/Other_Laws/zoning/zontoc.html
http://www.nyc.gov/html/dcp/html/pub/zonehand.shtml

City of Petaluma
Planning Services
11 English St., Petaluma, CA 94952
707-778-4301
http://www.cityofpetaluma.net/cdd/cpsp.html

For more general information on form-based codes, visit:

http://www.smartcodecomplete.com/learn/links.html

http://www.formbasedcodes.org/

Community members at an open house workshop for the Redmond Downtown Development Plan, City of Redmond

Photograph provided by SERA

Involving neighborhoods

Innovative design and development codes administered by local governments do not alone create the most effective approach to developing better-designed centers and corridors and encouraging investment in these areas. Engaging neighborhoods in developing design and development codes that are supportive of new development with an urban form will increase the success of modified regulations and incentives in attracting development and achieving the region's vision. While government can sponsor these efforts, the grassroots, community-building nature of these programs seeks a non-governmental, non-regulatory approach. As one neighborhood activist framed the issue, "what is missing is the necessary social infrastructure to manage the amount of rapid growth and change that is happening here in the region."

The nuts and bolts

Just as local governments and developers need to visualize growth in order to make better decisions regarding investing and developing in centers and corridors, so do neighborhoods, and they need assistance from experts and professionals. Solutions include a referral service for developers and neighbors to examples of successful development, or a catalog of pictures and ideas of well-designed development in various communities. Educational programs can also help citizens visualize growth, understand the planning process and codes, and articulate their concerns in a constructive way.

When a development proposal turns controversial, neighborhoods and developers may benefit from a "rapid response team" to help neighbors and business owners contribute constructively before development pressures bring things to the boiling point, misunderstandings occur and participants are polarized. Trained facilitators and community design specialists can help by clearly communicating the code and helping the community sort out the local issues, implications and options. A combination of tools that involve neighborhoods will help engage these participants in a consistent and proactive way helping to reduce conflicts, minimize reactions to every development proposal and improve the design of new development.

How to use it:

Neighborhood grant program: A neighborhood fund or grant program offers a way for residents and business owners to become involved in local planning and development projects and contribute their skills through a short-term commitment. Local grant programs can be run out of a neighborhood involvement office or community development department. Through the program, the city matches a neighborhood or local organization's contribution of sweat equity, professional services, donated goods or cash. Requiring this match from the community ensures that proposed projects have the true support of neighborhoods. The organizations do not need to be incorporated and can simply be a group of neighbors. A program that is open to the public can promote creativity by encouraging not only new ideas, but also the participation of new organizations and new leadership from a range of diverse neighborhoods.

In developing a grant program, priorities and grant criteria need to be determined in order to select the types of projects that will be funded and how the program will be

Example approach

City of Seattle, Washington

Neighborhood grant program

Building off the City of Seattle's emphasis on participation and community empowerment, its Department of Neighborhoods developed the Neighborhood Matching Fund. The intent of the program was to go beyond involving citizens in the city's priorities and empower citizens instead to address their own priorities. Neighborhood organizations can apply for a grant on a competitive basis to match their contributions in cash, volunteer labor or donated goods and services.

The intent of the program was to go beyond involving citizens in the city's priorities and empower citizens instead to address their own priorities.

The grant program includes four different available funds, each of which targets a differently scaled project and provides a different level of funding over a specified amount of time. The funds provide money for neighborhood-initiated improvement, organizing or planning projects. For example, the now-famous Fremont Troll, which serves as a focal point for the local neighborhood, was built as a piece of public art with funds from the grant program. The Morgan Junction neighborhood was able to replant a ravine with native plants, bringing together the neighborhoods on either side of the ravine in the process and building advocacy for the area's ecology.

The Neighborhood Matching Fund has been surprisingly successful at what it set out to do: build community, both physically and socially. Not only are the projects transforming the physical appearance of the neighborhoods, but they are building a stronger sense of community by involving thousands of residents. The program has also yielded additional resources, numerous innovations and new partnerships between communities and city government.

The fund has enabled the city to more than double its investment while promoting projects that might not have been feasible otherwise. Since the fund's inception, more than 1,500 projects have been completed in nearly every Seattle neighborhood. Approximately 250 projects are funded each year. The fund has seen growth over the course of the program with its resources tripling to a total of $4.5 million per year.

The Neighborhood Matching Fund provides money for neighborhood-initiated improvement projects such as public art or park rennovations, City of Seattle

The nuts and bolts

used. For example, programs can be developed to target a wide range of scales of projects by offering different levels of funding opportunities. If a city wants specific types of projects, it can establish different categories such as neighborhood planning or design projects, a physical improvement, a public school partnership, a race relations or social justice project, or a neighborhood climate protection fund. In addition to grants for neighborhood improvement projects, the program could also develop an awards program that gives grants to local neighborhood-based organizations to improve their capacity and capabilities. For example, a fund could help provide leadership training or technical assistance. Once the grant program determines the types and scales of the projects to be funded, different grant levels and the corresponding timelines for applications, funding awards and implementation of the projects can be set.

Such a fund can provide an effective means for residents to become involved in and positively influence the design and development of neighborhood improvement projects. These funding programs also increase the participation and cooperation among residents, businesses, public schools and the city. Each project is carried out in collaboration with the local government, and as a result, the departments involved can develop better relationships with the local neighborhoods. The program gives neighborhood organizations the resources they need to move from a reactive position to a more proactive and collaborative approach to development in and around their communities.

Existing use of the tool in the region: In this region, such a complete and ongoing neighborhood grant program has not been implemented. The City of Seattle implemented a neighborhood grants program that has been successful at engaging and empowering local communities. Since the program started it has funded over 1,500 projects in nearly every neighborhood in the city.

Urban design and planning classes: Seminars and training series can help citizens visualize growth and understand the planning process and associated codes. These educational programs can be organized by faculty as part of a university program; by professional planning, design and transportation organizations; or by non-profit advocacy groups. The best approach is to have at least one dedicated staff person or intern to coordinate the facilities, online resources, program outreach, announcements, speakers and topics. Likewise, secure funding for such a program improves its outreach capabilities and session development and coordination.

A significant effort is needed upfront to attract an audience to the events, but once a series is established it becomes easier to run. The organizer needs to solicit speakers, publicize the event, reach out to local organizations and leaders to build an audience, and oversee the event. The entire effort should involve minimal costs if time to manage the seminar is built into the organizer's workload and salary and if most speakers participate as volunteers. These low costs make it easier to offer the program to the public at no cost and to attract a broader audience.

Planning the sessions season-to-season is advantageous as it allows the program to be responsive to changing issues and the interests of the audience. Accessibility to the sessions through the Internet, as both live streams and archived videos, is also key to the success of current seminars and training series.

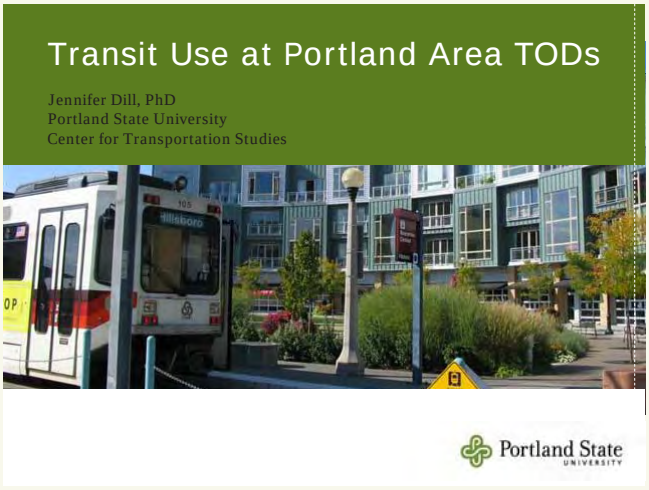
Example approach

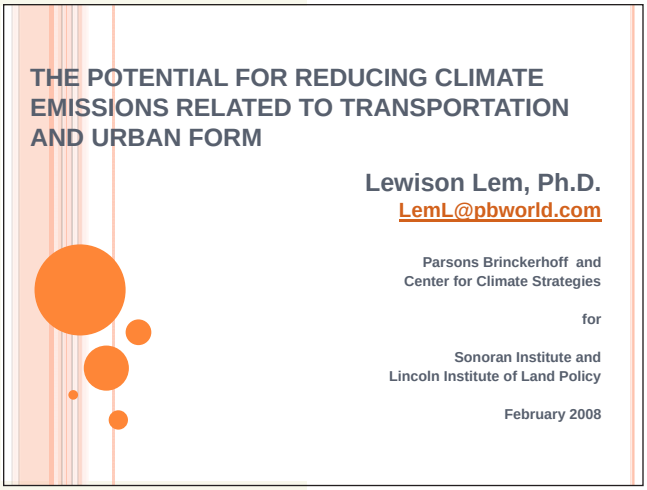
Portland State University

Portland State University education series

Each term since 2002, the Center for Transportation Studies at Portland State University (PSU) has sponsored a weekly seminar series on transportation-related topics that is free and open to the public. On the seminar web site, one can access presentation materials and watch streaming video of the seminars or access audio podcasts. During the presentation, anyone watching online can participate in the forum in real time by sending questions via e-mail. Presenters include resident and visiting professors, consultants, city staff and staff of various transportation-related agencies at the state and local levels, covering topics such as managing parking issues in regional centers and updates on local planning initiatives. The free seminars, and the wide array of research presented, attract varied audiences including students, planning and engineering professionals, and interested members of the public.

Building off the transportation seminar, the Oregon Chapter of the American Planning Association (OAPA) has partnered with PSU to provide an ongoing training series for planning commissioners. Through these presentations, the OAPA provides information about planning to public officials as well as the public at large. The live and online formats are modeled after the transportation series with sessions free and open to the public and participation available through online streaming video. Planning commissioners who have participated in or viewed the sessions have offered positive feedback.





Images used at the transportation seminars at PSU

The nuts and bolts

Existing use of the tool in the region: Portland State University's (PSU) Center for Transportation Studies offers a weekly seminar on transportation-related topics. PSU's School of Urban Studies and Planning co-sponsors a seminar series with the Oregon Chapter of the American Planning Association (OAPA) to train local planning commissioners. Both of these resources can also be viewed online as both live stream and archived videos. The City Club of Portland offers a speaker series called Friday Forums, which is open to the public and available on public broadcasting stations, cable access programming and the City Club's web site. Compact discs and video cassettes are available for order as well.

Local governments and community organizations can utilize and support these currently operating programs rather than establishing their own programs. Local staff can take an active approach by recommending program topics and speakers and by working with PSU, OAPA, the City Club and other organizations in honing what outreach and what program format works best for their communities and audiences. Selecting which program to use is integral as each offers a unique approach to outreach with its own strengths and weaknesses. For example, the City Club reaches a statewide audience by broadcast on Oregon Public Broadcasting, but in doing so, limits the use of visual aids in the presentation. This could limit the discussions surrounding important planning issues and approaches as described in the visualizing zoning section.

TGM outreach and education program: Another education program available locally is the Transportation and Growth Management (TGM) Outreach and Education program. Through this program, the Oregon Department of Transportation and the Oregon Department of Land Conservation and Development work with local governments to expand transportation choices while strengthening the economic vitality and livability of communities. Consulting services are typically provided through lectures, workshops and other public forums. The interactive workshops are flexible and are tailored to individual communities to address a variety of local transportation and land use issues.

Local governments throughout Oregon are eligible for TGM planning grants and community assistance services. These services are provided at no charge to local governments and are available to communities of any size. There is very little direct cost to participating communities beyond providing a location for the workshop, offering some staff support and publicizing the event. Thus, the program can provide a cheap and relatively fast alternative for addressing local design and development concerns.

Often cities seek funding and assistance from the program in response to anticipated or current development projects. Resulting presentations are designed to educate the general public, planning commissioners or city council members about key design considerations and opportunities within the current project that would improve the public realm and livability of the city. Many cities find that the outreach program serves as a good first step to introduce best practices and build knowledge of planning and smart growth principles.

In many instances the presentations have helped change votes in favor of mixed-use projects. The benefits of developing this knowledge base in the community can also have a long-lasting impact on community planning by building a constituency for high-quality design alternatives in the community.

Existing use of the tool in the region: Since 1997, more than 100 outreach workshops have been held across the state by TGM outreach services. They tend to emphasize services in smaller cities, but a number of TGM projects have also taken place in the Portland metro area. The Main Street Road Show, sponsored by the TGM outreach and education program, is oriented to smaller cities in more rural areas of the state. The region could consider a similar program focused specifically in this region in order to bring additional resources for outreach and design issues into centers, corridors and surrounding neighborhoods.

Keep in mind

Cumulative benefit: Programs that involve neighborhoods create more support for local planning efforts and development in these areas. Those programs that engage residents in specific projects create a sense of pride in the improvements and those people will feel invested and are likely to help maintain their projects long-term. Visible results from neighborhood projects can provide positive change and serve as the basis for future collaborative efforts. As a result, residents see positive change occurring within their neighborhood as opposed to negative perceptions associated with increases in density and development. Seeing visual results combined with more education in urban design and planning, communities may be more supportive of adopting innovative code approaches to achieving well-designed compact development in the region's centers and corridors.

Broader public outreach: These types of outreach programs can actually increase the number of people who are active in their communities and improve cooperation among residents, businesses and schools within the neighborhood. These established relationships will help serve as the basis for future collaborative efforts and may increase participation in local planning and design efforts.

It is important to involve a broad spectrum of neighborhoods and stakeholders in order to gain broad enough local support and investment in local planning and development efforts. It is also important to target specific neighborhoods in need of investment and assistance in encouraging local development. In order to do this, programs should include outreach efforts and technical assistance to educate local organizations and leaders about how to apply for and effectively use available technical assistance and funding programs. Education series and outreach programs can also engage a broader spectrum of individuals in wide-ranging locations by offering materials through the Internet and on DVD.

Putting it together

Engaging neighborhoods in the planning and development process can enhance the potential for success in implementing innovative regulations and incentives that attract investment in centers and corridors. Educational programs can help neighbors visualize growth, understand the planning process and codes, and articulate their concerns in a constructive way. A combination of tools that involve neighborhoods will help engage these participants in a consistent and proactive way, help reduce conflicts, improve the design of local developments and decrease barriers to compact development in centers and corridors. These educational and outreach tools offer effective methods for local governments, of varying sizes and resources, to implement.

Tips for implementation

- Select a program to partner with that best matches the outreach methods and goals of the local community and its needs.
- Partner with local or regional organizations that can provide unique resources for an educational program or series and can help make connections with a diverse range of individuals and practitioners.
- Consider partnering with a university to provide educational trainings as they have access to a comprehensive set of resources and face less stringent systems for format and performance measures than private firms or non-profit organizations.
- Consider funding outreach and marketing activities to attract a broad enough audience for educational efforts such as a seminar series.
- Contact planning commissioners, city staff, local civic organizations and neighborhood residents and business owners to attend the events and distribute materials.
- Produce videos, presentations and brochures to continue public outreach efforts after the public workshop or educational seminar is completed.
- Dedicate staff time and resources to follow up on tasks or work plans identified during an outreach or education program such as necessary code changes, implementation of design standards or capital improvement projects that increase pedestrian and bike safety.
- Use the TGM Outreach and Education program to address a current problem or challenge related to planning initiatives or development projects.

Resources

For more information on the example approaches, contact or visit:

Portland State University
School of Urban Studies and Planning
College of Urban and Public Affairs
PO Box 751
Portland, OR 97207
Center for Transportation Studies, transportation seminars
http://www.cts.pdx.edu/seminars.htm

City of Seattle
Department of Neighborhoods
Seattle Neighborhood Grant Program
206-684-CITY (2489)
http://www.seattle.gov/neighborhoods/nmf/

For information on additional education and outreach programs, contact or visit:

Oregon Chapter of the American Planning Association
Planning commissioner training
http://www.oregonapa.org/pageview.aspx?id=18208

Transportation and Land Use Connections: Outreach to Planning Commissioners
http://web.pdx.edu/~jdill/research.htm#TGM

Live and archived sessions for 2007-2008 season
http://media.pdx.edu/
(Click on 'Distance Learning Center Stream #3' on the left side)

Transportation and Growth Management (TGM) Outreach and Education
555 13th St., N.E.
Salem, OR 97301
503-986-4349

TGM Outreach and Education program
http://www.oregon.gov/LCD/TGM/outreach.shtml
Quick Response program
http://www.lcd.state.or.us/LCD/TGM/quickresponse.shtml

City Club of Portland
901 SW Washington St.
Portland, OR 97205
503-228-7231

Information on Friday Forums:
http://www.pdxcityclub.org/forums-events/friday-forums.php

About Metro

Clean air and clean water do not stop at city limits or county lines. Neither does the need for jobs, a thriving economy and good transportation choices for people and businesses in our region. Voters have asked Metro to help with the challenges that cross those lines and affect the 25 cities and three counties in the Portland metropolitan area.

A regional approach simply makes sense when it comes to protecting open space, caring for parks, planning for the best use of land, managing garbage disposal and increasing recycling. Metro oversees world-class facilities such as the Oregon Zoo, which contributes to conservation and education, and the Oregon Convention Center, which benefits the region's economy.

Your Metro representatives

Metro Council President
David Bragdon

Metro Councilors
Rod Park, District 1
Carlotta Collette, District 2
Carl Hosticka, District 3
Kathryn Harrington, District 4
Rex Burkholder, District 5
Robert Liberty, District 6

Auditor
Suzanne Flynn

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www.oregonmetro.gov

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METRO

REGIONAL INFRASTRUCTURE ANALYSIS

JULY 2008

COGAN OWENS COGAN

FCS GROUP
Solutions-Oriented Consulting

otak

Strategic Advisors:
J. Ned Dempsey, John Petersen, Karen Williams

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INFRASTRUCTURE ADVISORY COMMITTEE

Byron Estes, Portland Development Commission

Deane Funk, Portland General Electric

Marion Haynes, Portland Business Alliance

Ted Kyle, Clackamas County Water Environmental Services

Stephan Lashbrook, City of Lake Oswego

Lawrence Odell, Washington County

Pat Ribellia, City of Hillsboro

Alice Rouyer, City of Gresham

Ric Stephens, Alpha Community Development

Lorna Stickel, Regional Water Providers Consortium

Mike Wells, Wells Otis Development

METRO STAFF

Malu Wilkinson

Chris Deffebach

Robin McArthur

Ted Reid

Andy Shaw

CONSULTANTS

Cogan Owens Cogan, LLC

Arnold Cogan

Steve Faust

Kirstin Greene

Bob Wise

FCS GROUP

Todd Chase

Otak, Inc.

Scott Schumaker

Amanda Owings

Strategic Advisors

J. Ned Dempsey, Century West Engineering

John Peterson, George Mason University

Karen Williams, Lane Powell

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EXECUTIVE SUMMARY

As a number of recent incidents have graphically illustrated, the United States faces an infrastructure crisis of epic proportions. Congressman Earl Blumenauer has observed that the nation has no plan for building the roads, bridges, water and sewer lines, energy facilities, and other physical projects that support our communities.

"We're losing this battle," says Blumenauer. "We're investing less in infrastructure than in any time in our history."

The Portland region is not immune to this serious problem. Past plans that guided investments are outdated. The lack of adequate financing mechanisms has led to maintenance being postponed and neglected. Despite widespread recognition that sound infrastructure is critical to maintaining and enhancing regional economic growth, competitiveness, productivity and quality of life, current approaches to the planning, development and financing of critical community support systems are not working.

To make matters worse, approximately one million more people are expected to live in the seven-county Portland metropolitan area within thirty years. The estimated cost of building the public and private facilities needed to accommodate growth in jobs and housing in the three-county Portland region through 2035 is $27-41 billion. Traditional funding sources are expected to cover only about half that amount. Even if the region does not experience this projected growth, $10 billion is needed just to repair and rebuild our existing infrastructure.

Systems development charges, gas taxes and other revenue sources are not keeping pace with rising infrastructure costs, while voter-approved tax limitations and other ballot initiatives have crippled the ability of communities to fund these services. Rate-funded services tend to enjoy more stable and predictable funding, but can face significant difficulties in obtaining large amounts of up-front capital needed to make major improvements or expand capacity.

All of this leads to one unavoidable conclusion: we cannot continue to do things as we have in the past. New and creative solutions are essential.

Expenditures to improve public infrastructure are investments. As with other types of investments, the public should expect a return on its investments in public infrastructure.

That return can take many different forms, including quantitative measures such as higher tax revenues, improved housing or more jobs. Other "returns" could include more qualitative benefits, such as strong and livable communities. Although investing in infrastructure is expensive, the return on that investment directly improves the lives of the people who live and work here. Public investment is also necessary to make private investment possible and profitable, and private investment is what ultimately builds great communities.

In 1995, the Portland region adopted the 2040 Growth Concept, a long-range plan to guide future growth and development. This innovative blueprint for the future is based on a set of shared values that continue to resonate with residents of the region: thriving neighborhoods and communities, abundant economic opportunity, clean air and water, choices in housing and transportation, access to nature, and a sense of place that, taken together, are the reason people love to live here.

However, this vision will not become a reality unless we can provide the infrastructure to support it. Local and regional leaders have identified the lack of adequate infrastructure funding as a key barrier to successfully realizing the aspirations embodied in the 2040 Growth Concept.

To address this issue, Metro initiated a process to identify infrastructure needs, assess the funding gap, and explore financing and other policy options. The analysis focuses on eight infrastructure types needed to make and sustain great communities:

- Civic buildings, parking structures, public plazas
- Energy
- Schools
- Roads, transit, bike lanes and sidewalks (transportation)
- Stormwater
- Urban parks and open spaces
- Wastewater (sewers)
- Water

It is important that the region continue its legacy of coordination among local jurisdictions and the general public to identify and address the highest priorities for providing infrastructure to serve both existing and future residents. Political leadership and public engagement efforts will be needed to raise awareness of infrastructure needs and issues and garner support for agreed-upon solutions. Metro, along with its local government partners, plays a key role in leading this regional dialogue and building consensus.

Infrastructure planning, development and finance strategies are organized into the following four approaches:

Efficient Service Delivery

Fragmented delivery systems often result in reduced efficiencies. Better coordination among service providers can lead to cost

savings through sharing facilities and service delivery, adjusting service areas, merging service districts, and reallocating funding responsibilities for community and regional facilities. Improved maintenance of existing infrastructure systems ensures a maximum return on past investments. Potential strategies include:

- Shared public facilities
- Regional coordination and planning
- Systems maintenance

Demand Management

Reducing the demand for services can help prevent or delay the need for major capacity investments. Components of demand management include focusing growth to use existing capacity first, using pricing and other incentive-based strategies to reduce demand and shift it to off-peak times, and educating the public on conservation strategies. Potential strategies include:

- Compact development patterns
- Peak-use pricing
- Public education and resource conservation

Innovative Planning and Design

Emerging technologies provide opportunities to increase efficiencies and conserve resources over the long term. Investments in research and development of innovative approaches to infrastructure planning, design and construction can make infrastructure systems more sustainable and build community support. Preparing for the impacts of new technologies will result in long-term cost savings. Potential strategies include:

- Infrastructure recycling and reuse
- Sustainable infrastructure (e.g., natural systems, co-generation facilities)
- Emerging technologies (e.g., electric cars and water reuse systems)

New Funding

New funding sources are needed to enable the region to upgrade and replace deteriorating infrastructure systems and provide services to newly urbanizing areas. The region also needs to identify and remove barriers to public and private investments in infrastructure. Communities in the region can work together to secure funds at the local, community and regional levels and to leverage federal and state investments. A regional approach to financing basic infrastructure could help achieve the region's long-term vision. Potential strategies include:

- Pursuit of new state and regional revenue sources
- Public-private partnerships
- Strategic land acquisition

CONSIDERATIONS FOR MOVING FORWARD

Changing times require new approaches to infrastructure provision and finance. This analysis describes the region's infrastructure challenges and begins to quantify the problem and lay out some options to address the region's infrastructure needs. However, tough questions remain as the region moves forward:

- There will never be enough money for everything – how can we most efficiently guide public investment decisions to strategically target limited resources?
- Can managing demand reduce the need to expand the capacity of infrastructure?
- Are we providing infrastructure services at the most efficient level (geographical or jurisdictional), or are there opportunities to achieve economies of scale or efficiencies?
- How can we best address competing fiscal demands for new infrastructure, maintenance needs, and upgrades of existing facilities?
- Do service providers currently have the capacity to research and share information with counterparts nationally and globally to facilitate the adoption of innovations in service delivery?
- Will incorporating global climate change and sustainability into public messages help manage consumption?
- How can government deepen public understanding of the infrastructure challenges and increase public support for infrastructure finance?

RECOMMENDATIONS FOR ACTION

The time is right for decisive action by elected and appointed leaders across the region to address our infrastructure needs. Recommended actions:

- Coordinate regional partners to identify state legislative changes that would increase our capability to finance regional infrastructure needs.
- Convene regional partners to explore opportunities to implement solutions that increase efficiency and better manage demand.
- Increase public awareness of infrastructure needs and the importance of setting priorities with limited resources.
- Recognize return on investment when making public investment decisions in both urban and newly urbanizing areas.
- Encourage and facilitate implementation of new technologies that increase the efficiency and sustainability of infrastructure systems.

INTRODUCTION

The Portland region is facing a significant challenge to maintain, preserve and provide adequate infrastructure to meet the needs of current and future populations. Public investments made today will shape the region for years to come. The region is projected to grow more rapidly than expected since the region endorsed the 2040 Growth Concept in 1995. More people and the accompanying need for land, jobs and housing are best served when urban lands are used and redeveloped efficiently. Rising costs for building and maintaining public facilities in existing communities further highlight this need. Geographic areas recently added to the region's urban growth boundary are still largely undeveloped and may remain so for some time due to a lack of necessary infrastructure.

Local and regional leaders have identified the need for additional funding for infrastructure as a key to successful implementation of the 2040 Growth Concept vision and accommodating expected population growth. Metro's Making the Greatest Place Initiative is an effort to identify what the region has been doing well to achieve the 2040 vision, capitalize on successes and increase efforts where needed. Metro Council and other leaders throughout the region are seeking better information to aid them in important policy decisions. To that end, Metro initiated this process to identify infrastructure needs, assess the funding/financing gap, and explore financing and other policy options in partnership with leaders throughout the region. The analysis focuses on eight types of infrastructure that make and sustain great communities:

- Civic buildings, parking structures, public plazas
- Energy
- Schools
- Roads, transit, bike lanes and sidewalks (transportation)
- Stormwater
- Urban parks and open spaces
- Wastewater (sewer)
- Water

The study explores the following:

- What infrastructure is needed to serve existing residents and accommodate future growth? What issues need to be addressed?
- What will it cost to provide needed infrastructure? Where do we experience the greatest cost efficiencies?
- What infrastructure is planned? What is the funding/financing gap?

The vision of the 2040 Growth Concept is to establish complete communities that include:

- safe and stable neighborhoods for families
- compact development that uses both land and money more efficiently
- a healthy economy that generates jobs and business opportunities
- protection of farms, forests, rivers, streams and natural areas
- a balanced transportation system to move people and goods
- housing for people of all incomes in every community

- What are potential planning, development and financing policy options? How can we target infrastructure investments to get the greatest return?

NEEDS AND ISSUES

NATIONAL TRENDS

National population growth and increasing maintenance needs have resulted in a demand for additional infrastructure funds. The United States population is expected to grow 33 percent by 2035. Approximately 94 million more people will live here than in 2000. In addition to the need for new infrastructure to accommodate this growth, existing infrastructure systems are aging and overburdened and require substantial maintenance and upgrades. Moreover, current designs cannot support projected population and economic growth. Deteriorating infrastructure threatens the economy, environment and quality of life. The American Society of Civil Engineers (ASCE) rates the nation's water, sewer and transportation systems a grade of D-minus. More than 72,000 miles of municipal water and sewer pipelines are more than 80 years old.

According to the ASCE, an estimated $1.6 trillion is needed over the next five years to repair the existing infrastructure in the U.S. Any delayed investment increases this cost by 12-20 percent annually. It will cost $250 billion annually over the next 50 years to ensure "good" infrastructure. The United States currently spends 40 percent of that each year.

The federal share of infrastructure funding has been declining since 1975 and many funds once available through state governments for capital improvements no longer exist. Financial tools such as the federal highway trust fund are being depleted.

Global climate change, increasing energy and fuel prices, an aging population and an increasing disparity in income and wealth will have significant effects on regional development. Drought in southern states due to climate change could accelerate population growth in the Portland region. In addition, climate change may reduce the water available from glaciers, increase winter storm events and decrease summer flows. This means greater demands on existing sources and the possibility of water being treated as a commodity and traded from wet to dry areas. Another likely result of climate change is a national greenhouse gas cap-and-trade system.

The Report of the City of Portland Peak Oil Task Force states that the availability of oil may have peaked and prices will continue to rise with demand. According to some, the expected outcome of increasing fuel prices will be more dense development patterns, increased use of alternative forms of transportation, an emphasis on efficiency and a diminished role for the automobile-dependent land use pattern. As baby boomers age, housing demand for older

people will grow while lower and middle-class families may increase their preference for smaller, centrally located and easier to maintain units.

Another trend that may affect infrastructure is sustainable development. Portland and Oregon are considered national leaders in this field. Sustainability could serve as a framework for considering infrastructure investments and their impact on the region. Furthermore, increases in the prices of commodities, such as metals, heightens the need to promote the reuse and recycling of resources throughout the region.

Finally, there is an urgent need to ensure the provision of services and protection of critical physical infrastructure through emergency preparedness. Comprehensive emergency plans are needed to address infrastructure planning, engineering design, construction, and operation and maintenance activities for the purposes of homeland security and in response to natural disasters.

LOCAL TRENDS

People moving to the Portland region cite a strong and diverse economy, high quality of life, abundant public amenities and superior environmental quality as reasons for choosing the region. Metro forecasts show that within the next 30 years, one million more people will live in the seven-county Portland metropolitan area.[1] About 70 percent of that growth is expected in the tri-county Portland region (region).[2] A population increase of approximately 680,000 people by 2035 is expected, bringing about 590,000 new jobs and 310,000 new households.

Policies in the 2040 Growth Concept encourage the efficient use of land by directing growth inward rather than outside the urban growth boundary (UGB). Growth is encouraged in centers and corridors with increased emphasis on infill and redevelopment and higher density development in areas where it is appropriate. The 2040 Growth Concept is designed to help communities find more efficient and less expensive ways to deliver services.

However, as communities in the region strive to create vibrant places to live, work and play, they have experienced slower than expected growth in designated centers and corridors and little to no development in areas recently added to the urban growth boundary. Infrastructure costs have been cited as major obstacles in both cases. The region faces significant challenges regarding how it can effectively maintain, preserve and expand public infrastructure.

Although the function and livability of our communities depend on reliable public services, infrastructure systems are fraught with investment and maintenance shortfalls, uneven funding systems and multi-layered

[1] The seven-county Portland metropolitan area includes Clackamas, Columbia, Multnomah, Washington and Yamhill counties in Oregon, as well as Clark and Skamania counties in Washington.

[2] The Portland region includes the existing and potentially urbanizing portions of the metro region within Clackamas, Multnomah and Washington counties.

jurisdictional patterns. In addition to the need to address aging infrastructure conditions and upgrades needed to meet new environmental and emergency preparedness standards, the increasing population and employment base noted previously will put additional demands on roadway, transit, water, sewer, parks, schools and energy systems. This is accompanied by a common issue of concern for all service providers, how to raise and maintain sufficient funds.

Estimates of infrastructure capital costs needed to accommodate growth in the region over the next 30 years range from $27 to 41 billion. Traditional funding sources are expected to cover only about half that amount. State initiatives such as Measures 5 and 50 have limited local revenue streams. Infrastructure provided through user fees or rate-payment systems benefit from more stable funding, but struggle to secure funding for large capital improvements. Non-rate-based infrastructure types are subject to the inconsistencies of voter-approved bonds. Systems development charges have not kept pace with rising infrastructure costs.

During the course of this analysis, Metro collected data from infrastructure service providers throughout the region. Sixty-four service providers completed questionnaires regarding local infrastructure planning and funding efforts. In addition, more than 125 service providers attended two workshops to discuss infrastructure needs and opportunities. A summary of needs and issues identified through this outreach process follows.

Civic Buildings and Facilities

Capital funds for civic structures such as police and fire stations are often subject to voter approval and must compete with other interests for scarce resources. Urban amenities such as plazas, streetscapes and some civic buildings – critical components of downtown redevelopment efforts – are often supported through urban renewal programs and public/private development agreements. There are no dedicated funding sources for operations and maintenance. Libraries are relatively well-supported with local bond levies for capital costs, but they also often lack adequate operations and maintenance funds. Land supply and price also are issues when jurisdictions consider sites for civic facilities.

Energy

Electric and gas utilities have a legal obligation to provide their chartered services, with rates established and monitored by the state Public Utilities Commission. Based on current trends, the region requires the equivalent of two to three new 400 megawatt power plants to supply adequate power by 2035. Siting of energy infrastructure in communities is an ongoing challenge for utility companies. Energy conservation efforts reduce revenues while also reducing demand for electricity, helping to defer the need to build expensive new facilities.

Technological advances not yet known are likely to change the region's energy supply and infrastructure needs. Another challenge will be integration of district energy production and distribution systems into developing and redeveloped areas.

The most prominent challenge for energy providers is coordination with other service providers, transportation in particular. Better coordination in the planning and installation of infrastructure could result in cost savings for developers and rate payers. For instance, there are opportunities to place new energy and utility transmission systems within existing and planned transportation corridors. However, increasing demand for access to rights-of-way and denser development patterns make it difficult and more expensive to locate and relocate facilities. Local development code requirements often aggravate these problems.

Emerging energy sources also face difficulties in regards to location. Solar panels are often subject to development and design codes that restrict their application. There are a number of concerns about the siting of liquefied natural gas (LNG) transmission lines, including the potential for spills due to accidents or attacks and their effect on wildlife habitat and the environment.

Schools

While some areas of the region have underutilized school facilities, population growth will bring new school-aged residents to newly urbanizing areas, creating a geographical mismatch between existing school capacity and new school capacity needs. Future legislative mandates, such as full-day kindergarten, may require additional classrooms. As land values increase, siting schools near population centers becomes increasingly expensive. Better coordination with local jurisdictions and developers in regards to new development could provide cost efficiencies. School districts benefit when new neighborhoods are built around schools and when planning for roads considers school access and bus routes. Funding for capital improvements, dependent on local voter approval, is inconsistent across the region and often restricted, as some jurisdictions do not allow new revenues to pay for operations and maintenance. The recently-approved construction excise tax will provide a new funding source, but only for land acquisition and planning.

Transportation

Transportation costs represent the largest portion of unmet infrastructure needs. Current state and local transportation resources for operations, maintenance and expansion of the system are limited. Oregon ranks last compared with other western states in total auto taxes collected. The Oregon Department of Transportation (ODOT) , cities and counties devote nearly all existing state and federal gas tax revenues to operation and maintenance of the existing road system. Generally, about three quarters of local annual transportation

and public utility capital improvement budgets are spent on maintenance, preservation and operation of existing transportation infrastructure. The result is little available funding to address new capital facility needs. Local roads are funded through development fees, local improvement districts (LIDs) and other mechanisms, which leverage additional private and public investments.

Payroll taxes have provided the primary source of revenue for transit operations and for routine expenditures such as fleet upgrades, vehicle purchases and replacements. Unlike the gas tax, payroll tax revenues expand as the region's economy grows and wages rise, allowing revenues to better keep pace with inflation. However, under its present statutory limitation, the payroll tax may be insufficient to support the system expansions needed to serve a rapidly growing ridership. Another challenge for transit providers like TriMet is developing partnerships with local governments and developers to provide complementary access to transit, such as sidewalks and transit-oriented development. Currently, sidewalks connect to only 69 percent of the transit stops in the region.

There is no dedicated source of revenue for development of new regional transportation systems such as bridges and highways, which are essential for the efficient movement of freight and, therefore, the region's economy. Additionally, insufficient funds for operations is a continuing challenge for all. Fuel costs continue to increase and gas tax revenues are expected to decrease as automobiles become more fuel-efficient. The state gas tax has not increased since 1993 and gas tax revenues have lost significant purchasing power due to inflation and dramatic increases in material costs. It appears likely that electric vehicles will become more prominent in the next decade, requiring a new type of electrical energy charging station. Fuel cost increases already are stimulating transit ridership and could impact regional development patterns and the travel mode mix.

Stormwater/Wastewater

Stormwater and wastewater systems are aging throughout the region. Many are more than 100 years old. Increasing permitting requirements for treatment and discharge result in significant additional compliance costs. Sewer providers often can issue bonds secured by existing and future rate increases, providing stable revenue for incremental construction. However, communities face a significant challenge in securing up-front capital as major construction projects, such as new sewer plants or major trunk lines, cannot be added incrementally in a cost-effective manner. Collaboration and consolidation among providers may provide service and cost efficiencies, but are challenging to realize. Siting new sewer facilities is increasingly difficult in light of community compatibility issues and local, state and federal environmental regulations.

Although stormwater facilities are most effective at the local (watershed) level, solutions to these systems have little to no excess capacity. There are, however, site-specific opportunities for stormwater management solutions such as green streets and open space/stormwater management facilities. These providers share many of the same challenges to implementing capital improvements faced by sewer providers, especially securing reliable funding for long-term maintenance.

Urban parks and open spaces

The availability and cost of land represent the most significant challenges for ensuring adequate parks and open spaces for a growing population. As urban communities increase in density, this becomes both more necessary and more expensive. Given population projections, the region likely will need 5,000 acres of new urban park space and 8,000 acres of open space by 2035. While voters have been generous in approving funding for new acquisitions for parks and open space, funds for maintenance and operations are scarce.

Water

While our region appears to have an existing adequate source of water supply, projected population growth will increase demand. Source development and transmission of water to new users are challenges. Water conservation, reuse and non-potable use are becoming increasingly important to reduce demand and delay the need to upgrade systems. Securing up-front capital represents the largest hurdle to meeting new capacity demands.

Many water providers use intergovernmental agreements (IGAs) to provide service across jurisdictions, but coordination continues to be a challenge. Water providers will need to work with non-potable water supplier to effectively build and manage a viable system to reuse water when feasible.

SUMMARY OF LOCAL TRENDS

As evidenced by this summary of infrastructure needs and issues, the Portland region lacks a coordinated system for planning, construction and maintenance of the infrastructure required to create great communities. Some challenges, such as the lack of a stable funding source, are common among all service providers and require solutions at the regional level. Other challenges are unique to each provider and may be more appropriately addressed locally.

COSTS AND INVESTMENTS

COSTS

Given current levels of service delivery, the capital needed to accommodate population and job growth in the region through 2035 could run as high as $41 billion. Total costs include approximately $10 billion for repairs and reconstruction that would likely be needed even if the region did not experience its projected population growth.

Figure 1. Local Infrastructure Expenditures by Type

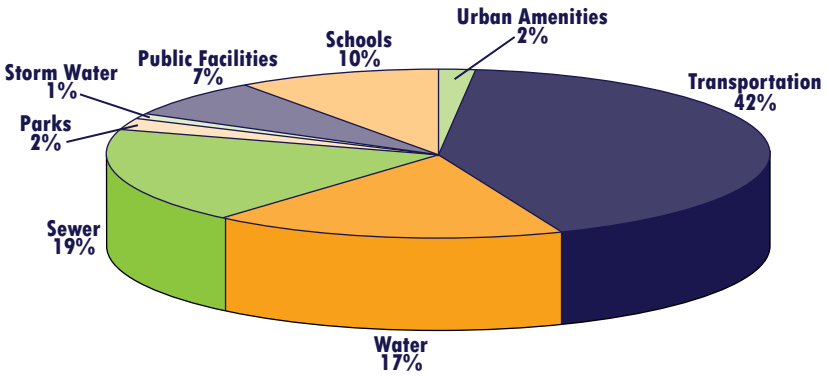


Figure 1 illustrates the allocation of local expenditures by infrastructure type in the Portland region. Transportation is by far the largest expenditure, accounting for 42 percent of local capital improvement plans. Sewer (19%) and water (17%) are the next highest cost items.

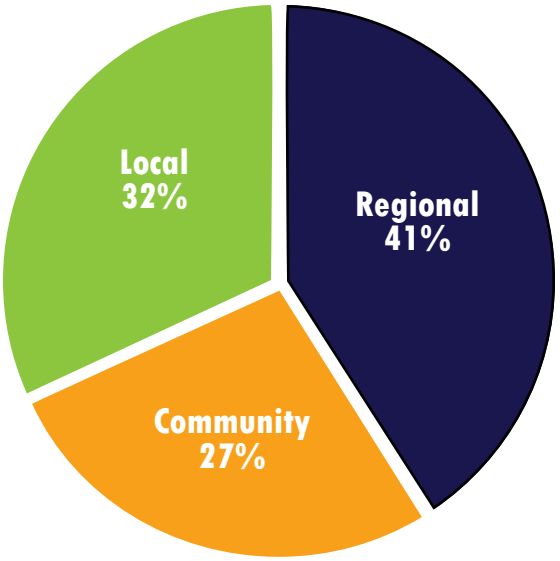
For the purposes of this cost analysis, infrastructure is separated into three levels of public investment: local, community and regional. The demand on local infrastructure is directly related to specific dwelling units. Though not necessarily on-site, community infrastructure may still be attributed to specific dwelling units. Regional infrastructure benefits the entire regional, though it is difficult to establish a nexus between the collective need for regional infrastructure and individual use. Table 1 provides examples of infrastructure at each level.

Regional infrastructure costs comprise 41 percent of total costs, followed by local infrastructure, 32 percent, and community infrastructure, 27 percent. Regional facilities are not usually funded by individual jurisdictions or developers.

Table 1. Levels of Infrastructure Investment

Local	Community	Regional
Local streets and sidewalks	Collectors and minor arterials	Major arterials and bridges; transit
Neighborhood parks	Community parks and fields; civic buildings (police, fire, libraries); parking garages	Regional parks, arts and cultural facilities
Household sewer and water collection and distribution pipes	Sewer trunk and treatment; water distribution, treatment and storage	Regional water and sewer facilities
Elementary and middle schools	High schools	Community colleges

According to an analysis of the 2035 Regional Transportation Plan (RTP) and local transportation system and public facility plans, the 2035 transportation system will cost approximately $23.7 billion, including approximately $4.7 billion for preservation/ reconstruction and $19 billion for capacity improvements. Of the $23.7 billion in transportation investment needed in the region, $14.2 billion will be needed for local/ community facilities and $9.5 billion for regional facilities.



COST INVESTMENTS

National research demonstrates that public infrastructure in urban settings and compact new development at the edge of existing systems is generally less expensive per unit than in areas with more land-extensive development patterns. Moreover, fragmented development patterns lead to loss of open space and agricultural lands, auto dependence, urban blight and disinvestment, and higher resource consumption.

Furthermore, compact regional development is shown to increase regional economic activity. A study by Joe Cortright, Vice President, Impresa Consulting, asserts that reduced transportation costs of $1.1 billion to $1.5 billion per year are tangible benefits of the Portland region's current transportation/land use system. The reduced transportation costs result in $800 million of additional economic activity in the region that would have benefited oil and auto companies outside the region.[3]

Case studies examining the cost of redevelopment in five existing urban centers and new development in twelve urbanizing areas in the Portland region found that while public infrastructure capital costs vary depending on specific location and access to existing infrastructure, they generally reflect this national pattern. Some urban case studies had lower costs than urbanizing case studies and vice versa. However, while local and community infrastructure costs per land area is generally higher in urban areas, the cost per job/dwelling unit is lower due to higher development densities. In fact, certain small scale infill development projects may have little or no infrastructure costs.

Urban and urbanizing areas usually have different public infrastructure requirements that vary by location, type, mix and scale of the development. Most urban developments occur where existing public facilities are already in place, but may require upgrading to accommodate increased demand. Projects often have no or little surplus vacant land to utilize for development phasing, and attempt

[3] Joe Cortright, Portland's Green Dividend. CEOs for Cities, 2007.

to optimize the available land with buildings, open space and parking. Parking usually is provided in above- or below-grade structures that are built early in the project and cannot be phased in over time. Many sites available for development in urban areas are "brownfields." While brownfield sites offer an excellent opportunity for redevelopment and cost savings due to their proximity to existing infrastructure, the potential cost of environmental remediation may make these sites impractical.

In contrast to urban area developments, urbanizing areas often require new public infrastructure or the expansion of existing systems. This often occurs on vacant or "greenfield" land with few constraints. Transportation infrastructure is the most critical investment needed to accommodate growth in these areas, comprising approximately fifty percent of the needed capital costs. Urban areas are generally more readily able to provide transportation, sewer and water services than newly urbanizing areas.

With respect to development density/design and resulting infrastructure demand, a key difference between the urban and urbanizing case studies is the timing of investment. Urban developments tend to require the majority of their infrastructure up-front (usually by year 15) while urbanizing developments can finance this in phases over many years. Therefore, while initial infrastructure costs tend to be the same or slightly higher in urban than in urbanizing areas, development in urban areas is often less expensive over time.

FUNDING AND FUNDING GAPS

To accommodate growth over the next 30 years, the Portland region will require infill utilities and upgrades to existing systems in urban areas and new systems to serve urbanizing areas. Demands are projected to be relatively consistent across the region, regardless of location. No one area within the region appears to be better prepared to accommodate future growth than another.

Traditional funding sources are expected to cover only about half the estimated $27 to 41 billion needed to accommodate growth by 2035. Compounding the decrease in federal funding for infrastructure are state initiatives which constrain the ability of local jurisdictions to raise revenue. Measures 5 and 50 place restrictions on property tax rates and increases in assessed property values. Thus, it is highly unlikely that local revenue can keep up with the cost of providing public services over the long term.

Some types of infrastructure, such as water, sewer, electricity and natural gas, are provided through rate-based funding systems. These tend to be stable and predictable because rates can be increased to cover additional costs. However, obtaining large amounts of up-front capital to make major improvements or expand capacity still are significant challenges.

Non-rate-based infrastructure, such as parks, school facilities, civic structures and transportation, generally do not have significant and stable sources for maintenance and operations and are subject to local budgetary constraints.

Parks and libraries tend to be fairly well supported with local bond levies for capital costs, but usually lack adequate operations and maintenance funding. Public investment in urban parking facilities and amenities such as landscaping, art and lighting are often funded through urban renewal programs or public-private development agreements. The current RTP identifies a $7 billion finance gap, which would be even higher if the full range of transportation costs to support great communities were identified.

Expanded or new local and community transportation facilities are often funded in part through system development charge (SDC) revenues, which leverage additional private and public investments. Metro's report, *Promoting Vibrant Communities with System Development Charges*, found that assessing differential SDCs in urban versus urbanizing areas can promote greater financial equity and the 2040 Growth Concept by reducing up-front costs of targeted developments. However, most local SDCs cover only 30-50 percent of the capital costs of local/community roadways or transit facilities. Moreover, they are subject to fluctuations based on the pace of new development, limited to certain types of infrastructure and can fund only capital improvements.

Among the other causes of funding gaps identified by service providers throughout the region are the following:

- Declining state and federal allocations.
- Lack of ongoing, reliable sources.
- Capital investment funds diverted to operating and/or maintenance.
- Funds diverted to unanticipated and/or emergency repairs.
- Rising construction costs.
- Small scale and fragmented development not allowing economies of scale.
- Low tax bases due to limited population size or low household incomes and/or voter reluctance to approve higher taxes.
- Funding adjustments that require political action.
- Lack of public support and/or political will.
- Competitive nature of funding sources based on geography.

PLANNING, DEVELOPMENT AND FINANCE

With a common understanding of the challenges facing the Portland region, the next step is to identify potential solutions to regional infrastructure needs and determine at what level of public investment each solution will be pursued. It is important that the region leverage its successful history of coordination among

local jurisdictions and the general public to effectively identify and address the highest priorities for providing infrastructure to serve both existing and future residents. Metro, along with other collaborative political bodies, plays a key role in leading a regional dialogue and building consensus. Leadership from elected officials and the private sector, as well as community engagement efforts will be needed to raise public awareness of infrastructure needs and issues and garner support for agreed-upon solutions.

Potential infrastructure planning, development and finance strategies are divided into the following four approaches:

Efficient Service Delivery – Explore ways to provide services more efficiently, decrease costs, conserve resources, and maximize current infrastructure investments.

Demand Management – Examining the need for infrastructure from conservation and land development perspectives can help prevent or delay the need for major capacity investments. Components of demand management include focusing growth to use existing capacity first; pricing usage to reduce and manage demand; educating the public on conservation strategies; and providing incentives to reduce demand.

Innovative Planning and Design – Research and implement innovative approaches to infrastructure planning and design to create vibrant communities. Plan for emerging technologies with potential to improve service delivery.

New Funding – Evaluate and pursue new local and regional funding sources to leverage state and federal investments. Identify and remove existing barriers to public and private investment.

The following pages outline strategies to address infrastructure needs and issues. A description of each strategy is accompanied by case studies for further clarification when applicable.

EFFICIENT SERVICE DELIVERY

Fragmented delivery systems often result in reduced efficiencies. For service providers, jurisdictional issues and daily operations can be barriers to working with adjacent service providers. Focused coordination among service providers can lead to shared facilities and service delivery, adjusting service areas, merging service districts, and allocating funding responsibilities for community and regional facilities.

Shared Public Facilities

Multiple goals can be met by coordinating public facility needs. Public facilities that serve more than one purpose make efficient use of public money. One way to accomplish this is to combine elements that serve two or more areas of public need. The groups served need not be mutually exclusive. Examples include combining a water reservoir with active park use and building library space inside a City Hall

building. Underutilized public space can be used for other activities. For example, utility corridors can be opened to public access for recreational use and public parking lots can be used for community gatherings and activities. Creating and developing public facilities that serve exclusive needs at opposite times of the year can be cost-effective. For example, a series of ball fields can double as a regional stormwater facility in the rainy season.

Case Studies

City of Sherwood Snyder Park

The City of Sherwood is in the process of constructing a new four million gallon covered reservoir in Snyder Park. To add to the amenities of this hill-top community park, the reservoir will be built partially underground, with two tennis courts constructed on top.

City of Sherwood Civic Building

The Sherwood Urban Renewal Plan Advisory Commission (SURPAC) recommended co-locating the new library inside the proposed City Hall building. In 2007, Sherwood opened the doors of the new 10,000 SF building to serve a growing population of approximately 16,000. The new facility was built with urban renewal dollars and general fund dollars (proceeds from sale of the Old Library and City Hall buildings). The City Hall includes a public plaza and a courtroom, which also function as a city council room and a community room.

Tualatin Hills Parks and Recreation District

Utilizing existing Bonneville Power Administration (BPA) right-of-way, the Tualatin Hills Parks and Recreation District operates several parks and trails throughout west Beaverton. Plans are underway to complete the 16-mile trail which runs underneath a BPA line from the Tualatin River north to Portland's Forest Park.

Sunnyside Village Green Park

A collaborative effort between North Clackamas Parks and Recreation and Clackamas County Water and Environment Services, this park is a multiuse facility integrating regional stormwater management with park facilities. The park includes a stormwater detention pond to reduce the rate of runoff in the basin and water quality treatment to stormwater flows. During summer months the dry depression zone serves as an open grass play area and amphitheater. During extreme storm events, water slowly fills the depression providing needed storage with overflows into a tributary to Sieben Creek.

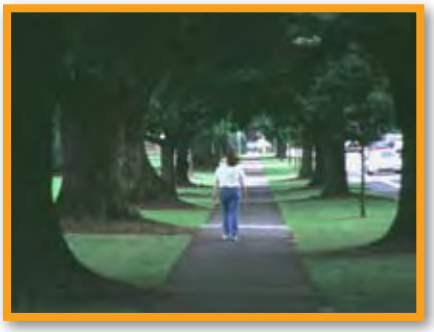
City of Wilsonville

The City of Wilsonville is maximizing the use of open space within Villebois Village. Palermo Park is two acres of active park area including a basketball court and play areas with open lawn spaces and trails. This park also functions as a stormwater treatment facility during the winter months.

Shared Public Service Delivery

Efficiencies can be realized by streamlining fragmented service delivery and infrastructure

maintenance. Intergovernmental agreements are the most common form of coordination found in the Portland region. However, focused collaboration could lead to redistricting service areas, merging service districts, and allocating financing responsibilities for community and regional facilities. For example, the cities of Wood Village and Fairview have IGAs with Gresham for wastewater treatment and work closely to keep the cost of treatment down and prepare for future system demands. These efforts could lead to strategies that allow service providers to be more efficient with the resources and infrastructure systems that currently exist.



Case Studies

Portland Region

- The City of Portland sells wholesale water to 19 other service providers.
- The cities of Hillsboro, Gresham, Tigard and Portland use intergovernmental agreements (IGAs) for park facilities and services.
- The Tualatin Valley Water District is a partner in water resources and transmission in a venture with the Joint Water Commission, the Willamette River Water Coalition and the City of Portland. In addition, it provides contract water services to the cities of Beaverton and Sherwood, as well as Clean Water Services, Valley View Water District and Southwood Park Water District. The District works with the Regional Water Providers Consortium on regional planning, conservation and emergency preparation plans.
- The North Clackamas Water Commission has IGAs with Sunrise Water Authority, South Fork Water Bureau, and the cities of Gladstone and Lake Oswego for a variety of services.
- Gresham has intergovernmental agreements (IGAs) with Multnomah County to maintain County-owned Vance Park and with Metro Parks & Greenspaces for maintenance of co-owned parcels.
- Clean Water Services has IGAs with seven large cities in Washington County to implement local sewer and stormwater operations and maintenance.
- Gresham has maintenance IGAs with Multnomah County and the Multnomah County Drainage District to provide services for specific stormwater infrastructure.
- Washington County employs IGAs with its cities for roadway maintenance and project funding through both the county-wide Traffic Impact Fee and the Major Streets Transportation Improvement Program. The County works closely with its municipal partners through the County Coordination Committee.
- The City of Milwaukie contracts with Clackamas County to provide traffic signal operations and maintenance.
- During snow and ice events, the effort of clearing roadways across the region is shared among ODOT, PDOT, counties, and smaller cities via a coordinated agreement.

Equipment Sharing

Large equipment for infrastructure maintenance and construction can be shared among cities and counties to accomplish large projects or provide secondary relief in emergency situations. A regional approach could be taken and be justified on a cost-benefit basis.

Case Study

Portland Region

The cities of Troutdale, Fairview and Wood Village share stormwater equipment.

Regional Coordination

There are many issues that are most effectively addressed at a scale larger than the local level. State/interstate, regional, sub-regional, and local infrastructure needs, costs, and benefits should be clearly defined. Potential collaborators can be identified and solutions developed that are appropriate for the type and size of the need. For example, the need for bridge planning and financing can be addressed regionally if it is agreed that this is a regional priority.

Participating in local advocacy groups or nonprofit organizations offers opportunities to build support for large projects to attain long-term goals. For example, participating in regional meetings can provide smaller agencies or jurisdictions opportunities to spread the word regarding proposed utility changes.

Case Study

Regional Water Providers Consortium

The Regional Water Providers Consortium is a group of 23 water providers that serve Clackamas, Multnomah and Washington counties and Metro. The Consortium provides a forum for collaboration on water supply issues and conducts activities that provide service to customers in and around the Portland metropolitan area. This includes coordinating implementation of the Regional Water Supply Plan, studying and discussing water supply issues, and promoting cost-efficient use and stewardship of water resources.

Capital Improvement Coordination

Public agencies can benefit from the knowledge of proposed capital improvement plans of various infrastructure entities. Where projects overlap, they can link the construction schedules to eliminate mobilization and clean-up efforts as well as lower the overall costs and public impacts. This strategy can be problematic when services are provided by multiple agencies and funds are available at different times. Case studies are similar to some of those identified under “Shared Public Service Delivery.”

Alternative Standards for Public Construction

Where funds are limited, the public can benefit from specific infrastructure elements that meet health and safety standards, but are of a lesser standard than what is typical for new construction. For example, interim pedestrian trails could be built instead of formal sidewalks on urban streets.

The increasing cost of energy and the impact it will have on both personal mobility and utility operations will likely lead to changed standards for public construction. For instance, smaller cars will use less space on roads and in parking areas.

Case Study

City of Portland Pedestrian Design Guide

The City of Portland Department of Transportation's (PDOT) Pedestrian Design Guide supplies several alternative designs for constructing pedestrian facilities where the conventional city standards are not feasible. The design guide allows for alternate surfacing materials, widths, and locations for sidewalks that often cost less to design and install. Many have been applied to local improvement district (LID) projects.

Franchise Agreement Consistency

Clear, consistent agreements among private utility providers and similarly sized jurisdictions can save time and money when coordinating public improvements and upgrades. Included in this should be an attempt to treat each utility consistently when participating in large urban projects. A regional governing agency could develop a model franchise agreement. The model franchise agreement could state common conditions, requirements and obligations as well as exceptions where they are appropriate due to the nature of the infrastructure type or a particular utility provider. The desired result is to realize common expectations among public agencies and utility providers in the region. The benefits may also be a consistent and fair treatment of utility providers, as well as more timely response, better cooperation and less litigation among parties. For instance, clear management of the limited space in the right-of-way can minimize future relocations as improvements and upgrades are performed on existing infrastructure. Furthermore, coordination between energy and other infrastructure providers in advance of development could minimize future relocations and identify alternatives to the right-of-way when limited space will not accommodate multiple utilities, resulting in cost savings for developers and ratepayers.

Oregon Department of Transportation/American Public Works Association Specifications

In 1996, the Governor's Task Force on Transportation Efficiency was assigned the mission of finding new ways to use Oregon's gas tax money more efficiently. Representatives from the infrastructure and construction trades voted to create joint standards. In 2002, the Oregon Standard Specifications for Construction were completed and were updated in early 2008. This document allows construction work to occur across the state under a standardized method and payment system, ensuring that projects receive a consistent quality of construction. The effort also provides cost savings by allowing contractors to use consistent materials and machinery across various jurisdictional boundaries.

Annexation Planning

Efficiencies can be realized by planning annexation areas along growth corridors and growth centers, including the infrastructure to support this sequencing. Funding mechanisms should be put in place to support growth as it happens, responding to cycles in the economy and housing markets.

Systems Maintenance

Techniques used to assess maintenance needs that can prolong the life of facilities should be expanded.

Case Study

Portland Region

- PDOT's Pavement Management System.
- The City of Portland maintains a software system to conduct asset management.
- Street cleaning frequencies can be adjusted to prolong the life of stormwater piping systems, reducing the maintenance costs caused by debris entering pipes.

Life-Cycle Costing

Considering whole-life costs when making infrastructure investment decisions can reduce long-term costs. One method of implementation is to require life-cycle costing as a criterion for project approval and/or permitting fees.

DEMAND MANAGEMENT

The Portland region needs to examine infrastructure conservation measures to help prevent or delay the need for major capacity investments. Components of demand management include: focusing growth to use existing capacity first; pricing usage to reduce and manage demand; educating the public on conservation strategies and travel options; and providing incentives to reduce demand.

Compact Development Patterns

Compact urban land form (smaller lots and multi-family vs. single family) is a key factor in reducing demands on infrastructure and on water in particular. Continue to promote compact development as a key factor in efficiency for all infrastructure types. Focus on infill and redevelopment in existing urban areas as well as newly urbanizing with close proximity to existing systems targeted for compact, mixed-use and industrial development.

Peak-use Pricing

Infrastructure system capacity or sizing for capacity often is a function of peak demand versus usage. Peak events dramatically increase the demand on infrastructure systems. For example, peak rain events in Lake Oswego can increase the demand for wastewater service up to six times more than the average demand. Most services where peak demand is an issue do not charge for the time of day the resource is used. Conservation is necessary, but pricing measures that reduce overall demand as well as peak demand should be implemented. There are many opportunities to change behavior by reducing or minimizing peak use of a variety

of services. Leveling out peak demand can be an effective way to reduce infrastructure cost. Peak-use pricing uses real time monitoring systems that charge for the actual amount of the resource used or capacity consumed. This technique could be used for many types of infrastructure, including roadway and water usage. One example is implementing or increasing toll charges during the rush hour (congestion pricing). Another is implementing peak seasonal pricing for water use, including wastewater. The cost of technology used to implement daily peak pricing for water is prohibitive at this time.

Case Studies

Portland General Electric (PGE)

PGE's Critical Peak Pricing (CPP) program provides lower energy rates on non-CPP event days. Businesses can reduce energy bills by shifting energy usage away from peak days and hours.

Singapore

Singapore introduced the world's first congestion pricing program in 1975 and implemented electronic road pricing in 1998. New technology is used to predict prevailing and emerging traffic conditions and adjust pricing accordingly. Congestion charges are part of a comprehensive traffic management effort that includes an annual road tax, fuel taxes, custom duties and vehicle registration fees and investment in public transportation.

Public Education and Resource Conservation

Invest in public outreach efforts to inform the public of the current state of infrastructure in the region. Help people understand the real costs and benefits of their actions. Provide detailed information on strategies to reduce impacts on infrastructure, including conservation measures to help prevent or delay the need for major capacity investments. In particular, efforts to conserve water and energy and reduce driving could have a significant impact on the need to upgrade existing infrastructure systems. When possible, incentives should be used to encourage conservation efforts, such as lower use of utilities.

Case Studies

Portland Bureau of Environmental Services

The City of Portland provides a discount on sewer charges for properties that disconnect downspouts from the combined sewer system.

Regional Water Providers Consortium

The Regional Water Providers Consortium develops and implements water conservation programs that educate the public about water-related issues. The programs include a summer marketing campaign, website, schools programs, community events and partnerships, and public education and outreach.

Drive Less/Save More Campaign

The Drive Less/Save More Campaign is sponsored by Metro's Regional Travel Options Program, TriMet, ODOT and other public/

private partners. The campaign seeks to reduce single-person car trips by promoting travel options like public transit, car pooling, biking and walking and encouraging drivers to trip chain or combine multiple errands into single trips. The campaign website provides access to a number of resources at http://drivelesssavemore.com/.

INNOVATIVE PLANNING AND DESIGN

Traditional infrastructure facilities may be designed and provided in innovative ways that address sustainability and increase community support. Emerging technologies provide opportunities to increase efficiencies and lead to best practices.

Infrastructure Recycling and Reuse

Promote innovative ways to reuse or recycle existing infrastructure. For example, schools or unused transportation or utility corridors that are insufficient to serve one purpose can be used for other purposes to help reduce the need for new facilities to meet expanding demand.

Case Studies

Springwater Corridor

The Springwater Corridor is a former rail corridor; the Springwater Division Line was developed for rail service in 1903. Much of Springwater Corridor was acquired by the City of Portland in 1990, with additional acquisitions by Metro in the following years. Master planning for the Corridor began in 1991, and involved input from citizens, agencies, organizations, and municipalities, including Portland Department of Transportation; Oregon Department of Transportation; the cities of Gresham and Milwaukie; Metro; Clackamas and Multnomah counties; the 40-Mile Loop Land Trust; and the Johnson Creek Corridor Committee.

Banks–Vernonia State Trail

Recently completed, this is the first "rails-to-trails" state park built in Oregon. It is built on an abandoned railroad bed that stretches 21 miles from the town of Banks to the city of Vernonia. The railway line dates back to the 1920s, when it was used for moving logs and lumber from the Oregon-American lumber mill in Vernonia, and freight and passengers from Keasey to Portland. The line was abandoned and the rails salvaged in 1973. The right-of-way was then purchased by the state in 1974, and transferred to Oregon Parks and Recreation Department in 1990.

Green Infrastructure

Infrastructure innovation is evolving rapidly due to regional planning initiatives, market acceptance of the green building movement and interest in sustainable development. It may be possible to foster regional collaboration and leadership in various fields of green planning, design, engineering and development. An excellent example of this is Metro's work to foster green street designs to address storm water, urban design and other multiple benefits.

Examples of regional "green" infrastructure that might be developed include:

- Solid waste management and zero waste and economic development related to recycling industry
- Water conservation and reuse strategies
- Green buildings
- Eco-roofs for open space and storm water management
- Distributed renewable energy
- Waste water treatment systems as sources of bio-nutrients
- Metropolitan food transportation and distribution strategies

Case Studies

Metro Green Street Handbook

Metro's Green Street Handbook is an example of a green infrastructure initiative that documents the state of the art of stormwater management in the streetscape.

Sustainable Infrastructure Research and Development

Support the evolution of Portland State University (PSU) as a research and development and application center for innovative sustainable infrastructure. PSU currently houses significant assets that can help the region develop and apply innovative research, development, technological transfer, finance and operation techniques. These resources could potentially be organized into a regional infrastructure innovation center or network. This center could draw on the rich academic resources in civil engineering, transportation, biology, chemistry, energy and mechanical engineering, electrical engineering, nanoscience, urban and regional planning, public administration, business administration, finance and other disciplines to improve the capacity of the region to accommodate future growth.

Case Studies

Canada

The National Research Council of Canada, Center for Sustainable Infrastructure Research (http://irc.nrc-cnrc.gc.ca/csir/index_e.html) is a collaboration of universities, municipal governments and industrial partners in Regina, the Province of Saskatchewan and elsewhere. The collaboration is pursuing a multi-disciplinary research and development program to develop innovative technologies and decision support tools that address the economic, social, and environmental aspects of infrastructure sustainability. This effort will help develop a technology base that will give Saskatchewan a competitive advantage in sustainable infrastructure technologies.

Virginia

The Green Infrastructure Center (www.gicinc.org), in Charlottesville, VA, is a nonprofit organization founded in December 2006 to assist communities in developing strategies for protecting and conserving

their ecological and cultural assets through environmentally-sensitive decisions, lifestyles and planning. Green infrastructure includes the interconnected natural systems and ecological processes that provide clean water, air quality and wildlife habitat. Green infrastructure sustains a community's social, economic, and environmental health. The Center provides tools to help communities identify the services provided by natural systems, such as enhanced quality of life and economic benefits, and develop strategies to protect and sustain these resources.

Australia

The Natural Edge Project (TNEP) is an independent and highly developed Sustainability Think-Tank based in Australia. TNEP operates as a partnership for education, research and policy development on innovation for sustainable development. TNEP's mission is to contribute to and succinctly communicate leading research, case studies, tools and strategies for achieving sustainable development across government, business and civil society. See: http://www.naturaledgeproject.net/

Sustainable Infrastructure Standards

Long-term cost savings can be realized through sustainable infrastructure development. Sustainable infrastructure standards are evolving based on the strong market recognition of the U. S. Green Building Council's LEED rating system and related developments. Both the American Society of Civil Engineers (ASCE) and American Public Works Association (APWA) have infrastructure programs to support sustainability.

Case Studies

United States Green Building Council (USGBC)

According to the USGBC, LEED for Neighborhood Development integrates the principles of smart growth, urbanism and green building into the first national system for neighborhood design. LEED certification provides independent, third-party verification that the location and design of a project meet accepted high levels of environmentally responsible, sustainable development. The post-pilot version of the LEED ND rating system is expected to launch in 2009.

American Society of Civil Engineers

ASCE and the Canadian Society of Civil Engineers are formulating a joint sustainable development action plan for the profession.

See: http://content.coprinstitute.org/files/pdf/ASCESustainableDevelopmentActionPlan.pdf

Emerging Technologies

Plan for and utilize emerging technologies that can reduce costs and increase infrastructure services. Strategies include:

- Planning infrastructure to support the use of electric and other alternative-fuel cars.
- Integrating solar generation infrastructure into the urban form.

- Constructing facilities designed to generate power, such as systems to capture methane in wastewater treatment plants.
- Use advanced street lighting technology such as LEDs or super-conducting cables.
- Designing water reuse systems that include the use of bio-reactors.
- Utilizing GPS equipment to redistribute peak auto use on congested traffic ways.
- Smart meter technology to allow peak pricing.
- Smart signal systems to manage congestion.

NEW FUNDING

New funding sources are needed to upgrade and replace existing infrastructure systems as well as provide infrastructure to newly urbanizing areas. Communities in the region can support new investment by working together to pay for the infrastructure needed at the local, community and regional levels, and to leverage federal and state investments. This analysis should include identifying and removing barriers to public and private investments in infrastructure. A regional look at financing possibilities for basic infrastructure could help support implementation of the region's 2040 vision. Financing devices need to be put in place upfront by the responsible governments.

Support Federal Legislation

Support development of a national infrastructure plan proposed by Congressman Earl Blumenauer. Work with the regional congressional delegation to develop support for this plan and targeted federal funding. "The legislation calls for a new National Plan to define and finance the infrastructure required to support a sustainable economy, improve the livability of our cities and rural communities, provide jobs for Americans, and strengthen national security." The bill would create a Commission on Rebuilding America for the 21st Century and a national vision for infrastructure including specific recommendations and a set of model principles to inform future infrastructure investments.

Potential New State Revenue Sources for Oregon

Opportunities for funding community and regional infrastructure facilities, such as roads, bridges, transit systems, and water/sewer facilities should start at the state level, with new funding sources for strategic infrastructure investments identified during the 2009 legislative session. Examples from this region and other jurisdictions follow. Each of these tools has been used in other places, but implementation of any tool has inherent benefits and risks.

- Additional funds for the Oregon Infrastructure Bank to be dedicated to metropolitan areas.
- An expanded role for the Oregon Infrastructure Bank to provide credit-enhancement to local governments and service districts.

- Funding from the Oregon Strategic Transportation Initiative dedicated to strategic projects in metropolitan areas.
- State transportation project mitigation (traffic impact) fees for strategic regional projects.
- A real estate transfer fee with revenues dedicated to infrastructure.
- An increased Oregon fuel tax and additional revenues dedicated to strategic infrastructure.
- A lodging accommodations tax and dedicated revenues to infrastructure.
- Revenues from the Oregon weight-mile tax and dedicated revenues to regional freight mobility projects.
- An increased Oregon motor vehicle fee with revenues dedicated to strategic regional projects.
- Oregon income tax deductions for businesses and residents located within a designated Center, Corridor, Employment or Industrial area per the 2040 Growth Concept.
- State provisions to allow establishment of Special Benefit Assessment Districts with local taxing authority.

Case Studies

Oregon Special Public Works Fund

The Special Public Works Fund administered by the Oregon Community Development Division is primarily a loan program that provides funding for municipally-owned facilities that support economic and community development. Established in 1985 by the Oregon Legislature, the fund has grown to $160 million. Loans range in size from less than $100,000 to $15 million. Loan terms can be offered at tax-exempt rates for up to 25 years. Grants are limited to $500,000 or 85 percent of the project cost, or up to $5,000 per eligible job created or retained.

Oregon Water/Wastewater Fund

This is a loan and grant program administered by the Oregon Community Development Division to provide for the design and construction of public infrastructure needed to ensure compliance with the U.S. Safe Drinking Water Act or the Clean Water Act. Public entities, municipalities, ports and special districts may apply for funding improvement of drinking water, wastewater, or storm water systems. Loans range in size from less than $100,000 to $15 million. Loan terms can be offered at tax-exempt rates for up to 25 years. Grants are limited to $10,000 per hookup, with a maximum of $750,000 per project. An applicant is not eligible for grant funds if the annual median household income in the applicant's service area is more than the state average median household income level.

Oregon Transportation Infrastructure Bank (OTIB)

OTIB offers direct loans for eligible projects funded from available resources or through the sale of revenue bonds. Borrowers include cities, counties, transit districts, ports, tribal

governments, state agencies and private for-profit and non-profit entities. Uses of funding include various transportation and transit projects. Loan terms can include tax-exempt financing with repayment beginning within five years of project completion and must be repaid within 30 years or at the end of the useful life of the project. Projects are selected on a competitive basis with preference given to projects with quick loan repayment. Projects that receive OTIB funds may include federal money which requires the applicants to abide by applicable state and federal laws, rules and regulations including NEPA, Davis-Bacon Act, Buy America, etc. As of January 2005, the Oregon Transportation Commission had approved a $30 million non-revolving line of credit from the State Highway Fund for the OTIB.

State Transportation Mitigation Fees

Washington State Department of Transportation (WSDOT) allows local jurisdictions (cities and counties) to charge developers for their impacts on state transportation facilities. The WSDOT mitigation fee program has been used to fund the local share for capacity improvements to roadways in Pierce and Snohomish Counties in the greater Seattle Metropolitan Region. The mitigation fee is based on the capital cost of projects identified in the State Transportation Improvement Program and calculated annually by WSDOT staff. Each jurisdiction has the flexibility to charge the mitigation fee or waive it on a case by case basis. CALTRANS is also now considering a similar approach for funding the local share of strategic state transportation improvements.

Oregon Senate Bill 772, Public-Private Partnerships

In 2003, the Oregon Legislature approved a new bill that provides ODOT with tools to develop public-private partnerships for transportation projects, and raised the limit of funding for this program to $50 million. While no such partnerships have materialized, this program has the potential for creating opportunities to build large, badly-needed transportation projects.

Oregon House Bill 2278, expansion of ConnectOregon

This bill funds another $100 million of ConnectOregon through lottery bond sales and authorizes a statewide multimodal transportation study.

Washington Economic Development Finance Authority (WEDFA)

WEDFA can act as the issuing authority on tax exempt Industrial Revenue Bonds to finance eligible infrastructure investments by qualifying public or private entities. WEDFA issues bonds for up to $10 million on a single project, but does not provide any credit enhancement for borrowers. Washington state securities law requires that each borrower obtain a direct pay letter of credit from a lending institution equal to the principal plus 125 days interest. An alternative to the letter of credit provision is for

the borrower to work with a lender to arrange a "private placement" of the bond with an institutional investor or banking firm. WEDFA staff can assist with private placement efforts.

California Infrastructure and Economic Development Bank (I-Bank)

State financing authority provides tax exempt financing to public agencies and qualifying private and non-profit entities. Since 1999, the I-Bank has financed more than $6.5 billion in bonds and loans for economic development and public infrastructure projects. I-Bank also provided more than $300 million in loans from the Infrastructure State Revolving Fund Program since 2000. I-Bank leverages about $2.50 in added public and private investment for each $1.00 it lends. Public infrastructure projects financed by I-Bank include flood control, water, wastewater, public safety facilities, and public streets.

California Proposition 1B

Approved by voters in November 2006, Prop. 1B enacts the Highway Safety, Traffic Reduction, Air Quality, and Port Security Bond Act of 2006 and authorizes $19.925 billion of state general obligation bonds for specific purposes. Focus of this program is on high-priority transportation corridor improvements, trade infrastructure and port security projects, school bus replacement, passenger rail improvements, state/local transportation projects, bridge retrofits, railroad grade separation projects, and traffic safety.

California Proposition 1C

Approved by voters in November 2006, Prop. 1C enacts the Housing and Emergency Shelter Trust Fund Act. Funds are used for providing shelters for battered women and children, low income housing, homeownership assistance, and development programs targeted in urban areas near public transportation. The measure authorizes $2.85 billion in GO bonds to fund 13 new and existing housing and development programs. Funds are awarded on a competitive basis.

Potential New Regional Revenue Source or Authority

Particularly if federal or state funding efforts do not appear viable, a regional referendum should be considered to seek voter support for new or expanded fees that can be used to leverage state or federal funding to complete strategic infrastructure projects such as bridge construction or preservation, and new roadway, transit, multimodal, and urban amenity projects. If regional funds were to be collected by Metro, it is likely that the Legislature would need to increase Metro's spending cap. Examples of regional tools used in local and other jurisdictions follow. Each tool has inherent benefits and risks.

- Transportation project mitigation fees or system development charges for strategic regional projects.
- Real estate transfer fee dedicated to strategic regional infrastructure projects (this would be an increase in Washington County).

- Fuel tax, with dedicated funding for strategic regional projects.
- Lodging accommodations tax, with dedicated funding for infrastructure.
- Motor vehicle fee increase, with dedicated funding for strategic regional projects.
- Expansion and extension of the construction excise tax, with dedicated funding for strategic community or regional infrastructure projects.
- Expanded role for Metro to educate and inform citizens and businesses regarding the benefits of conservation.
- Expanded role for Metro to help coordinate utility district roles and responsibilities in conjunction with service providers.
- Revolving Loan Fund for location efficient mortgages for low and moderate income homebuyers.
- Carbon Impact Offset fee for new buildings that do not meet energy efficiency guidelines.

Case Studies

San Diego

The San Diego Association of Governments (SANDAG) is using innovative techniques to plan and fund their transportation system. A 5 percent sales tax dedicated to transportation improvements has been particularly successful.

Virginia

With the passage of a new transportation act, Virginia is pursuing what appears to be regional financing of transportation that locks together state and local financing of improvements and more regional control of land use. The overall approach allows the regional transportation authority to levy certain taxes and require that localities do likewise for transportation support. State funds will be tied to regional actions. As part of the transportation plan, Virginia is building "hot lanes" on the interstates that will toll individual drivers that use HOV lanes.

State or Regional Bond Bank

Bond banks are a financial intermediary that provides low cost funds through the sale of tax exempt bonds. Capital financing through bond banks allows borrowers to take advantage of the bank's high investment grade rating, low interest rates and reduced issuance and post issuance costs. Local governments are shareholders that participate in bank governance and in some cases make minimal stock subscription payments. For more information see the Appendix.

Case Studies

States of Alaska, Indiana, Maine, New Hampshire, Vermont

Alberta Province, Canada

Value-capture finance

Public improvements made today can lead to future increases in economic value. By capturing a share of future increases, these improvements can be made self-financing. Value-capture finance leverages future tax

receipts to pay for public infrastructure needed to support development for projected growth. In other words, private land value increases generated by new public investment are all or in part "captured" through a land related tax to pay for that investment.

Public and private sectors are constituent elements in the development process. Local government's role evolves as provider of infrastructure and promoter of development. New applications are possible as governments and private developers find it necessary and desirable to work together. Value-capturing finance shares the benefits and costs among partners so that private benefits are partially invested in public services. Those that benefit from new public investment in infrastructure and services pay for them. Examples include urban renewal districts.

Assessment and Taxation Districts

Special districts assess properties with added charges to recover the cost of special improvements made to them. They are not a burden on the general tax base and do not constitute general indebtedness. Moreover, this technique allows landowners to amortize payments over time. Special districts are a viable source of funding at the local or community level. It can be a challenge to explain this technique to the public. A common type of special district is the local improvement district (LID) where a public amenity is needed. Public agencies can encourage and/or aid the use of an LID to fund specific projects. With this source of private (often via property-owners) funding, many elements can be completed at little cost to the public agency.

The following are other types of assessment and taxation districts:

- Regional Improvement Districts
- Special Benefit Assessment Districts
- Business Improvement District
- Supplemental SDCs
- Reimbursement Districts
- Urban Renewal Districts

Case Studies

Washington State Local Infrastructure Financing Tool (LIFT)

Established during the 2006 legislative session, the LIFT program provides a new way to support public infrastructure, with focus on job creation and increasing local economic activity. LIFT is a competitive program that allows selected local governments to take advantage of tax revenue generated by new private developments in Revenue Development Areas (RDAs). Much like Oregon's urban renewal program, LIFT supports RDA's use of state and local tax increment revenues to repay bonds. Jurisdictions may apply for up to $2.5 million in annual LIFT authority, and in most cases only one RDA is allowed per county.

Community Facilities District Act ("Mello-Roos")

Mello-Roos enabled Community Facility Districts (CFD) to be established by local government agencies in California as a means of obtaining community funding. CFDs are areas where a special tax is imposed on property owners. The CFD has chosen to seek public financing through the sale of bonds for the purpose of financing certain public improvements and services.

Tax Revenues and Fees

Tax revenues and fees could be used to fund new infrastructure. Most taxes require voter approval and would likely be subject to a cap. Tax revenues and fees include:

- Impact Fees, Systems Development Charges
- Utility Charges/Fees (user charges)
- Motor Vehicle Registration Fees
- Fuel Tax (maximum allowed under state laws)
- Utility Franchise Fees
- Developer Connection Charges
- Real Estate Transfer Fee
- Construction Excise Tax
- Lodging Tax
- Toll Revenues
- Mitigation Fees
- Property Tax Levy
- Payroll Tax
- Road User Fee (establish a user fee paid by households, businesses, and industries to fund transportation system improvements and upgrades; similar to Portland Mayor-elect Sam Adams' Safe, Sound and Green Plan and the street utility fee in Hillsboro).
- Tax Increment Financing (establish a tax increment district to raise the funding for necessary public infrastructure improvements).

Public-Private Partnerships

Public-private partnerships (PPPs) are an effective means to develop infrastructure projects. A PPP is a contractual agreement between a public agency (federal, state or local) and a private sector entity. Through this agreement, the skills and assets of each sector (public and private) are shared in delivering a service or facility for use by the general public. In addition to the sharing of resources, each party shares in the risks and rewards potential in the delivery of the service and/or facility. PPPs can create wide opportunities for deeper funding and sources of creativity.

Successful PPPs have strong political leadership, shared burdens and rewards, commitment to plans, project timetables and clear, realistic funding sources. PPPs can be focused at various scales and structured in different ways (See the Appendix). Some are more applicable to infrastructure needs than others, and some more applicable to particular types of infrastructure. For instance, utilities such as water or sewer that have a user-paid revenue stream are better implemented

under some models, and road or highway infrastructure that may combine user fees with local, state, and federal capital contributions are better constructed under other models. They are used extensively in Europe, but with mixed success. Metro could develop a "toolkit" to define the range of PPPs and the criteria for success in developing and managing PPPs.

Case Studies

South Waterfront; Portland, OR

The South Waterfront project is a PPP among the City of Portland, the Portland Development Commission, and Oregon Health and Science University. Tax increment revenues and local private cost-sharing was used to provide needed improvements and desired amenities. Development agreements between the city and individual property owners provided a tool for negotiating public and private commitments to meet plan goals on a site-specific basis. PPPs were used to finance some improvements and long-term maintenance of public facilities. For example, local improvement districts assisted with streetcar, tram, parks and greenway installation and maintenance.

Metro

A transit-oriented development (TOD) Program aims to provide built examples of transit-oriented development projects and to demonstrate the potential of public-private partnerships for making great communities. The TOD program provides financial incentives and uses PPPs to enhance the economic feasibility of higher density mixed-use projects served by transit. The program has contributed to many of the successful TOD developments in the region and has acquired key opportunity sites at transit stations.

Cascade Station, Airport Light Rail Transit; Portland, OR

Bechtel, Trammel Crow, Port of Portland, PDOT, TriMet and PDC partnered to build light rail transit and retail / commercial infrastructure near the Portland Airport. Bechtel provided the private partner's contribution by constructing the infrastructure in exchange for the right to enter into 99-year leases that would allow private development of the Port's land. The Portland Development Commission was an intermediary and provided about $30 million in financing.

Land Acquisition

Investigate new approaches to land acquisition. Land acquisition is a major challenge preventing large scale development projects in the region. A handful of corporations now control the building of large residential housing developments in the United States. There is a need to plan for areas to be annexed by talking to these corporations to understand what large-scale development would look like and how to prepare for it. New approaches to land acquisition include:

- Planning for public transit and development patterns that support it is of particular importance. Obtain rights-of-way before

development occurs to dictate where linear infrastructure will go.

- Various landowners form a private limited liability corporation to spread costs and benefits and consolidate land for a single developer.
- Public sector uses a tool similar to urban renewal, but to purchase land in urbanizing areas for development purposes.
- Work with developers to get control of parcels with highest value to leverage process.

Patient Equity[4]

Patient equity is the capital committed to a development budget that does not have a defined payback schedule. Patient capital is not a substitute for other financing that sunsets in seven to ten years. Rather, it is additive, layered on top of a conventional development budget such that the overall cost of the project increases. Patient equity pays the increased costs and mitigates the risks of new development. Ultimately, it can facilitate a project's success and over time yield substantial return to its investors.

Patient equity is ideal for financing walkable, mixed-use projects. It allows conventional equity to take on a proportionally smaller piece of the total development budget. Investors of patient equity in walkable projects are likely to see substantial financial returns as the project matures and critical mass is achieved (ten or more years). However, current methodologies for evaluating equity investments are often biased toward short-term (one to seven years) investment decisions. Many of these methodologies are unable to evaluate cash flows beyond year five, which is when walkable, urban developments see their strongest financial performance. A similar method could be to establish a patient equity fund for long-term investments to be used in public-private partnerships.

Case Studies

Reston Town Center

Mobil Land owned the master planned community of Reston, Virginia, located in the Washington, D.C. metropolitan area. The 200-acre site includes more than one million square feet of office, hotel and retail space, and thousands of condominium and rental apartments. Current rental rates and sales prices demonstrate the premium that Reston Town Center's walkable urbanism commands. There is no direct evidence of how much patient equity was in the project but estimates of patient equity for the first phase of the Town Center are upwards of 50 percent of the development budget.

Century Theatre Block, Albuquerque

The Historic District Improvement Company (HDIC) developed the Century Theatre Block in Albuquerque as the catalytic project starting the revitalization of the downtown. The project consists of a 47,000 square foot, 14-screen

[4] Source: Leinberger, Christopher B. *The Need for Patient Equity in Creating Great Places.*

movie theater, 25,000 square feet of retail and 25,000 square feet of office space in a mixed-use, walkable form. The HDIC project had a 40% higher construction and tenant improvement budget than the conventional budget. The development budget became 5% conventional equity, 67% debt and 27% patient equity. The cash flows have recently surpassed the conventional projections and seem set to significantly surpass the conventional projections in the future.

AvalonBay Communities, Inc.

AvalonBay REIT concentrates on building and owning rental apartment projects in markets with high barriers to entry. As a result, over half of their portfolio is in walkable, urbane locations. This portfolio has earned AvalonBay a reputation as one of the premier rental apartment REITs in the United States. It has consistently been the most profitable apartment REIT and has provided the highest shareholder return for apartment REITs.

Remove Barriers to Investment

Identify and remove existing legal, regulatory and other barriers to public and private investment in new development and infrastructure. For instance, liability issues associated with superfund sites prevent redevelopment of brownfields due to fear of lawsuit. Unfunded mandates from federal and state governments also serve as obstacles to investments in infrastructure. Likewise, cities should revisit development codes to encourage investments, removing codes that prevent compact urban development.

Carbon and Ecosystem Service Markets

Due to the impact of climate change, there is a rapidly evolving set of markets in green house gas reduction or sequestration. The United States Congress is considering a national cap-and-trade system that could result in up to $1 trillion in capital exchange. It is likely that national legislation will pass within the next few years. The Western Governors' Climate Initiative also is developing a regional cap-and-trade system to reduce greenhouse gas emissions and several Oregon leaders are developing a similar concept designed to quantify and monetize the value of services provided by ecosystems and develop the market mechanisms where they can be sold, purchased, or traded. These opportunities are detailed in several presentations at: www.nebc.org/content.aspx?pageid=34

Case Studies

Climate Action Plan Tax, Boulder, Colorado

Boulder voters approved Initiative 202 in 2007, making this the first time in the nation that a municipal government will impose an energy tax on its residents to directly combat global warming. The energy tax is also referred to as a carbon tax since it is based on electricity consumed through the burning of coal which is directly related to carbon or greenhouse gas emissions. The average household will pay $1.33 per month and the average business will pay $3.80 per month. The tax will generate

about $1 million annually through 2012 when the tax is set to expire. Estimated energy cost savings from this measure are $63 million over the long term.

Oregon

There are significant efforts in Oregon to develop an ecosystem services market for the Willamette Valley and elsewhere to value and capitalize on ecosystem services provided by nature. Taken together with the emerging cap and trade carbon markets there are and will be major opportunities for funding for energy-efficient infrastructure, compact development and open space "greenfrastructure" needs of the region. Regional collaboration will be essential to fully participate in both markets.

CRITERIA FOR TARGETING REGIONAL FUNDS

While it is important to pursue strategies in all four categories, the reality is that new funding sources are crucial to providing needed infrastructure. The following matrix outlines a set of regional funding program eligibility criteria. These funding criteria could be applied to ascertain the relative advantages and disadvantages for the aforementioned funding programs, using a relative scoring method for each criterion ranging from 1 (least effective) to 5 (most effective). The highest scoring funding programs should be advanced for consideration by the appropriate legislative body and/or public-at-large.

Criteria	Evaluation Question to be Addressed	Comments
Legal precedence in Oregon	Is this technique allowed under Oregon law?	
Current use in Portland region	How many jurisdictions or districts use it today? Has it been successful?	
Overall simplicity (easy to understand/convey)	Can it be explained in 20 words or a simple graphic?	Important for public support
Implements 2040 policy objectives	Can funding be focused on centers, corridors, and employment and industrial areas?	
Equity among affected stakeholders	Who pays the cost? Are they the beneficiaries?	
Ease of integration with existing governments	How many inter-agency agreements/ modifications will be required?	Important to local agencies
Potential revenue generation	What is revenue generation potential: high, med., low?	Forecast over 30 years
Stability of annual revenues	How much does the revenue stream rely on variable factors, such as construction cycles?	Historical review of revenue system
Ability to be used for annual operations & maintenance	Can the revenue be used for annual operations & maintenance?	Important to local agencies
Flexibility of the revenues	Can the revenue address multiple infra needs?	Flexibility of technique
Annual implementation/ administrative costs	What will be the cost of administering this to local governments?	Forecast over 30 years
Ability to leverage federal or state funds	Can this revenue source leverage non-local grants?	Potential for all levels of government
Ability to leverage local public/ private funds	Can this revenue source leverage private investment?	Potential for all levels of government
Likely to receive voter approval	Is this the type of program voters generally support?	Important to elected officials
Consistency with other financing techniques used by local governments	How well does it fit in with contemporary patterns?	Helps sell program to citizens

* It is recommended that regional funding techniques be ranked according to these criteria on a scale of 1 to 5, with 1 being least effective and 5 being most effective, and use this as a basis for prioritizing funding programs.

CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS

Changing times require new approaches to infrastructure provision and finance. This analysis describes the region's infrastructure challenges and begins to quantify the problem and lay out some options to address the region's infrastructure needs. However, tough questions remain as the region moves forward:

- There will never be enough money for everything – how can we most efficiently guide public investment decisions to strategically target limited resources?
- Can managing demand reduce the need to expand the capacity of infrastructure?
- Are we providing infrastructure services at the most efficient level (geographical or jurisdictional), or are there opportunities to achieve economies of scale or efficiencies?
- How can we best address competing fiscal demands for new infrastructure, maintenance needs, and upgrades of existing facilities?
- Do service providers currently have the capacity to research and share information with counterparts nationally and globally to facilitate the adoption of innovations in service delivery?
- Will incorporating global climate change and sustainability into public messages help manage consumption?
- How can government deepen public understanding of the infrastructure challenges and increase public support for infrastructure finance?

RECOMMENDATIONS

The time is right for decisive action by elected and appointed leaders across the region to address our infrastructure needs. Recommended actions:

- Coordinate regional partners to identify state legislative changes that would increase our capability to finance regional infrastructure needs.
- Convene regional partners to explore opportunities to implement solutions that increase efficiency and better manage demand.

- Increase public awareness of infrastructure needs and the importance of setting priorities with limited resources.
- Recognize return on investment when making public investment decisions in both urban and newly urbanizing areas.
- Encourage and facilitate implementation of new technologies that increase the efficiency and sustainability of infrastructure systems.

EXECUTIVE SUMMARY

JULY 2008

METRO

As a number of recent incidents have graphically illustrated, the United States faces an infrastructure crisis of epic proportions. Congressman Earl Blumenauer has observed that the nation has no plan for building the roads, bridges, water and sewer lines, energy facilities, and other physical projects that support our communities.

"We're losing this battle," says Blumenauer. "We're investing less in infrastructure than in any time in our history."

The Portland region is not immune to this serious problem. Past plans that guided investments are outdated. The lack of adequate financing mechanisms has led to maintenance being postponed and neglected. Despite widespread recognition that sound infrastructure is critical to maintaining and enhancing regional economic growth, competitiveness, productivity and quality of life, current approaches to the planning, development and financing of critical community support systems are not working.

To make matters worse, approximately one million more people are expected to live in the seven-county Portland metropolitan area within thirty years. The estimated cost of building the public and private facilities needed to accommodate growth in jobs and housing in the three-county Portland region through 2035 is $27-41 billion. Traditional funding sources are expected to cover only about half that amount. Even if the region does not experience this projected growth, $10 billion is needed just to repair and rebuild our existing infrastructure.

Systems development charges, gas taxes and other revenue sources are not keeping pace with rising infrastructure costs, while voter-approved tax limitations and other ballot initiatives have crippled the ability of communities to fund these services. Rate-funded services tend to enjoy more stable and predictable funding, but can face significant difficulties in obtaining large amounts of up-front capital needed to make major improvements or expand capacity.

All of this leads to one unavoidable conclusion: we cannot continue to do things as we have in the past. New and creative solutions are essential.

REGIONAL INFRASTRUCTURE ANALYSIS

Expenditures to improve public infrastructure are investments. As with other types of investments, the public should expect a return on its investments in public infrastructure. That return can take many different forms, including quantitative measures such as higher tax revenues, improved housing or more jobs. Other "returns" could include more qualitative benefits, such as strong and livable communities. Although investing in infrastructure is expensive, the return on that investment directly improves the lives of the people who live and work here. Public investment is also necessary to make private investment possible and profitable, and private investment is what ultimately builds great communities.

In 1995, the Portland region adopted the 2040 Growth Concept, a long-range plan to guide future growth and development. This innovative blueprint for the future is based on a set of shared values that continue to resonate with residents of the region: thriving neighborhoods and communities, abundant economic opportunity, clean air and water, choices in housing and transportation, access to nature, and a sense of place that, taken together, are the reason people love to live here.

However, this vision will not become a reality unless we can provide the infrastructure to support it. Local and regional leaders have identified the lack of adequate infrastructure funding as a key barrier to successfully realizing the aspirations embodied in the 2040 Growth Concept.

To address this issue, Metro initiated a process to identify infrastructure needs, assess the funding gap, and explore financing and other policy options. The analysis focuses on eight infrastructure types needed to make and sustain great communities:

- Civic buildings, parking structures, public plazas
- Energy
- Schools
- Roads, transit, bike lanes and sidewalks (transportation)
- Stormwater
- Urban parks and open spaces
- Wastewater (sewers)
- Water

The vision of the 2040 Growth Concept is to establish complete communities that include:

- safe and stable neighborhoods for families
- compact development that uses both land and money more efficiently
- a healthy economy that generates jobs and business opportunities
- protection of farms, forests, rivers, streams and natural areas
- a balanced transportation system to move people and goods
- housing for people of all incomes in every community

It is important that the region continue its legacy of coordination among local jurisdictions and the general public to identify and address the highest priorities for providing infrastructure to serve both existing and future residents. Political leadership and public engagement efforts will be needed to raise awareness of infrastructure needs and issues and garner support for agreed-upon solutions. Metro, along with its local government partners, plays a key role in leading this regional dialogue and building consensus.

Infrastructure planning, development and finance strategies are organized into the following four approaches:

Efficient Service Delivery

Fragmented delivery systems often result in reduced efficiencies. Better coordination among service providers can lead to cost savings through sharing facilities and service delivery, adjusting service areas, merging service districts, and reallocating funding responsibilities for community and regional facilities. Improved maintenance of existing infrastructure systems ensures a maximum return on past investments. Potential strategies include:

- Shared public facilities
- Regional coordination and planning
- Systems maintenance

Demand Management

Reducing the demand for services can help prevent or delay the need for major capacity investments. Components of demand management include focusing growth to use existing capacity first, using pricing and other incentive-based strategies to reduce demand and shift it to off-peak times, and educating the public on conservation strategies. Potential strategies include:

- Compact development patterns
- Peak-use pricing
- Public education and resource conservation

Innovative Planning and Design

Emerging technologies provide opportunities to increase efficiencies and conserve resources over the long term. Investments in research and development of innovative approaches to infrastructure planning, design and construction can make infrastructure systems more sustainable and build community support. Preparing for the impacts of new technologies will result in long-term cost savings. Potential strategies include:

- Infrastructure recycling and reuse
- Sustainable infrastructure (e.g., natural systems, co-generation facilities)
- Emerging technologies (e.g., electric cars and water reuse systems)

New Funding

New funding sources are needed to enable the region to upgrade and replace deteriorating infrastructure systems and provide services to newly urbanizing areas. The region also needs to identify and remove barriers to public and private investments in infrastructure. Communities in the region can work together to secure funds at the local, community and regional levels and to leverage federal and state investments. A regional approach to financing basic infrastructure could help achieve the region's long-term vision. Potential strategies include:

- Pursuit of new state and regional revenue sources
- Public-private partnerships
- Strategic land acquisition

CONSIDERATIONS FOR MOVING FORWARD

Changing times require new approaches to infrastructure provision and finance. This analysis describes the region's infrastructure challenges and begins to quantify the problem and lay out some options to address the region's infrastructure needs. However, tough questions remain as the region moves forward:

- There will never be enough money for everything – how can we most efficiently guide public investment decisions to strategically target limited resources?

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RECOMMENDATIONS FOR ACTION

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- Encourage and facilitate implementation of new technologies that increase the efficiency and sustainability of infrastructure systems.

COGAN OWENS COGAN · FCS GROUP Solutions-Oriented Consulting · otak

Strategic Advisors:
J. Ned Dempsey, John Petersen, Karen Williams

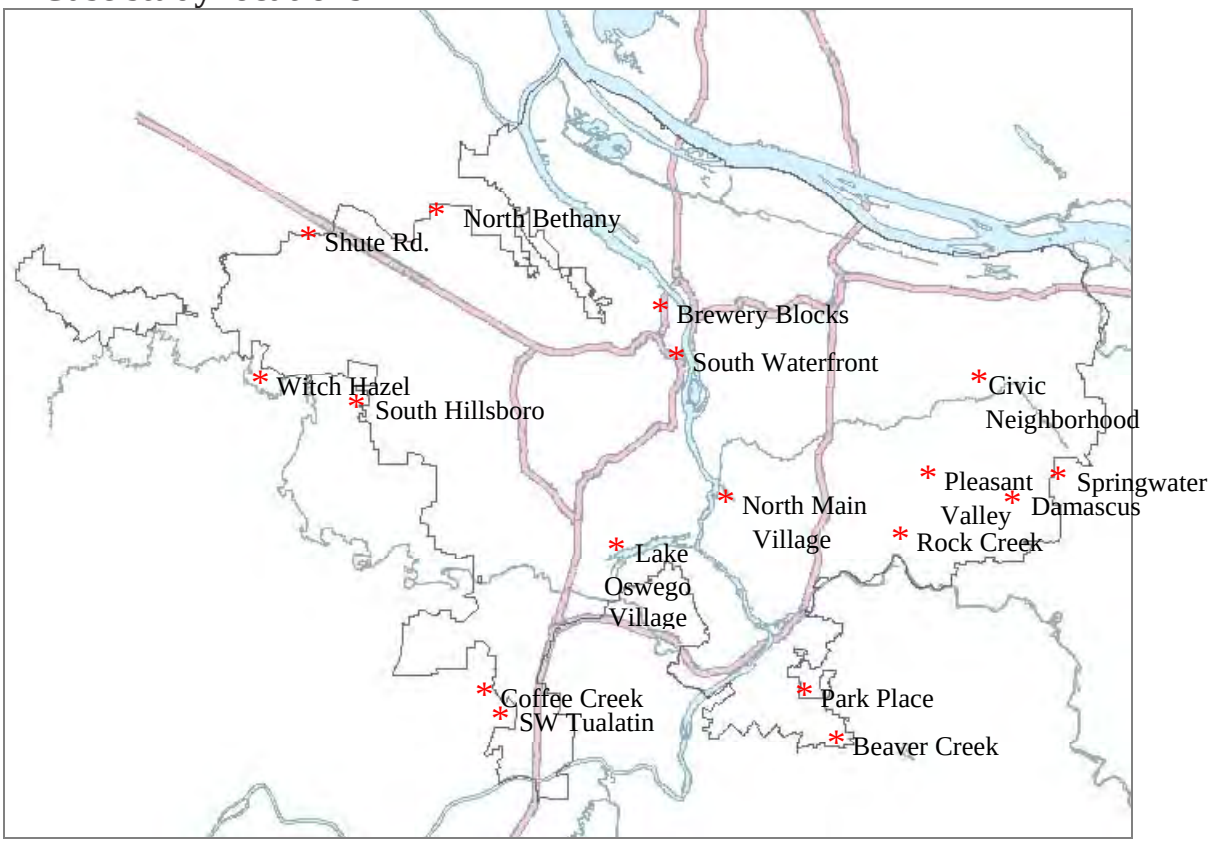
Comparative infrastructure costs: local case studies

Regional Infrastructure Analysis
Discussion draft

Purpose

In the coming years, the region will grapple with questions of where and how to grow. These decisions will have implications for the long-term costs, both environmental and financial, that will be borne by current and future residents. An understanding of the factors that contribute to variations in infrastructure costs will be essential in making these decisions. To assist in these decisions, this paper focuses on the financial costs associated with providing infrastructure. In particular, this paper places 17 local case study areas in the context of the national literature on the relationship between development patterns and infrastructure costs. These 17 case studies from throughout the Metro region include 12 areas that are newly urbanizing and 5 case studies that are in established urban areas.

Case study locations



Urbanizing areas

Recent urban growth boundary expansion areas (costs are preliminary and are taken from concept plans)

- Shute Road
- Rock Creek
- Witch Hazel
- Coffee Creek I
- South Hillsboro
- Beavercreek
- SW Tualatin
- Pleasant Valley
- North Bethany
- Springwater
- Damascus
- Park Place

Urban Areas:

Recent redevelopment projects in existing urban areas (projects are completed; costs are final)

- North Main Village
- Gresham Civic Neighborhood
- South Waterfront
- Brewery Blocks
- Lake Oswego Village Center

The focus of this work is on the following categories of infrastructure:

- Civic buildings, parking structures, public plazas
- Energy
- Parks
- Sanitary Sewers
- Schools
- Stormwater
- Transportation
- Water

Infrastructure facilities were also broken into two main categories:

- Local / community infrastructure – facilities that are most directly tied to a particular development (e.g. on-site sewer lines)

- Regional infrastructure – facilities that are cumulatively necessary for the region (e.g. highways or light rail)

Primary findings:

- The case studies summarized herein substantiate the body of national planning literature that posits that, on average, lower-density, single-family development patterns on the urban fringe are typically costlier to serve than are mixed use developments in central locations.

- On average, it is less expensive to provide services and facilities for new jobs and people in existing urban areas because such developments are, up to a point, able to utilize existing facilities.
    - The weighted average local/community infrastructure cost for the urban case studies is $51,000 per EDU, or $31,000 if the South Waterfront case study area is excluded.
    - The weighted average local/community infrastructure cost in newly urbanizing locations is $75,000 per EDU, or $72,000 if the S.W. Tualatin case study area is excluded.[1]
    - Residents of the urban case study areas are forecasted to have substantially shorter commutes than the residents of newly urbanizing case study areas (in the year 2035). Longer commute distances translate into higher regional infrastructure costs that will be shared by all.

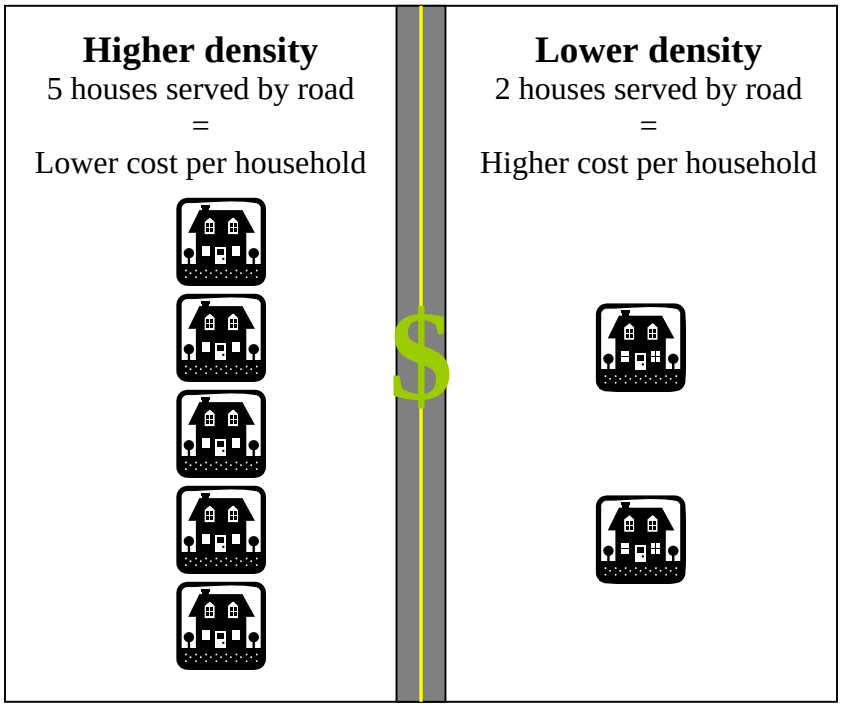
- There is a great deal of variation in local/community infrastructure costs. Factors such as amenity level, level of service, topography, and distance to existing facilities (e.g. existing sewer mains) may help explain the variation.

- Transportation infrastructure is the most substantial investment needed to accommodate growth in urbanizing areas. In urbanizing areas, developments on relatively flat land that are close to existing transportation facilities have the greatest return on investment.

[1] It should be noted that local/community infrastructure costs might approach zero for certain small-scale infill development projects that are located in areas that have available infrastructure capacity because of previous investments.

The literature on comparative infrastructure costs

A number of past studies have described the relationship between development patterns and infrastructure costs. Generally, these studies assert that the primary urban form characteristics that contribute to cost differences are density and distance from existing urban areas.



The influence of development density on infrastructure costs is fairly intuitive – larger lots require more lineal feet of pipes and pavement per household. These increased lengths translate into higher costs.

Even those costs that are initially born by the developer are eventually passed on to the general public. Upon completion, these facilities are dedicated to the public. Subsequent maintenance and replacement will typically be paid for by all tax and utility rate payers (at the higher cost that was caused by the longer lengths of pipes and pavement). Thus, all existing taxpayers have a financial interest in how new areas are developed.

However, density is not the end of the story. Collectively, longer commute distances translate into a need for more highway, bridge and transit capacity. When compared to their suburban counterparts, residents of central, urban locations have markedly shorter daily travel distances (on average, about 1/3 shorter). Ultimately, strategies that focus growth population and job growth in centers and corridors that are well connected by multiple transportation modes are the surest means of reducing commute distances and public costs (both financial and environmental).

Local case studies – methods

- Some of these case study areas include employment uses while others include residential uses. Since employees and households place different demands on infrastructure, the analysis uses a standardized measurement called an equivalent dwelling unit (EDU).

An EDU is a standard unit of measurement for infrastructure demand:

= One household (2.5 residents)

Has about the same infrastructure demand as:

= Five jobs

- Costs for the urbanizing areas were taken from concept plans. These costs are early estimates that will no doubt change as the planning becomes more refined.

- Costs for urban case studies were provided by the responsible redevelopment agencies and are for completed projects.

- The case study costs are from a span of several years. In order to provide a more fair comparison, costs for all case studies were escalated to first quarter 2008 dollars.

- Costs are broken down into two categories: local/community and regional.

    - Local/community costs are those that are most directly necessitated by a particular development and are paid for by the public (rather than the developer). Arterial roads are an example. Local/community costs are typically included in concept plans.

    - Regional costs are for facilities of regional importance such as highways, high-capacity transit, and air/water terminals. Regional costs were calculated as a function of forecasted commute distance. These distances were forecasted using MetroScope, a regional land use scenario model, and secondary construction cost data.

- Costs that were included in concept plans, but that appeared to be regional costs (e.g. state highway improvements), were deducted from local/community costs.

- Metro's consultant team, which includes FCS Group and Cogan Owens Cogan, assisted in data analysis. All local jurisdictions for which a case study is included herein had the opportunity to review and comment on the case study.

Local / community costs

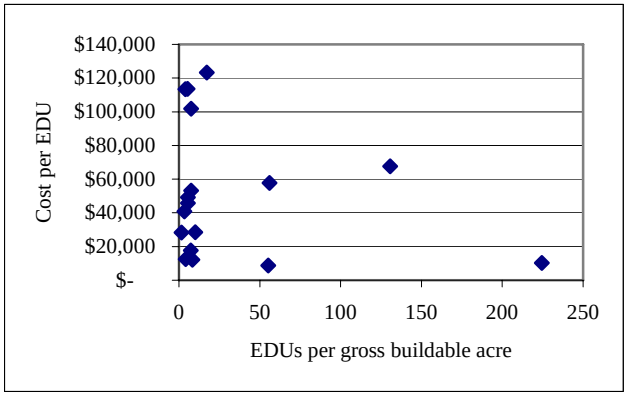
Local/community facilities are those that are most directly necessitated by a particular development that are paid for by the public (rather than the developer). The costs of these facilities are typically well documented and case studies are a useful way to understand them.

The case studies show that newly urbanizing areas typically have substantially higher per-EDU costs than do redevelopment projects in existing urban areas.

Average local/community infrastructure costs per EDU

Urbanizing areas:	$75,000	or	$72,000 (w/out SW Tualatin high-end case study)
Urban areas:	$51,000	or	$31,000 (w/out S. Waterfront high-end case study)

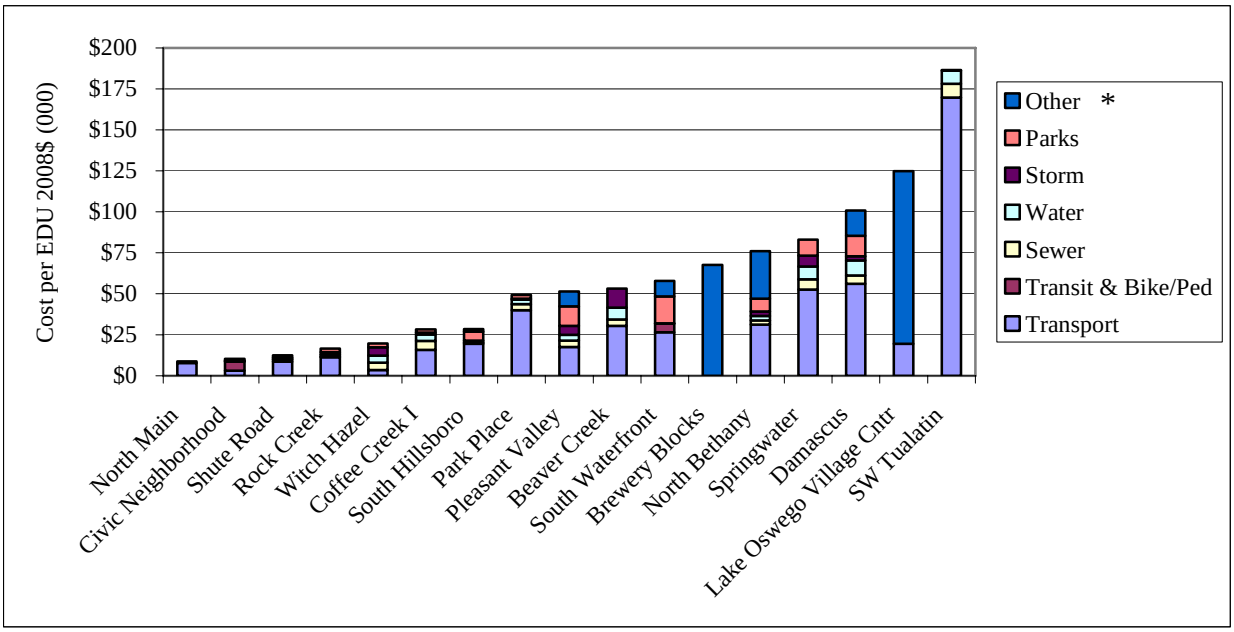
Wide variation local/community costs in lower-density case studies: Despite the clear difference in average costs for the two case study types, a relationship between density and the cost of providing local/community level infrastructure is difficult to discern when the case studies are looked at individually. In particular, this scatter plot shows a tremendous variation in costs for the urbanizing areas with lower densities. Perhaps a clearer relationship would emerge with additional case studies



and more information on the factors that affect costs. A summary of the local/community level costs for each case study is provided in Appendix 1.

Judging from this limited number of studies, there would appear to be additional factors that influence costs per EDU. These factors may include level of service or the provision of amenities such as parks and sidewalks and other facilities such as schools. Such amenities and facilities are often already available in established urban areas, thereby reducing incremental local/community infrastructure costs for redevelopment projects.

Components of local/community infrastructure costs (per EDU)



* "Other" costs may include structured parking, land write-downs, schools, etc

Who pays, and when?

In urbanizing areas, almost all the necessary capital facilities to initiate a project are located within the project area and can be capitalized into the final product, with the cost recovered upon sale of lots or homes. Consequently, the initial infrastructure costs for urbanizing areas are often largely private. The public costs for developing and maintaining urbanizing areas are typically paid later out of a combination of revenue sources or are paid in terms of social costs such as traffic congestion.

Redevelopment projects in urban areas, by contrast, must rebuild existing facilities, the price of which is already capitalized into the land value. This circumstance necessitates that a public

agency provide the capital for the project to commence. The result is that such projects are often criticized on the grounds that there is a large public subsidy. However, when all public facility costs, including regional costs (described below), are added up, urban redevelopments are less expensive per EDU than are developments in urbanizing areas.

Regional infrastructure costs

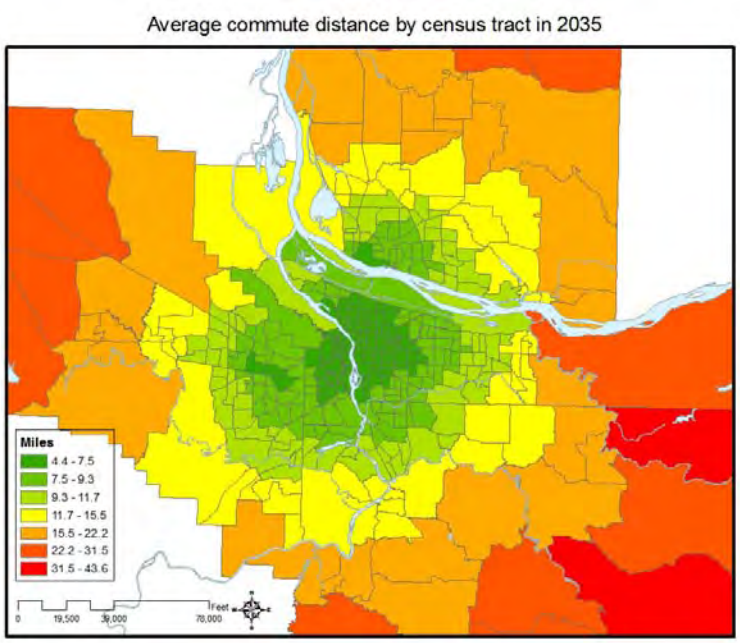
A second type of infrastructure cost, regional cost, is more difficult to account for with case studies and, for this reason, usually does not get included in concept plans. Regional infrastructure facilities include highways, light rail, bridges, and marine and air terminals. Unlike local and community level facilities, it is difficult to link any particular development with the need for a regional facility. Instead, the need for regional facilities is cumulative in nature and all residents end up paying for them indirectly. Yet, regional costs are substantial and are greatly affected by urban form.

A good proxy for gauging regional infrastructure consumption is household commute distance. In essence, households that have longer commutes consume more regional infrastructure. Jonathan Miller[2], a long-time author of the Urban Land Institute's publication, Emerging Trends in Real Estate, recommends that regions develop the ability to conduct full cost analysis and pricing of infrastructure. Miller's report posits that if the full costs of infrastructure were capitalized into real estate prices, location choices would adjust, favoring central, transit-oriented locations. This phenomenon is likely to be amplified with increases in fuel prices. Considering these full costs will be an important consideration in future growth management decisions and investments in public facilities. Thus, the case studies that follow include regional cost estimates, using commute distance as a proxy.

Using MetroScope, an econometric model that forecasts future household and employer location choices (at the census tract level), average commute distances were forecasted for each census tract in the region (for the year 2035).[3]

[2] Miller, J. (2007). *Infrastructure 2007*. Urban Land Institute. Accessed at http://www.uli.org/AM/Template.cfm?Section=Home&CONTENTFILEID=27598&TEMPLATE=/CM/ContentDisplay.cfm on June 23, 2008.

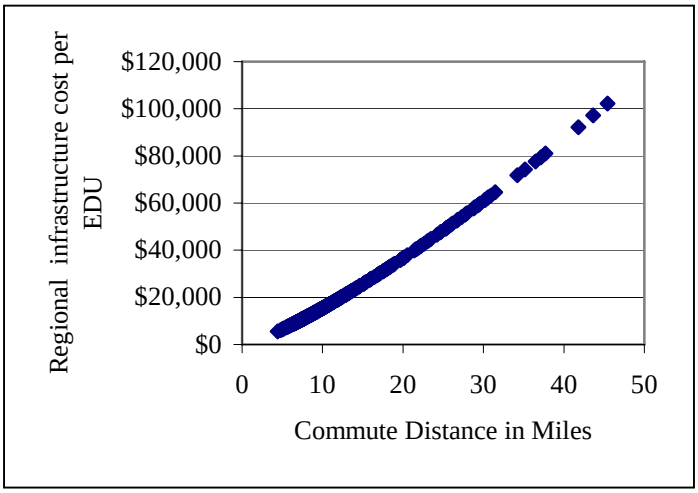
[3] Because MetroScope cannot predict future policy changes made by cities or actions taken by firms, forecasted commute distances are not a foregone conclusion. Policy changes can serve to shorten or lengthen forecasted commutes. Generally, however, MetroScope scenarios can give reliable estimates of the likely outcomes of a given set of policy choices.



Even in the year 2035, today's existing urbanized areas are likely to be home to most of the region's jobs. Generally, commute distances increase in concentric rings around the region's urban core.

Increased commute distances beget increased regional infrastructure costs:

The above commute distances were used to estimate the average per-household regional infrastructure costs for each census tract. Costs are based on national data sources.



Forecasted (year 2035) commute distances for case study areas range from:

5 miles in urban areas (minimum)

To

17 miles in newly urbanizing areas (maximum)

Compared to

12.32 miles average for the 7-county region

Regional infrastructure costs per EDU for case study areas range from:

$5,000 in urban areas (minimum)

To

$41,000 in newly urbanizing areas (maximum)

Compared to

$30,000 average for the 7-county region

Shorter work commutes save private money too:

5 mile commute:
= 10 miles per day (round trip)
= 2,600 miles per year
÷ 27 miles per gallon
= 96 gallons per year
X $4.00 per gallon
= $384 per year in gasoline

17 mile commute:
= 34 miles per day (round trip)
= 8,840 miles per year
÷ 27 miles per gallon
= 327 gallons per year
X $4.00 per gallon
= $1,308 per year in gasoline

The urban household saves over $900 in gasoline per year

…and that's just the commute!

Opportunities ahead

Focusing infrastructure investments in existing urban areas will be an important means of guiding growth in accordance with the wishes of the region's residents – in existing centers and corridors, rather than on rural land. A 2004 national poll[4] indicates that nearly nine in ten Americans (86%) want their states to fund improvements in existing communities over incentives for new development in the countryside.

[4] Belden Russonello & Stewart. (2004) *2004 National Community Preference Survey: conducted for Smart Growth America and National Association of Realtors®*. Accessed on June 27, 2008 at http://www.smartgrowthamerica.org/documents/NAR-SGASurvey.pdf

The need to prioritize funding is supported by recent changes in housing preferences. In recent years, residents are placing higher values on central locations, shorter commutes and walkable access to urban amenities. Leinberger (2008)[5] notes that, unlike twenty years ago, per square foot, urban residences command a 40 to 200 percent premium over traditional suburban neighborhoods in cities as diverse as New York City, Portland, Seattle, and Washington D.C.

These preference shifts can be attributed, in part, to demographic changes. According to Nelson (2006)[6], the demographic shifts that we have seen over the last 50 years will continue: more households without children and more single-person households, often seniors. These demographic changes point to a responsibility to build for an aging population. To provide for that population, jurisdictions in the region can focus on strengthening existing communities that are pedestrian friendly and well served by transit. Fortunately, these very design characteristics will also be a primary means of minimizing future infrastructure costs.

Finally, the prioritization of public investments in infrastructure in centers and corridors is a critical strategy for reducing the region's energy consumption and its contributions to global warming. Ewing et al (2007)[7] document the connection between urban form and travel behavior and point to studies that have found that residents of compact urban areas with interconnected streets and mixed uses drive about 1/3 less than residents of lower density, residential communities. Investments in infrastructure that supports centers and corridors will be an essential means of creating more housing choices. This strategy is also a primary means to reduce future infrastructure costs.

Limitations

- Concept plans use different methodologies, include or exclude different types of facilities, and have varying levels of detail. These differences make comparisons somewhat difficult and point to a need for standardization.
- The small sample size of case studies included herein places limitations on drawing firm conclusions.
- However, with these caveats, these case studies do point to local trends that echo the literature on the topic of comparative infrastructure costs. Generally, higher-density developments in central locations have lower infrastructure costs (local/community and regional) than do lower-density developments on the urban fringe.

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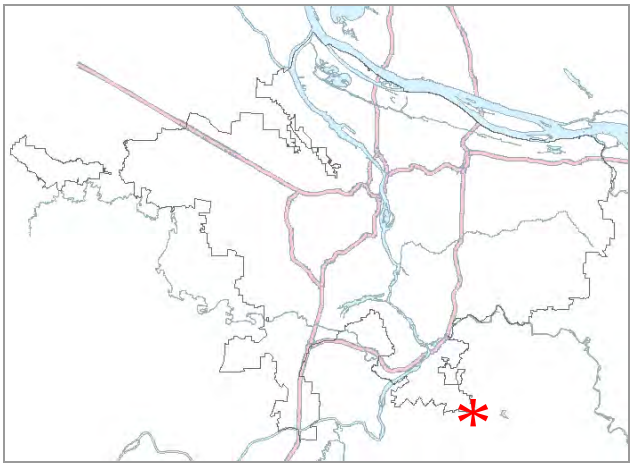
[5] Leinberger, C. (March, 2008) *The next slum?* The Atlantic Monthly. Accessed on June 27, 2008 at http://www.theatlantic.com/doc/200803/subprime

[6] Nelson, A.C. (2006) *Leadership in a new era*. Journal of the American Planning Association. 72(4). 393-407.

[7] Ewing, R., K. Bartholomew, S. Winkelman, J. Walters, D. Chen (2007) *Growing Cooler: the evidence on urban development and climate change*. Urban Land Institute. Accessed on June 27, 2008 at http://www.uli.org/AM/Template.cfm?Section=Home&CONTENTFILEID=32909&TEMPLATE=/CM/ContentDisplay.cfm

Beaver Creek concept area– urbanizing area

Oregon City, OR



Total acres:	453
Gross buildable acres:	292
Net new population:	3,624
Net new jobs:	3,652
Total EDUs:	2,180
Avg. EDUs per gross buildable acre:	7.47
Avg. commute miles in the year 2035:	17.09

Estimated capital costs (2008$, including regional costs)

Per EDU:	$ 94,000
Total:	$205,297,000

Proposed Use

The plan envisions a diverse mix of uses (an employment campus north of Loder Road, mixed use districts along Beavercreek Road, and two mixed use neighborhoods). Transit-oriented land uses are planned to increase the feasibility of transit service in the future. The concept area is adjacent to Clackamas Community College, providing workforce-training opportunities for future area residents and employees.

Existing Conditions

Transportation
The site is adjacent to Beavercreek Road and just south of the intersection between Highway 215 and 205. Traffic on Highway 213 is congested during peak rush hours. Beaver Creek road is a major local connector. There is very limited bike and pedestrian infrastructure.

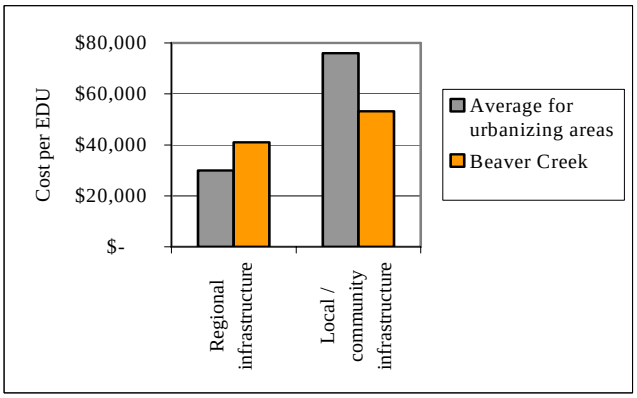
Water
Water is sourced from the Lower Clackamas River. The water system is mostly undeveloped and will need to be expanded to meet any future demand.

Wastewater
Wastewater systems are largely undeveloped. There is a 12-inch sewer trunk that runs the length of Beaver Creek road, which is insufficient for expanded use.

Stormwater
The concept plan area drains into two basins, Abernathy Creek and Caufield Creek, both of which drain into the Willamette River south of downtown Oregon City. Storm water systems are largely undeveloped.

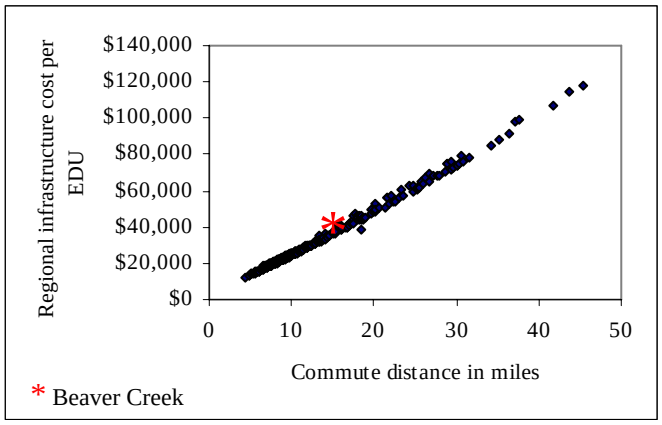
Parks, plazas, public places
There are no existing public parks or open spaces within the plan area.

How do Beaver Creek's infrastructure costs compare to the regional average?



Beaver Creek's regional infrastructure costs (highways, bridges, transit, etc) are significantly higher ($11,000 more per EDU) than average for the 7-county region. Its local/community infrastructure costs are about $22,000 less per EDU than the regional average for urbanizing areas. Improvements to highway 213 are not included in the local/community costs.

What are the factors that influence infrastructure costs in the Beaver Creek area?



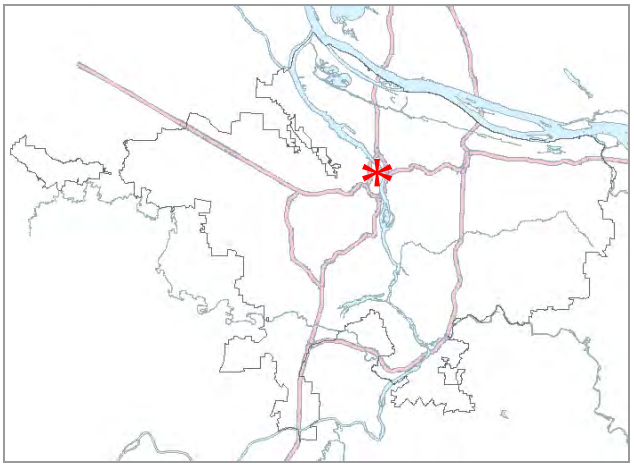
Commute distance: Longer travel distances translate into more regional infrastructure needed per household. Residents of the census tract that comprises the Beaver Creek area are forecasted to have an average commute distance of 17.09 miles in the year 2035, significantly higher than the 7-county average (12.32 miles).

Topography: The Beaver Creek area is flat with one creek.

Parks: No parks are included in the concept plan (and its cost estimates).

Brewery Blocks – urban area

Portland, OR



Total acres:	4.6
Gross buildable acres:	4.6
Net new population:	282
Net new jobs:	2,440
Total EDUs:	601
Avg. EDUs per gross buildable acre:	130.65
Avg. commute miles in the year 2035:	4.99

Estimated capital costs (2008$, including regional costs)

Per EDU:	$ 73,000
Total:	$43,652,000

Proposed Use (completed project)

The Brewery Blocks development is a mix of high-density residential and commercial.

Existing Conditions

Transportation

An urban street grid exists. The streetcar system was developed as a part of the larger River District redevelopment.

Water

Sufficient water facilities already exist within the area.

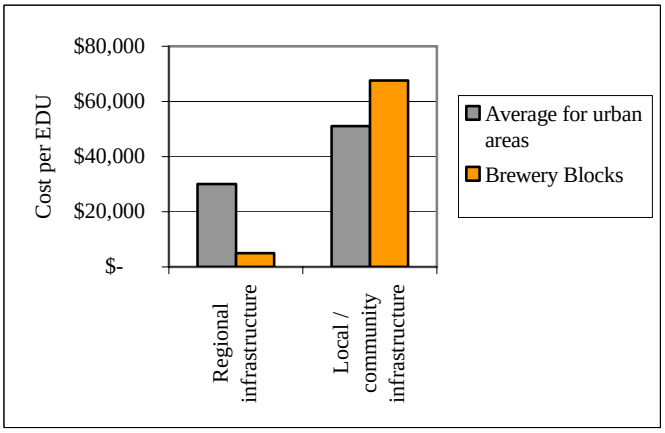
Wastewater

Sufficient wastewater facilities already exist within the area.

Stormwater
Sufficient stormwater facilities already exist within the area.

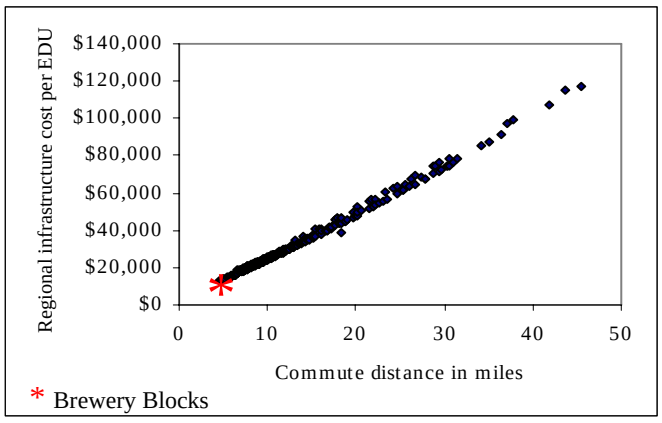
Parks, plazas, public places
Though there are no public parks within the Brewery Blocks, the development is able to take advantage of an existing park system that includes the North and South Park Blocks, Jamison Square, and Tanner Springs.

How do the Brewery Block's infrastructure costs compare to the regional average?



The Brewery Block's regional infrastructure costs (highways, bridges, transit, etc) are considerably lower ($25,00 less per EDU) than average for the 7-county region. Its local/community infrastructure costs are about $17,000 more per EDU than the regional average for urban areas.

What are the factors that influence infrastructure costs for the Brewery Blocks?



Commute distance: Longer travel distances translate into more regional infrastructure needed per household. Residents of the census tracts that include the Brewery Blocks are forecasted to have an average commute distance of 4.99 miles in the year 2035, considerably shorter than the 7-county average of 12.32 miles.

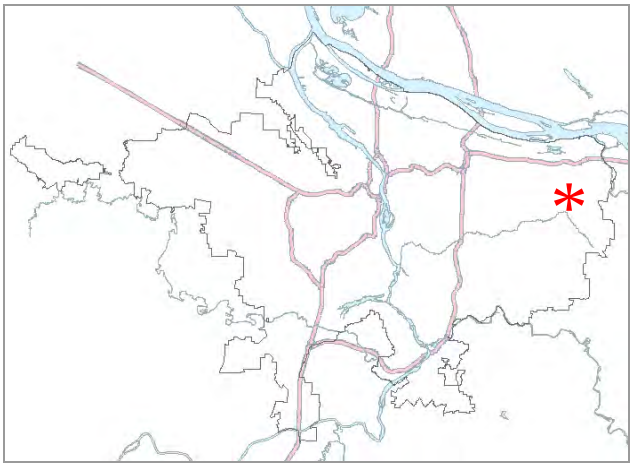
Topography: The Brewery Blocks are a redevelopment project. The entire parcel is buildable.

Existing facilities: The Brewery Blocks are able to take advantage of existing facilities, including transit, sewer, water, parks, and streets.

Structured parking and other improvements: The infrastructure costs associated with the Brewery Blocks redevelopment were accrued by the construction of structured parking, provision of street furnishings, and sidewalk improvements.

Civic Neighborhood– urban area

Gresham, OR



Total acres:	5
Gross buildable acres:	5
Net new population:	1,589
Net new jobs:	2,433
Total EDUs:	1,122
Avg. EDUs per gross buildable acre:	224.4
Avg. commute miles in the year 2035:	11.13

Estimated capital costs (2008$, including regional costs)

Per EDU:	$ 37,000
Total:	$41,824,000

Proposed Use

The Civic Neighborhood area is a mix of residential, retail, and office uses that is served by transit.

Existing Conditions

Transportation

The site is bisected by a light rail line and is served by four-lane major arterials and one local connector: Burnside Road, Division St., Eastman Parkway and the two-lane Wallula Road. Division St. was recently improved.

Water

The site is well integrated into Gresham's water infrastructure.

Wastewater

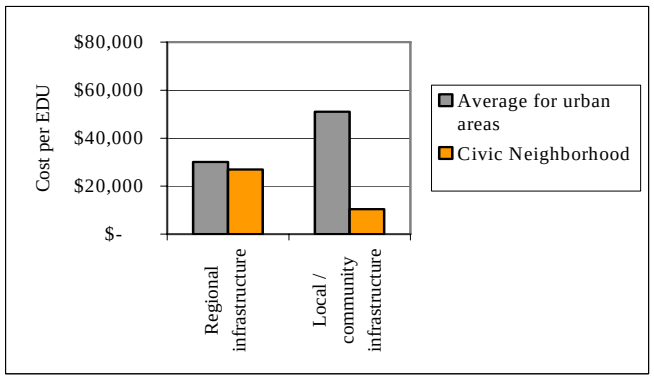
The site is well integrated into Gresham's sewer infrastructure.

Stormwater

Stormwater is handled by existing City of Gresham infrastructure.

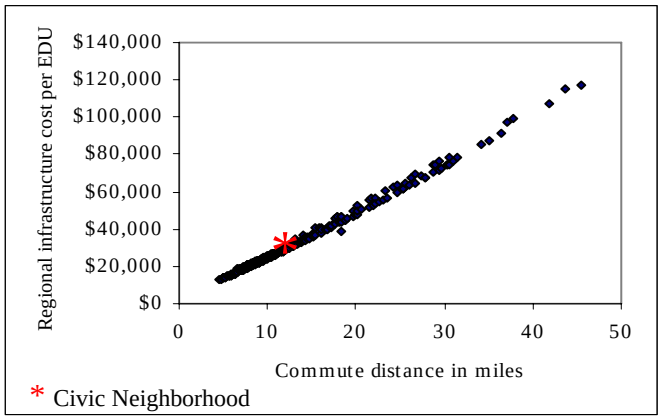
Parks, plazas, public places
Though there are no parks within the Civic Neighborhood area, it is being developed with a pedestrian orientation.

How do Civic Neighborhood's infrastructure costs compare to the regional average?



Civic Neighborhood's regional infrastructure costs (highways, bridges, transit, etc) are lower than average for the 7-county region. Its local/community infrastructure costs are also considerably lower (about $41,000 less per EDU) than the regional average for urban areas.

What are the factors that influence infrastructure costs in Civic Neighborhood?



Commute distance: Longer travel distances translate into more regional infrastructure needed per household. Residents of the census tract that includes Civic Neighborhood are forecasted to have an average commute distance of 11.13 miles in the year 2035, shorter than the 7-county average of 12.32 miles.

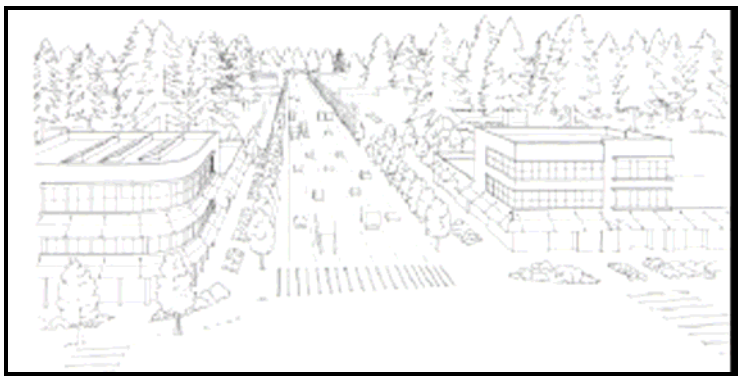
Topography: Civic Neighborhood is a redevelopment project. The entire parcel is buildable.

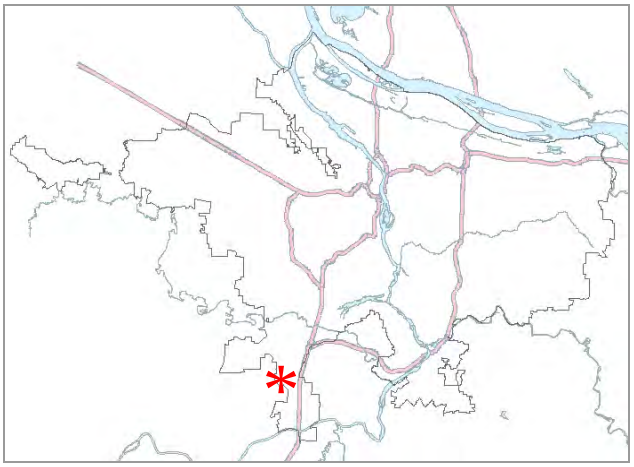
Existing facilities: Civic Neighborhood is able to take advantage of nearby facilities, including light rail.

Transit and street improvements: The bulk of Civic Neighborhood's costs are attributable to transit ($6,194,000) and transportation ($3,413,000) improvements.

Coffee Creek (1) master plan area– urbanizing area

Wilsonville, OR





Total acres:	216
Gross buildable acres:	196
Net new population:	(25)
Net new jobs:	1,474
Total EDUs:	295
Avg. EDUs per gross buildable acre:	1.51
Avg. commute miles in the year 2035:	12.82

Estimated capital costs (2008$, including regional costs)

Per EDU:	$ 59,000
Total:	$16,932,000

Proposed Use

Coffee Creek is being planned as a Regionally Significant Industrial Area.

Existing Conditions

Transportation

The area is within 1/2 mile of the Wilsonville I-5 North Interchange, with vehicle access via SW Lower Boones Ferry Road, Day Road and SW Grahams Ferry Road. There are few existing bicycle and pedestrian facilities and no transit service within the Coffee Creek Master Plan area. The closest transit stop is located nearby with a SMART bus line that provides stops along 95th Avenue and Commerce Circle (within ½ mile of the Master Plan area).

Water

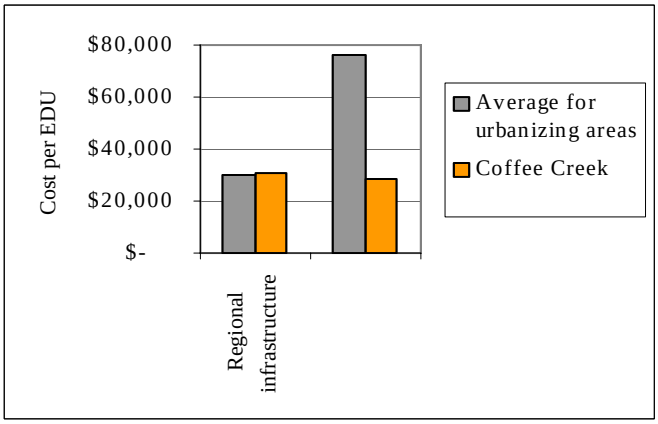
Water main transmission supply lines exist through the central and southern portions of the Master Plan area. An additional reservoir would be needed at some point to provide adequate peak capacity prior to build out of the Master Plan area.

Wastewater
The Coffee Creek Master Plan Area is located in the City of Wilsonville's United Disposal Interceptor sewer trunk line basin subarea. Sewer Main trunk links are located within the central portion of the Coffee Creek Master Plan area. Site survey work will need to occur and the City will need to update its sewer system model to determine on and offsite sewer system improvements and trunk line size/location, pump station requirements, and cost.

Stormwater
The Coffee Creek Master Plan area is located within the Coffee Lake Creek Basin. The north tributary to Basalt Creek is located south of Day Road. Basalt Creek drains into Coffee Creek Lake and extends north of Day Road into the City of Tualatin UGB. The master plan area is relatively flat with topography that varies 1-5 feet in elevation, and gently slopes from north to south. The City requires each new development within the Coffee Creek Industrial Master Plan area to detain and treat run off.

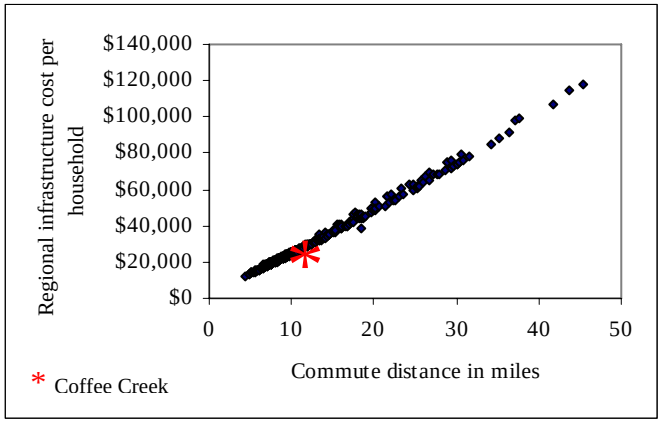
Parks, plazas, public places
There are no existing park facilities within the Master Plan area.

How do Coffee Creek's infrastructure costs compare to the regional average?



While Coffee Creek's regional infrastructure costs (highways, bridges, transit, etc) are about average for the 7-county region, its local/community infrastructure costs are about $47,000 per EDU lower than the regional average for urbanizing areas.

What are the factors that influence infrastructure costs in Coffee Creek?



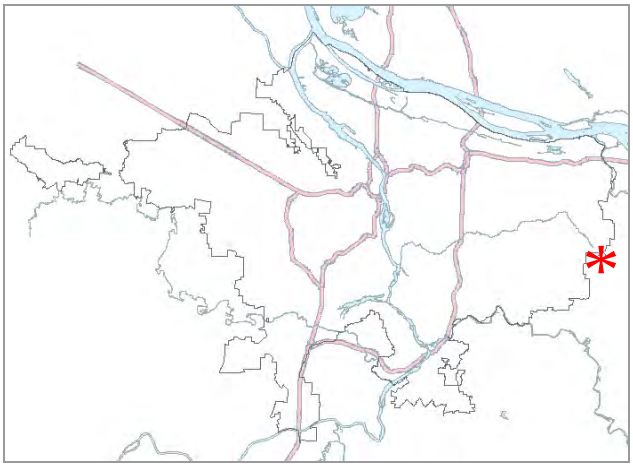
Commute distance: Longer travel distances translate into more regional infrastructure needed per household. Residents of the census tract that includes Coffee Creek are forecasted to have an average commute distance of 12.82 miles in the year 2035. This distance is slightly higher than the average for the 7-county region (12.32 miles).

Topography / natural features: The Coffee Creek area is flat, making the area relatively less expensive to serve.

Transportation: Over half of Coffee Creek's local / community level infrastructure costs ($4,518,000) are attributable to transportation improvements.

Damascus Concept Plan– urbanizing area

Damascus and Happy Valley, OR



Total acres:	12,200
Gross buildable acres:	5,739
Net new population:	54,836
Net new jobs:	45,000
Total EDUs:	30,934
Avg. EDUs per gross buildable acre:	5.39
Avg. commute miles in the year 2035:	13.5

Estimated capital costs (2008$, including regional costs)

Per EDU:	$ 134,000
Total:	$4,147,851,000

Proposed Use

The Damascus area is being planned as a new community that will include a variety of housing densities, mixed-use areas, and employment zones.

Existing Conditions

Transportation

The area is served by a transportation system that was designed for farm-to-market travel purposes. The street system is primarily made up of narrow, two-lane roads that carry urban levels of traffic. Highway 212, 172nd Avenue, Foster Road, 242nd Avenue, 222nd Avenue and Sunnyside Road are the primary routes that connect the communities of Damascus and Boring to other parts of the region. Most roads perform adequately during rush hour, except for segments of Highway 212, Highway 224 and Sunnyside Road. Significant congestion and safety issues exist in the current Damascus city center (where Sunnyside, Highway 212, and Foster Road converge). Streets do not have bicycle and pedestrian facilities, except for sidewalks along limited sections of Highway 212 in the Damascus and Boring rural centers. Transit service is limited to two bus lines; a park-and-ride lot is located in Carver. The majority of the study area is located outside of the TriMet service boundary.

Water

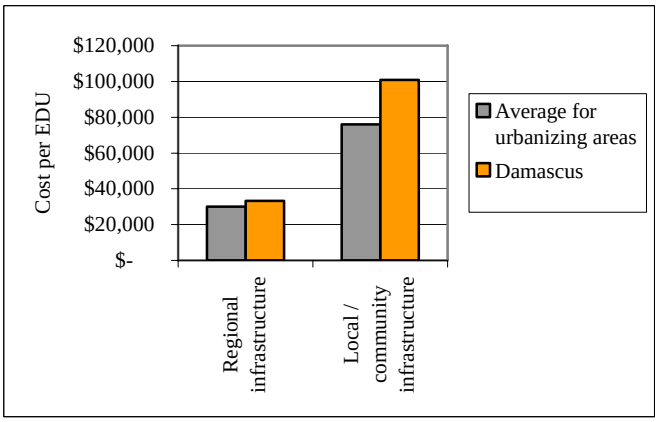
Two water districts, the Boring Water District and the Sunrise Water Authority, serve portions of the study area. Substantial portions of the area have no public water service.

Wastewater
Most of the primary study area has no sanitary sewer service. Only the far eastern edge of Damascus (Rock Creek corridor) has sanitary service. There are no sanitary sewage treatment facilities within the primary study area. There is a small, publicly-owned sanitary sewage treatment facility in the Boring rural center, but it is not available for additional hook-ups.

Stormwater
There is no existing public stormwater service in the study area.

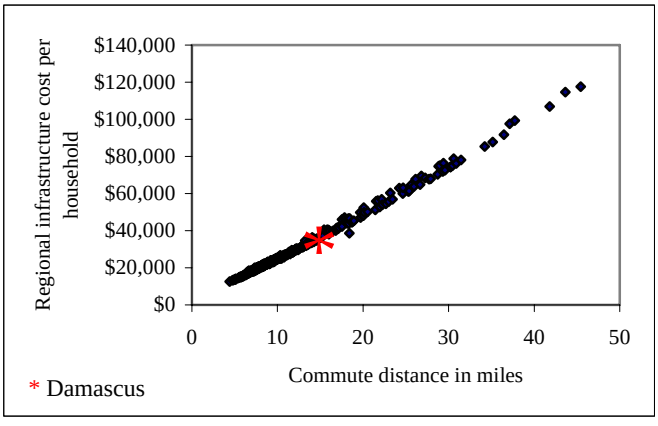
Parks, plazas, public places
North Clackamas County contains a wide range of regional, state, county, community parks and recreation facilities. Metro owns a parcel in the Damascus Buttes area. Clackamas County, the City of Portland, and the state own the right of way for the Cazadero and Springwater trails, which are currently undeveloped. Clackamas County provides parks near the study area, including Barton Park, a 116-acre county park located along the Clackamas River.

How do Damascus' infrastructure costs compare to the regional average?



Damascus' regional infrastructure costs (highways, bridges, transit, etc) are slightly higher than average for the 7-county region. Its local/community infrastructure costs are about $26,000 per EDU higher than the regional average for urbanizing areas.

What are the factors that influence infrastructure costs in Damascus?



Commute distance: Longer travel distances translate into more regional infrastructure needed per household. Residents of the census tracts that comprise the Damascus area are forecasted to have an average commute distance of 13.5 miles in the year 2035. This distance is higher than the average for the 7-county region (12.32 miles).

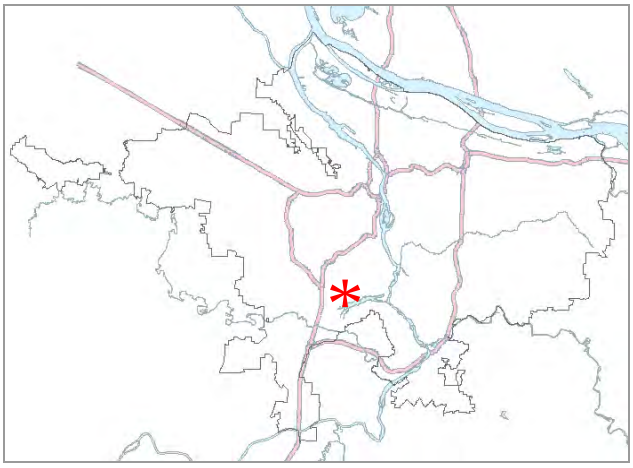
Topography / natural features: Buttes and transition areas (15-25% slopes) cover large portions of the Damascus area. Riparian areas are also found throughout the concept plan area. These features reduce average densities, making the area more expensive to serve. The topography will split the wastewater system to the east and to the west, resulting in increased cost of collection and conveyance. Existing treatment facilities are located some distance from the urban centers.

Transportation: $1,731,623,000 (2008$) of the local / community level infrastructure costs for Damascus are for transportation improvements. Regional transportation facilities (Sunrise Hwy) have been deducted from the costs.

Lake Oswego Village Center– urban area

Lake Oswego, OR

Photo: Todd Chase



Total acres:	2.39
Gross buildable acres:	2.39
Net new population:	0
Net new jobs:	207
Total EDUs:	41
Avg. EDUs per gross buildable acre:	17.15
Avg. commute miles in the year 2035:	8.83

Estimated capital costs (2008$, including regional costs)

Per EDU:	$ 147,000
Total:	$6,023,000

Proposed Use (project completed)

Redevelopment as a mixed-use (restaurant, retail, office) area with structured parking.

Existing Conditions

Transportation
An existing street network serves the area.

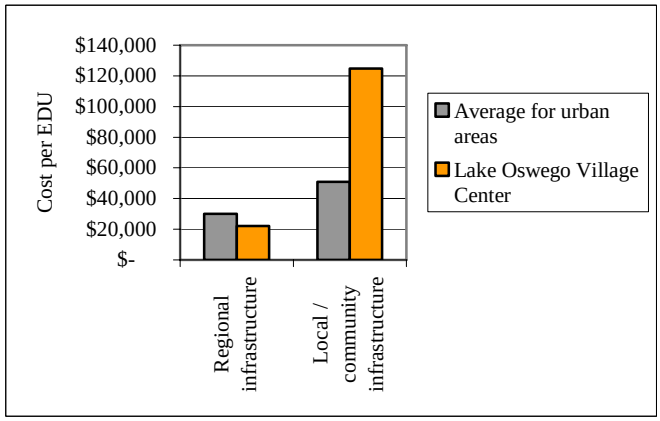
Water
Adequate water supply exists for the plan area.

Wastewater
Adequate sewer capacity exists in the plan area.

Stormwater
Adequate capacity to handle stormwater exists in the plan area.

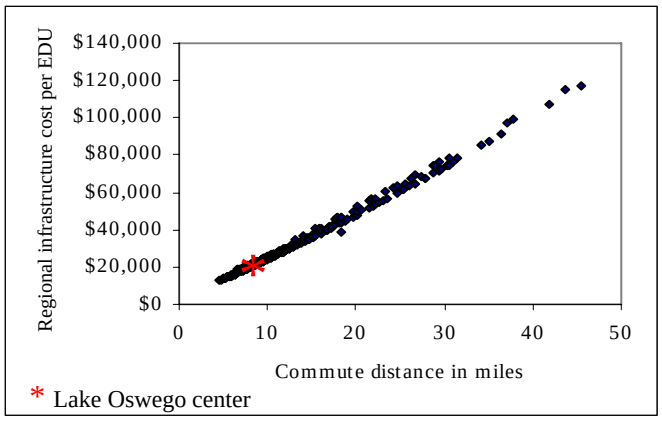
Parks, plazas, public places
Millennium Plaza Park is in the vicinity of the project area.

How do Lake Oswego Village Center's infrastructure costs compare to the regional average?



Lake Oswego center's regional infrastructure costs (highways, bridges, transit, etc) are lower than average for the 7-county region. Its local/community infrastructure costs are about $74,000 more per EDU than the regional average for urban areas.

What are the factors that influence infrastructure costs in Lake Oswego Village Center?



Commute distance: Longer travel distances translate into more regional infrastructure needed per household. Residents of the census tracts that include Lake Oswego village center are forecasted to have an average commute distance of about 8.83 miles in the year 2035, lower than the 7-county average of 12.32 miles.

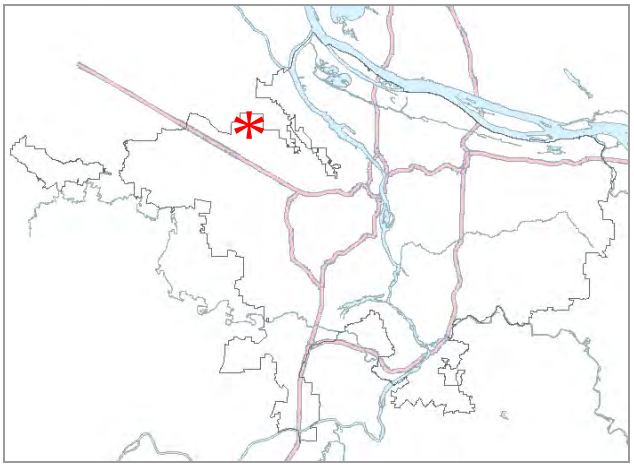
Topography: Lake Oswego center is a redevelopment project. The entire parcel is buildable.

Existing facilities: The project is able to take advantage of existing water, stormwater, and wastewater facilities.

Structured parking: Most of the local / community level infrastructure costs are attributable to the construction of a structured parking garage.

North Bethany concept area– urbanizing area

Washington County, OR



Total acres:	800
Gross buildable acres:	680
Net new population:	12,500
Net new jobs:	276
Total EDUs:	5,055
Avg. EDUs per gross buildable acre:	7.43
Avg. commute miles in the year 2035:	11.92

Estimated capital costs (2008$, including regional costs)

Per EDU:	$ 105,000
Total:	$530,299,000

Proposed Use

The North Bethany area is planned as a primarily residential community with some employment uses. The employment uses are commercial and institutional and are ancillary to the residential uses.

Existing Conditions

Transportation

Major transportation facilities in the vicinity of the plan area include Springville Rd., Kaiser, 185th, and Germantown Rd. There is bus service on Springville, 185th, and Kaiser.

Water

The current source of water in the concept area is private wells. Once fully developed, the area will be served by Tualatin Valley Water District.

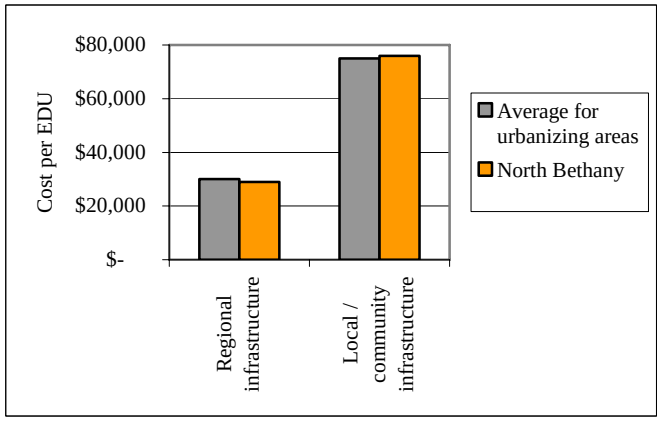
Wastewater

Wastewater is currently handled on-site through the use of septic systems.

Stormwater
Storm water runoff from the project site follows the natural topography, and is generally managed by several stream channels and the occasional culvert. The western end of the project site drains directly to Rock Creek. The remaining project site is the headwaters of small drainages that are tributaries to Abbey Creek and Bethany Creek.

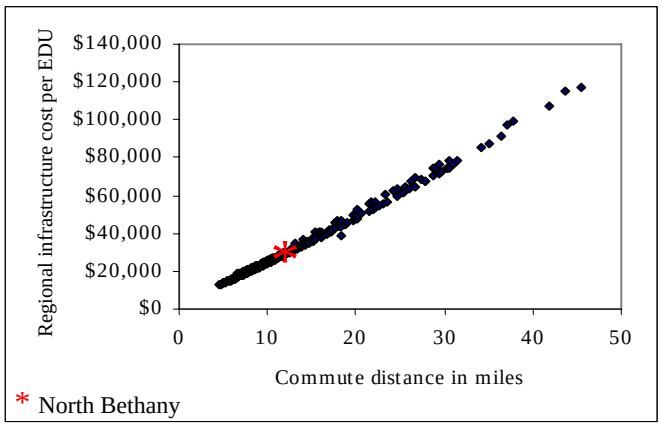
Parks, plazas, public places
Though there are a number of open spaces, trails, and parks in the vicinity of the plan area, there are no such areas that currently exist within the concept plan area.

How do North Bethany's infrastructure costs compare to the regional average?



North Bethany's regional infrastructure costs (highways, bridges, transit, etc) are about average for the 7-county region. Its local/community infrastructure costs per EDU are also about average for urbanizing areas.

What are the factors that influence infrastructure costs in the North Bethany area?



Commute distance: Longer travel distances translate into more regional infrastructure needed per household. Residents of the census tract that comprises the North Bethany are forecasted to have an average commute distance of 11.92 miles in the year 2035, slightly lower than the 7-county average (12.32 miles).

Topography: The North Bethany area is relatively flat with the exception of the northern portion, which is sloped. A number of riparian areas are in the area.

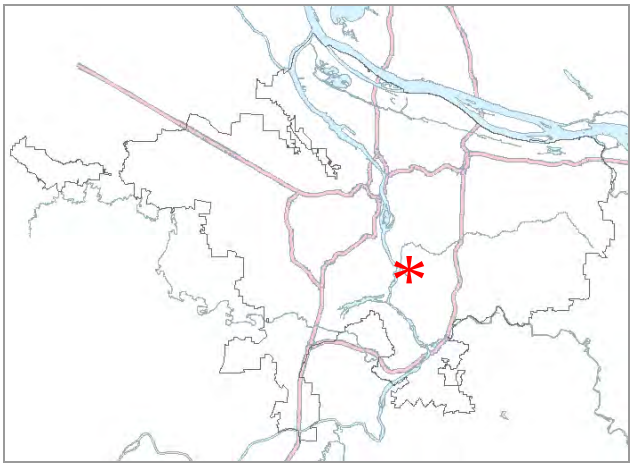
Amenities: The North Bethany area has been termed a "Community of Distinction" and the plan entails a number of amenities including significant amounts of parkland ($38,800,000). These parks would match Tualatin Valley Park and Recreation District's level of service standards.

Schools: North Bethany's local / community level infrastructure costs include the construction of 3 schools ($90 -$111 million). These costs include land and construction.

Off-site improvements – The costs include off-site improvements such as the Bethany Blvd. / US 26 overpass have been deducted from N. Bethany's total local/community costs since they are regional facilities.

North Main Village– urban area

Milwaukie, OR



Total acres:	1.9
Gross buildable acres:	1.9
Net new population:	228
Net new jobs:	40
Total EDUs:	105
Avg. EDUs per gross buildable acre:	55.26
Avg. commute miles in the year 2035:	7.99

Estimated capital costs (2008$, including regional costs)

Per EDU:	$ 28,000
Total:	$2,958,000

Proposed Use (completed)

The North Main Village project is located in downtown Milwaukie, OR and consists of thirteen three-story townhomes, each with a garage and ground floor commercial element with two stories of living space above. The project also includes twenty condominium units.

Existing Conditions

Transportation

North Main Village's location in an already urbanized setting affords it access to existing transportation facilities including the Milwaukie Transit Center. However, transportation improvements are necessary to serve the area's growth.

Water

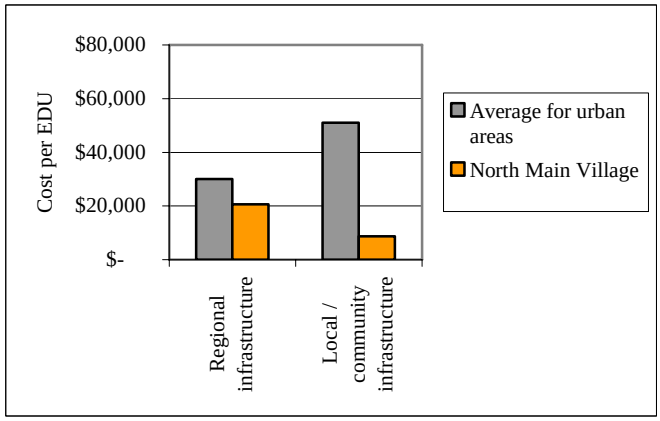
Existing water facilities are sufficient to serve North Main Village.

Wastewater
Existing wastewater facilities are sufficient to serve North Main Village.

Stormwater
Existing stormwater facilities are sufficient to serve North Main Village.

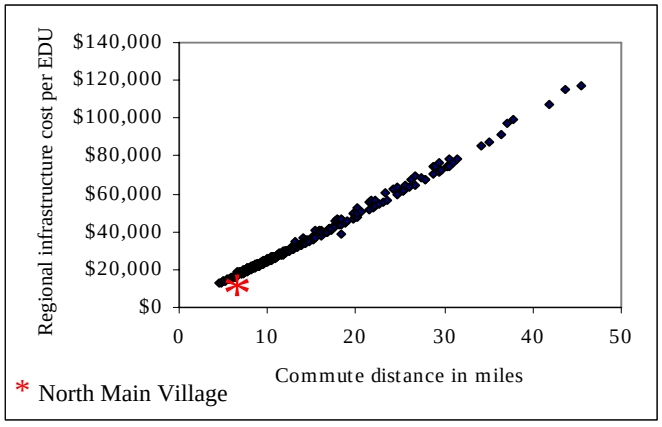
Parks, plazas, public places
North Main Village has no on-site parks, but a number of parks are nearby: Milwaukie Riverfront Park, Scott Park, and Dogwood Park.

How do North Main Village's infrastructure costs compare to the regional average?



North Main Village's regional infrastructure costs (highways, bridges, transit, etc) are about $9,000 per EDU lower than average for the 7-county region. Its local/community infrastructure costs are also about $42,000 per EDU lower than the regional average for urban areas.

What are the factors that influence infrastructure costs in North Main Village?



Commute distance: Longer travel distances translate into more regional infrastructure needed per household. Residents of the census tract that includes North Main Village are forecasted to have an average commute distance of 7.99 miles in the year 2035, considerably lower than the 7-county average of 12.32 miles.

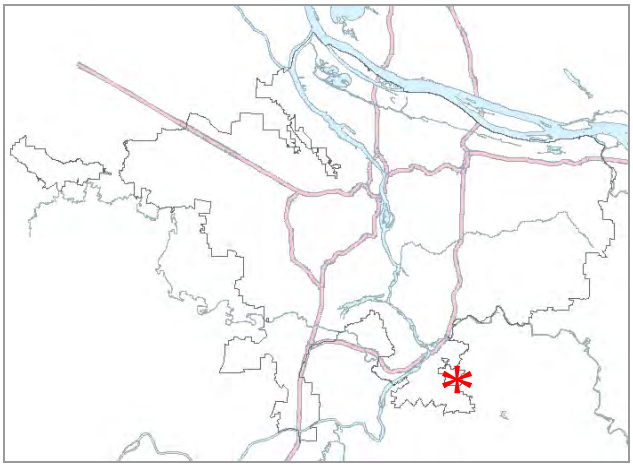
Topography: North Main Village is a redevelopment project. The entire parcel is buildable.

Transportation: The bulk of the local / community costs associated with North main village are transportation-related ($811,000).

Land write-downs: About $108,000 is attributable to land write-downs (appears in "other" costs in Appendix 1).

Park Place concept area – urbanizing area

Oregon City, OR



Total acres:	480
Gross buildable acres:	266
Net new population:	3,645
Net new jobs:	0
Total EDUs:	1,458
Avg. EDUs per gross buildable acre:	5.5
Avg. commute miles in the year 2035:	12.27

Estimated capital costs (2008$, including regional costs)

Per EDU:	$ 79,000
Total:	$115,222,000

Proposed Use

Park Place is being planned as a residential community. A developer has recently been consolidating ownership of over half of the plan area. It is hoped that that consolidation will simplify the provision of public facilities.

Existing Conditions

Transportation

Isolated portions of the roadway system experience congestion and delays. The Highway 213 corridor is approaching capacity, particularly on the segment between Redland Road and the I-205 interchange. The public transit system provides limited service to this low-density, suburban location. The bicycle and pedestrian systems are incomplete, but plans exist to make incremental improvements.

Water

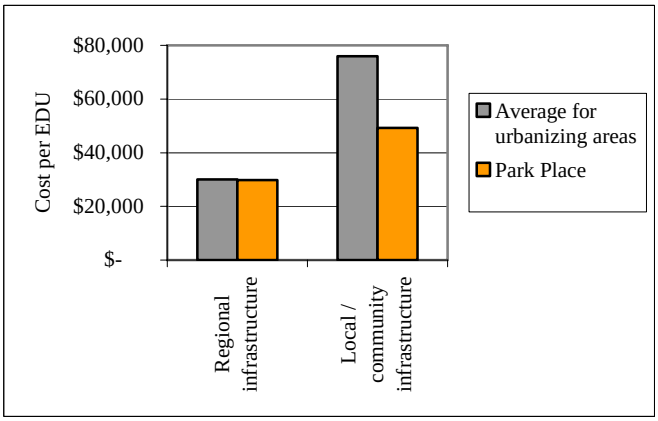
Water conveyance facilities are limited within the study area. The Oregon City water system has sufficient water supply to serve the study area.

Wastewater
Limited wastewater collection exists within the study area. However, most properties are on septic systems. Two-trunk interceptor lines, owned by the Tri-City Sewer District, pass through the study area. These two interceptors connect with the Highway 213/ Newell interceptor, which conveys their flows to the wastewater treatment plant. These interceptors and the treatment plant have capacity to serve future development within the study area.

Stormwater
Stormwater is currently managed with roadside ditches and natural drainage channels. No other major stormwater infrastructure facilities exist onsite. All stormwater within the study area is conveyed to Abernethy Creek, Newell Creek, and Livesay Creek. Abernethy Creek and Newell Creek are subject to occasional flooding.

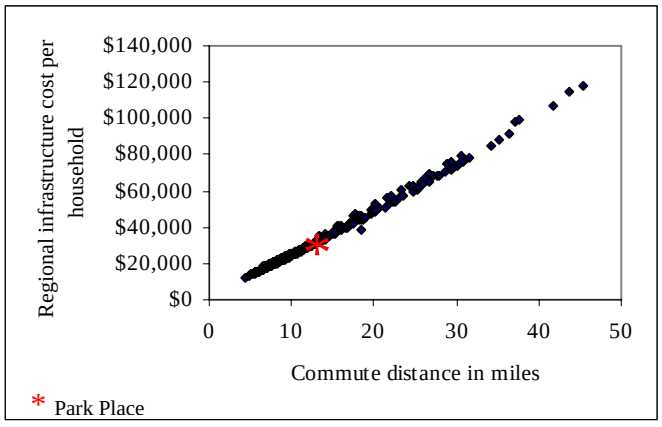
Parks, plazas, public places
Clackamas County and Metro own open spaces within the concept plan area.

How do Park Place's infrastructure costs compare to the regional average?



Park Place's regional infrastructure costs (highways, bridges, transit, etc) are about average for the 7-county region. Its local/community infrastructure costs are about $26,000 less per EDU than the regional average for urbanizing areas.

What are the factors that influence infrastructure costs in Park Place?



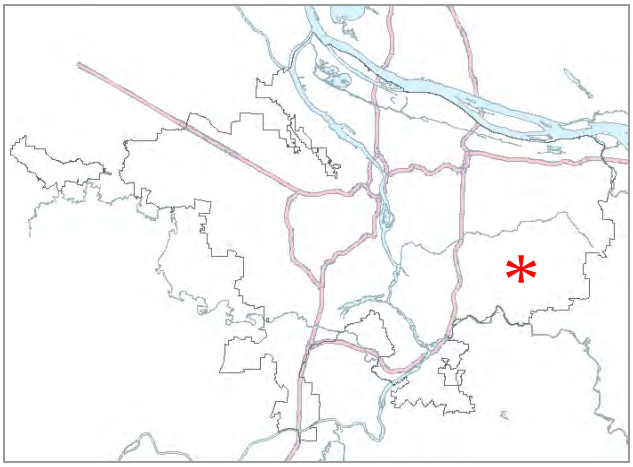
Commute distance: Longer travel distances translate into more regional infrastructure needed per household. Park Place residents are forecasted to have an average commute distance of 12.27 miles in the year 2035. This distance is about average for the 7-county region (12.32 miles).

Topography / natural features: Large portions of the Park Place concept area are not developable because of constraints such as steep slopes and wetland areas.

Transportation: Park Place's transportation costs amount to $58,400,000 and make up the bulk of the area's local / community level infrastructure costs.

Pleasant Valley concept area– urbanizing area

Gresham, OR



Total acres:	1,530
Gross buildable acres:	1,071
Net new population:	12,315
Net new jobs:	4,935
Total EDUs:	5,913
Avg. EDUs per gross buildable acre:	5.5
Avg. commute miles in the year 2035:	10.8

Estimated capital costs (2008$, including regional costs)

Per EDU:	$ 77,000
Total:	$457,811,000

Proposed Use

The Pleasant Valley area is planned as a new community with a town center, residential neighborhoods, and employment zones.

Existing Conditions

Transportation
Foster Blvd., a two-lane rural road, is the main road that currently provides access to the area.

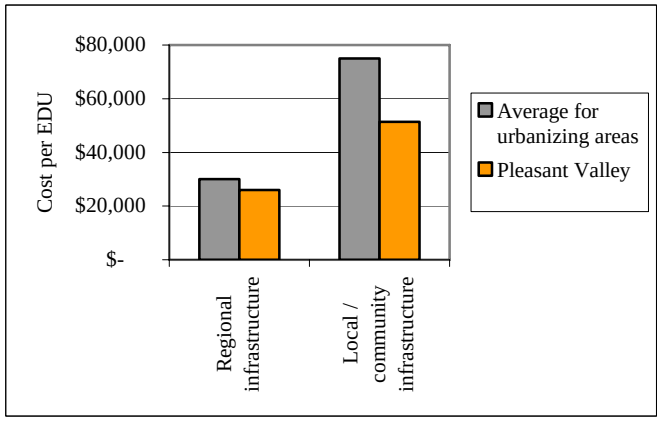
Water
The area is primarily served by private wells.

Wastewater
Wastewater is handled with private septic systems.

Stormwater
Stormwater is currently directed to ditches along local roads.

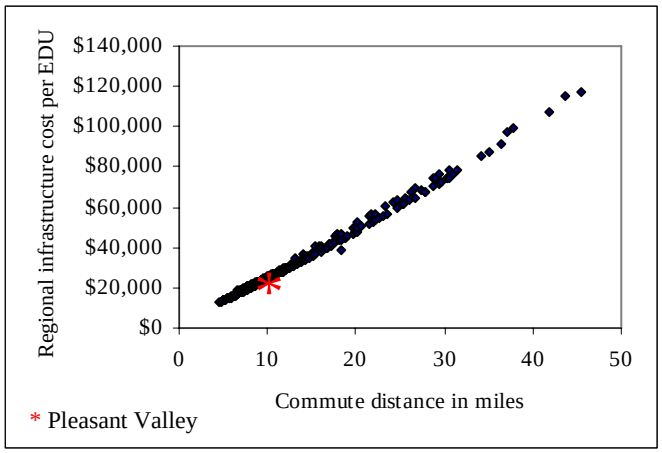
Parks, plazas, public places
The Springwater Corridor, a regional trail, passes through the Pleasant Valley plan area. There are no other existing parks within the area, though there is open space associated with Pleasant Valley Elementary School (existing).

How do Pleasant Valley's infrastructure costs compare to the regional average?



Pleasant Valley's regional infrastructure costs (highways, bridges, transit, etc) are slightly lower than average for the 7-county region. Its local/community infrastructure costs per EDU are about $24,000 less than the regional average for urbanizing areas.

What are the factors that influence infrastructure costs in the Pleasant Valley area?



Commute distance: Longer travel distances translate into more regional infrastructure needed per household. Residents of the census tracts that comprise the Pleasant Valley area are forecasted to have an average commute distance of about 10.8 miles in the year 2035, lower than the 7-county average (12.32 miles).

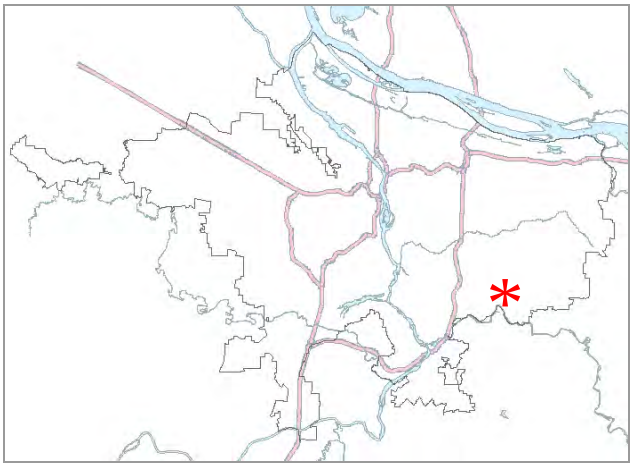
Topography: The Pleasant Valley area is mostly flat, but has a number of riparian areas.

Green practices: Most of the streets will be green streets. Though there are not additional capital costs associated with these streets, it is anticipated that there will be higher maintenance costs. All stream crossings will use bridges (no culverts)

Parks: About ¼ of Pleasant Valley's local / community level costs are attributable to parks ($70,186,000).

Rock Creek concept area– urbanizing area

Happy Valley, OR



Total acres:	670
Gross buildable acres:	357
Net new population:	7,037
Net new jobs:	619
Total EDUs:	2,939
Avg. EDUs per gross buildable acre:	8.23
Avg. commute miles in the year 2035:	10.72

Estimated capital costs (2008$, including regional costs)

Per EDU:	$ 43,000
Total:	$126,680,000

Proposed Use

The Rock Creek area is planned as a community with residential, mixed-use, and employment uses.

Existing Conditions

Transportation
Two-lane rural roads with soft shoulders and roadside drainage ditches are typical in the plan area.

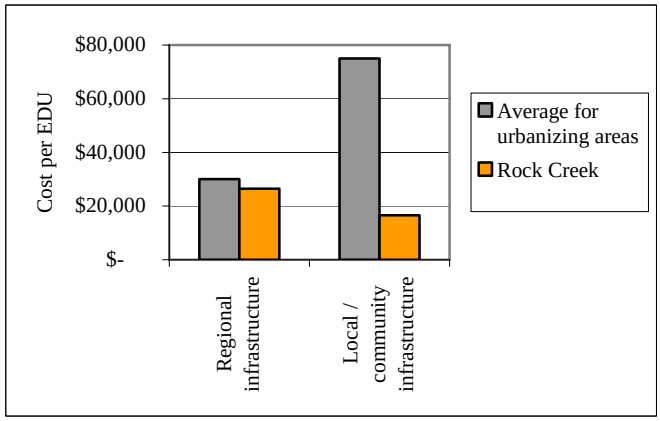
Water
Two wells and water from the Clackamas River supply the area with water. According to the Mt. Scott Water District, all necessary facilities are in place for any new developments in the planning area with the exception of a 12-in water line for the higher areas.

Wastewater
There are three points of connection to the existing sewer system. There will need to be additional pumps installed in order to get the effluent to a point where a gravity flow system will work.

Stormwater
Storm drainage in the area is mostly over land, with some culverts under existing roads and ditches running alongside these roads. The area is split into two drainage areas that flow into Rock Creek and Sieben Creek.

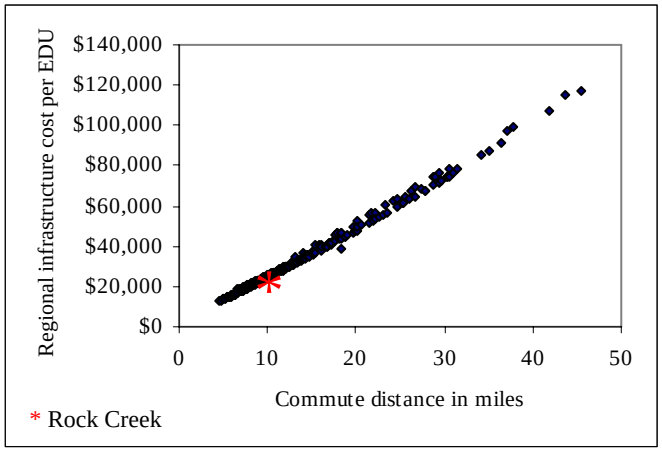
Parks, plazas, public places
The area does not have any existing parks.

How do Rock Creek's infrastructure costs compare to the regional average?



Rock Creek's regional infrastructure costs (highways, bridges, transit, etc) are slightly lower than average for the 7-county region. Its local/community infrastructure costs are about $58,000 per EDU cheaper than the regional average for urbanizing areas.

What are the factors that influence infrastructure costs in the Rock Creek concept area?



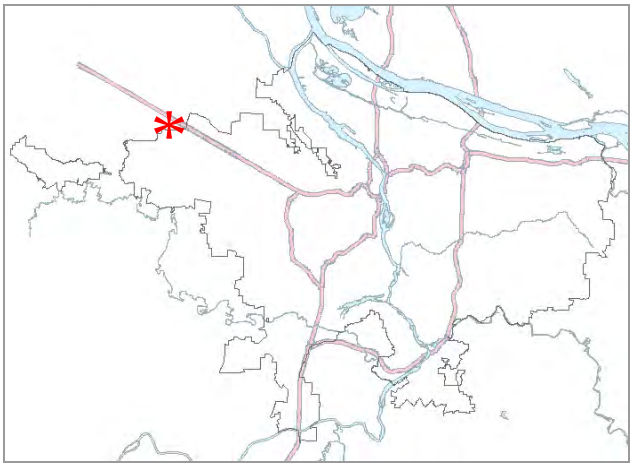
Commute distance: Longer travel distances translate into more regional infrastructure needed per household. Residents of the census tracts that include the Rock Creek area are forecasted to have an average commute distance of 10.72 miles in the year 2035, lower than the 7-county average (12.32 miles).

Topography: The Rock Creek area has slopes to the north (over 30% slopes) and Rock Creek and its tributaries flow through the area. South of Sunnyside Rd., the area is flat.

Transportation: Approximately 2/3 of Rock Creek's local / community level infrastructure costs are attributable to transportation improvements ($33576,000). Roads, including Sunnyside Road, and 147th Avenue, have been improved to urban standards to provide multimodal access.

Shute Road concept area– urbanizing area

Washington County, OR



Total acres:	203
Gross buildable acres:	175
Net new population:	0
Net new jobs:	3,660
Total EDUs:	732
Avg. EDUs per gross buildable acre:	4.18
Avg. commute miles in the year 2035:	13.99

Estimated capital costs (2008$, including regional costs)

Per EDU:	$ 46,000
Total:	$33,623,000

Proposed Use

The Shute Rd. concept area is being planned to provide large lots for industrial uses. Genentech, an international biomedical manufacturer, has acquired nearly half of this site (85 acres). Genentech has developed phase 1 facilities and will provide 300-400 jobs in the first phase.

Existing Conditions

Transportation

The site is adjacent to the Shute Road exit of the Sunset Highway. Shute Road and Evergreen Road, both five lane local connectors intersect at the southwest corner of the site.

Water

Water mains run along Shute Road and Evergreen road adjacent to the site.

Wastewater

There are currently no sanitary lines running though the site. One trunk line runs up Evergreen Road to the corner of the site and another line dead-ends into Shute Road near the center of the site.

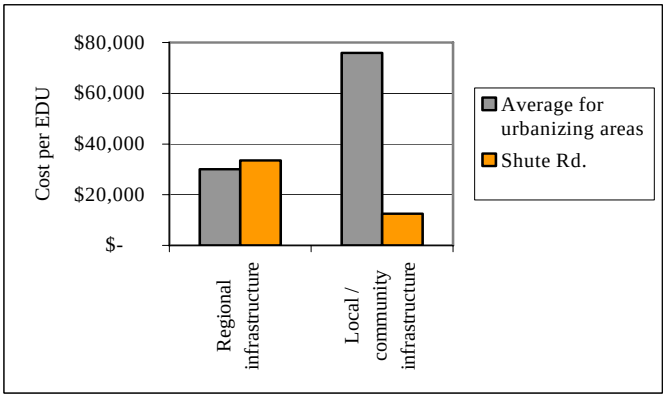
Stormwater

Storm lines parallel water lines along Shute Road and Evergreen Road.

Parks, plazas, public places

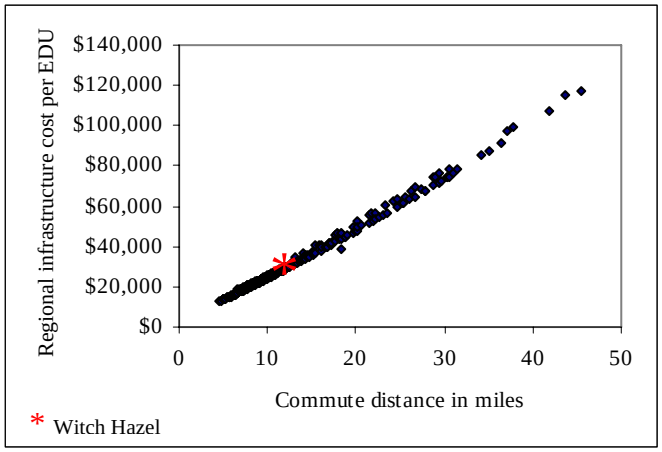
There are no existing public parks or green spaces within the site.

How do Shute Rd.'s infrastructure costs compare to the regional average?



Shute Rd.'s regional infrastructure costs (highways, bridges, transit, etc) are slightly higher than average for the 7-county region. Its local/community infrastructure costs are about $63,000 per EDU lower than the regional average for urbanizing areas.

What are the factors that influence infrastructure costs in the Shute Rd. concept area?



Commute distance: Longer travel distances translate into more regional infrastructure needed per household. Residents of the census tract that comprises the Shute Rd. area are forecasted to have an average commute distance of 13.99 miles in the year 2035, higher than the 7-county average (12.32 miles).

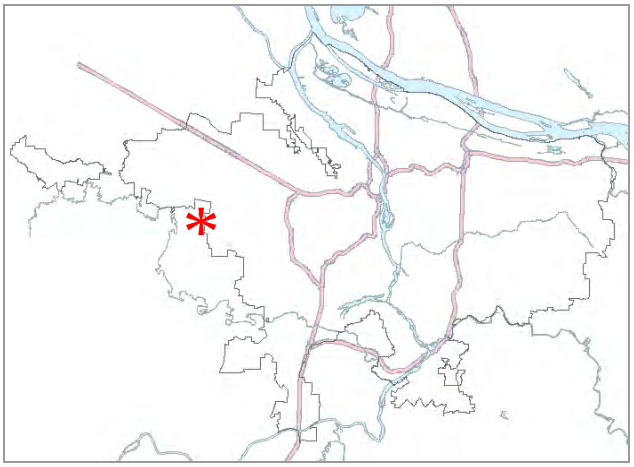
Topography: The Shute Rd. concept area is relatively flat with a small riparian area associated with Waibel Creek. The area around the creek is non-wetland.

Employment use: Shute Rd. will be an employment area. Employment uses tend to place fewer demands on infrastructure than residential uses.

Transportation: Approximately 2/3 of Shute Rd.'s local / community level infrastructure cost is attributable to transportation improvements ($6,350,000).

South Hillsboro concept area– urbanizing area

Hillsboro, OR



Total acres:	1,565
Gross buildable acres:	1,030
Net new population:	25,455
Net new jobs:	879
Total EDUs:	10,358
Avg. EDUs per gross buildable acre:	10.05
Avg. commute miles in the year 2035:	12.2

Estimated capital costs (2008$, including regional costs)

Per EDU:	$ 58,000
Total:	$600,591,000

Proposed Use

The South Hillsboro area will be a community including residential, retail, and office uses.

Existing Conditions

Transportation

Current transportation facilities generally consist of two lane sections without curbs. Drainage crossings are primarily culverts with some minor retaining / transition structures. At grade railroad crossings connect the study area to Tualatin Valley Highway.

Water

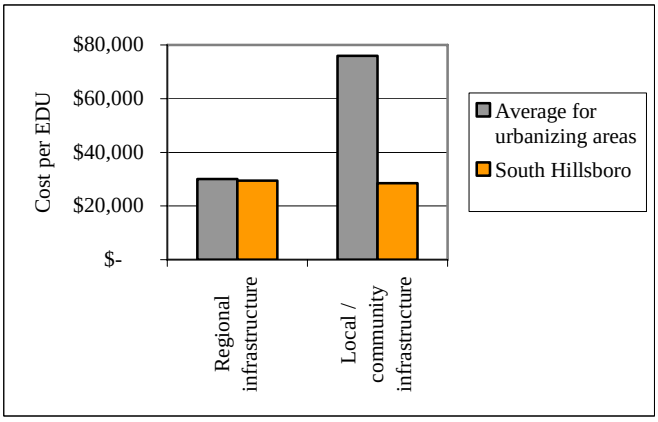
Existing 8” and 10” waterlines to the northwest of the study area provide distribution to current development in that area and will eventually be connected to the grid for the South Hillsboro planning area. An existing 42” transmission line is located at the south side of the railroad tracks along the north edge of the South Hillsboro planning area. Connection to this line will be made to serve south into the planning area.

Wastewater
A 24" trunk sewer in Davis Road extending from the River Road Pump Station to SW 234th Avenue is currently being constructed. The trunk sewer is designed to serve 525 acres including a significant portion of the South Hillsboro planning area. Area 71 is within this service area. The Clean Water Services "Aloha Pump Station" on SW 209th Avenue near SW Stoddard Drive and the Cross Creek Pump Station further south on 209th Avenue near SW Murphy Lane can serve Area 69 of the South Hillsboro planning area.

Stormwater
Development to the west and north of the study area includes storm drainage conveyance, storage and treatment of the areas consistent with standards in place at the time of the respective land use action. Outfall from these systems is to natural drainage tributaries of the Tualatin River. Throughout the South Hillsboro planning area, ditches provide storm water management along roadways. Large agricultural tracts have surface ditches that direct flow to natural conveyances.

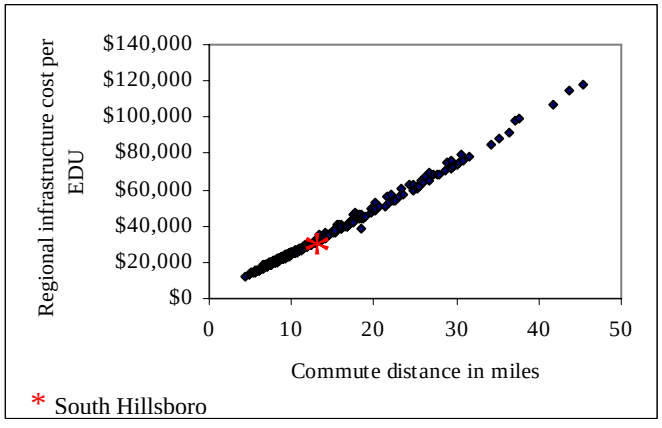
Parks, plazas, public places
The City of Hillsboro currently has no park or recreation facilities located within the South Hillsboro Community Plan Study Area. The Bonneville Power Administration right-of-way north of Tualatin Highway extends south into the study area and could accommodate a trail.

How do South Hillsboro's infrastructure costs compare to the regional average?



South Hillsboro's regional infrastructure costs (highways, bridges, transit, etc) are about average for the 7-county region. Its local/community infrastructure costs per EDU are about $46,000 less than the regional average for urbanizing areas.

What are the factors that influence infrastructure costs in the South Hillsboro area?



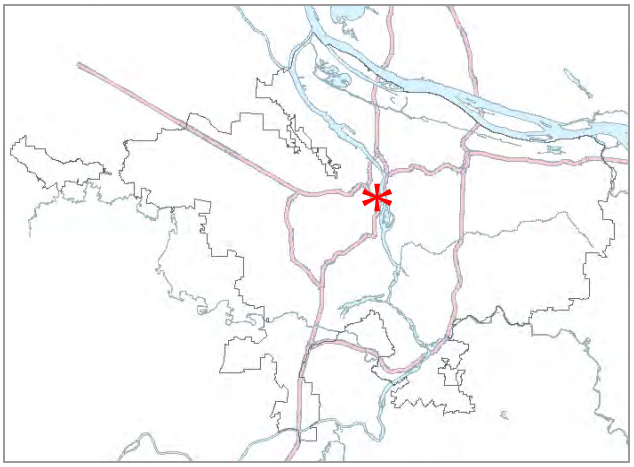
Commute distance: Longer travel distances translate into more regional infrastructure needed per household. Residents of the census tract that comprises the South Hillsboro area are forecasted to have an average commute distance of 12.2 miles in the year 2035, slightly less than the 7-county average.

Topography: The South Hillsboro area is flat. Several Tualatin River tributaries flow west/southwesterly through the site, including Gordon Creek, Butternut Creek, a Butternut Creek tributary, Rosedale Creek (also referred to as Hazeldale Creek), and an unnamed tributary.

Stormwater: There are no stormwater costs associated with the South Hillsboro area.

South Waterfront – urban area

Portland, OR



Total acres:	130
Gross buildable acres:	100
Net new population:	9,000
Net new jobs:	10,000
Total EDUs:	5,600
Avg. EDUs per gross buildable acre:	56
Avg. commute miles in the year 2035:	5.33

Estimated capital costs (2008$, including regional costs)

Per EDU:	$ 72,000
Total:	$401,857,000

Proposed Use

The South Waterfront District offers a unique opportunity for redevelopment as it provides the largest block of vacant or underutilized land within the city's core. The district will have a mix of urban-scale offices, housing, hotels, parks and retail uses. The area will be served by a multimodal transportation system and may serve as a transit hub for south downtown. Redevelopment in the district is meant to serve as a catalyst for the creation of a larger science and technology-based economy in the Central City.

Existing Conditions

Transportation

Though the South Waterfront's central Portland location affords it extensive transportation connections, a substantial amount of redevelopment is contemplated.

Water

Existing water facilities are sufficient to serve South Waterfront.

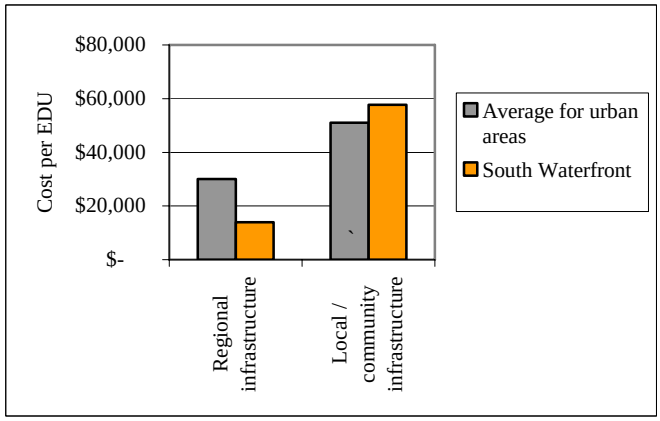
Wastewater

Existing sewer facilities are sufficient to serve South Waterfront.

Stormwater
Upgrades to the areas stormwater system will be necessary to serve the planned development.

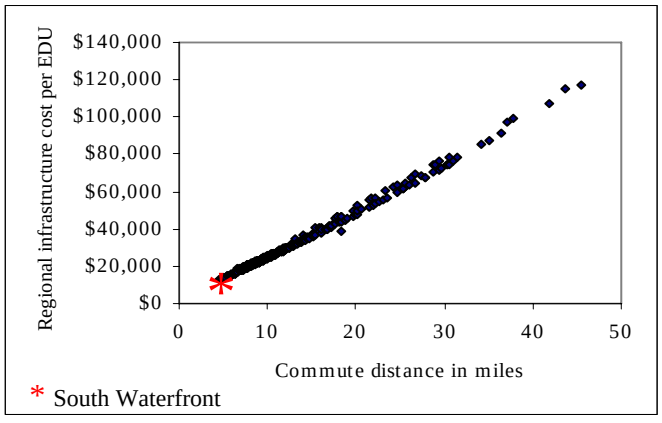
Parks, plazas, public places
There are no existing parks within the plan area. The plan includes the creation of a Willamette River Greenway. Given the area's central location, numerous parks and trails are in the vicinity.

How do South Waterfront's infrastructure costs compare to the regional average?



South Waterfront's regional infrastructure costs (highways, bridges, transit, etc) are about $16,000 less per EDU than average for the 7-county region. Its local/community infrastructure costs are about $7,000 more per EDU than the regional average for urban areas.

What are the factors that influence infrastructure costs for South Waterfront?



Commute distance: Longer travel distances translate into more regional infrastructure needed per household. Residents of the census tracts that include South Waterfront are forecasted to have an average commute distance of 5.33 miles in the year 2035, considerably shorter than the 7-county average of 12.32 miles.

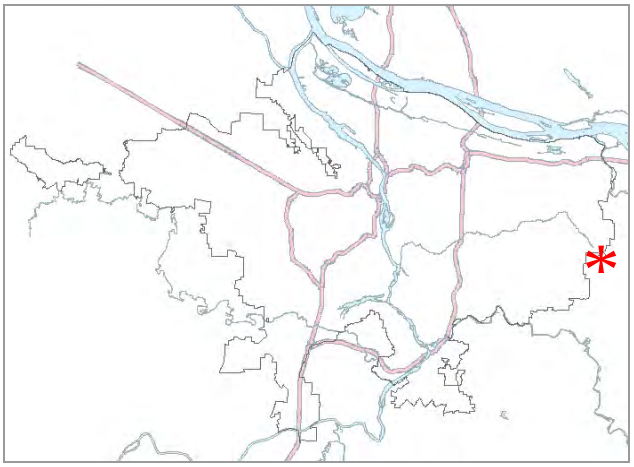
Topography: South Waterfront is a redevelopment project. The portion closest to the Willamette River will not be developed, but will be restored as a greenway.

Existing facilities: South Waterfront is able to take advantage of existing streets, sewer, and water facilities.

Most local / community costs are attributable to transportation ($148,445,000), transit / bike / pedestrian ($29,900,000), park ($92,553,000), and affordable housing requirements.

Springwater Community Plan– urbanizing area

Gresham, OR



Total acres:	1,272
Gross buildable acres:	762
Net new population:	4,022
Net new jobs:	15,330
Total EDUs:	4,522
Avg. EDUs per gross buildable acre:	5.9
Avg. commute miles in the year 2035:	12.82

Estimated capital costs (2008$, including regional costs)

Per EDU:	$ 114,000
Total:	$471,254,000

Proposed Use

The Springwater area is planned for industrial/high-tech campuses. To augment the mixed-use theme of the City as a whole, a village center with mixed retail and housing, and low-density residential development are also planned for areas too sloped for industrial use.

Existing Conditions

Transportation

The existing transportation system was designed primarily to serve rural residential and farm to market uses. The arterials are generally fast moving with most intersections either having no traffic control or only stop signs. Highway 26 is the major thoroughfare that traverses the study area, connecting Gresham with both Portland (to the west) and Sandy (to the southeast). Hogan Road/242nd Avenue also provides a north/south connection through the western portion of Springwater.

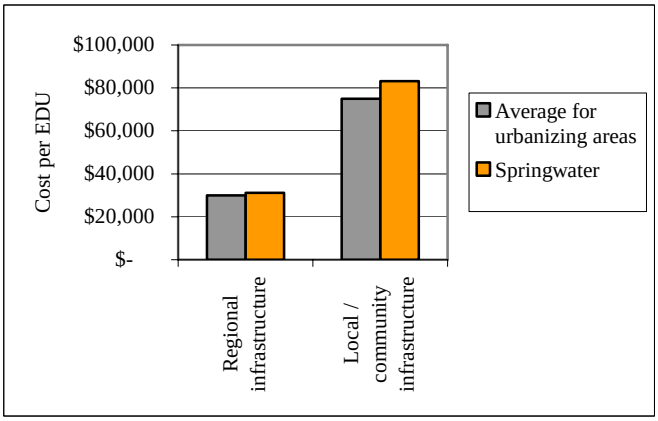
Water
The area has no public water system. Private wells serve the area.

Wastewater
The area has no public sewer system. Waste is directed to private septic systems.

Stormwater
The area has no public stormwater system. Stormwater is directed to creeks and to drainage ditches along roads.

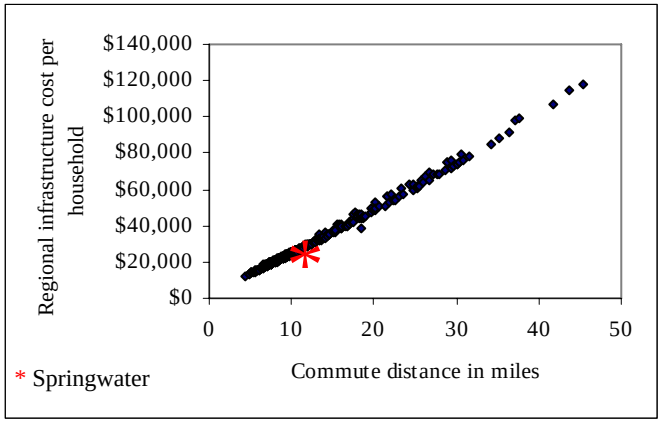
Parks, plazas, public places
The area has no public parks, but is bisected by the Springwater Corridor, a regional trail that connects Portland to Boring.

How do Springwater's infrastructure costs compare to the regional average?



Springwater's regional infrastructure costs (highways, bridges, transit, etc) are about average for the 7-county region and its local/community infrastructure costs are about $8,000 per EDU higher than the regional average for urbanizing areas.

What are the factors that influence infrastructure costs in Springwater?



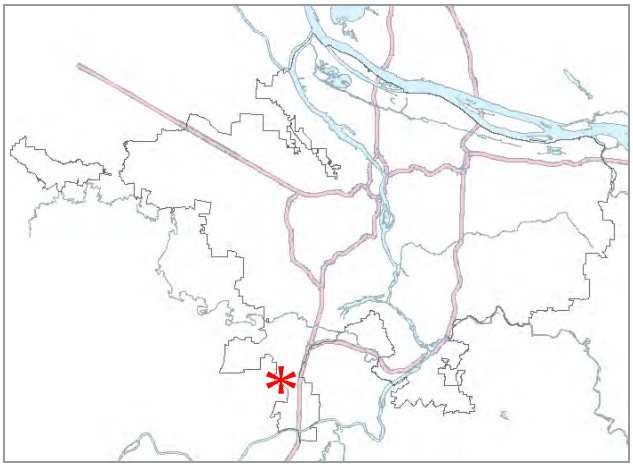
Commute distance: Longer travel distances translate into more regional infrastructure needed per household. Residents of the census tract that includes the Springwater area are forecasted to have an average commute distance of 12.82 miles in the year 2035. This distance is slightly higher than the average for the 7-county region (12.32 miles).

Topography / natural features: With the exception of its western portion, the Springwater area is relatively flat. The sloped, western portion of the area will be low-density residential. The concept area also has a number of riparian areas. These features reduce average densities, making the area more expensive to serve.

Transportation: Almost 2/3 of the local / community costs ($237,231,000) associated with Springwater are attributable to transportation improvements.

SW Tualatin Concept Plan– urbanizing area

Tualatin, OR



Total acres:	431
Gross buildable acres:	352
Net new population:	0
Net new jobs:	5,760
Total EDUs:	1,152
Avg. EDUs per gross buildable acre:	3.27
Avg. commute miles in the year 2035:	12.36

Estimated capital costs (2008$, including regional costs)

Per EDU:	$ 216,512
Total:	$249,422,000

Proposed Use

The SW Tualatin area is planned as an industrial area.

Existing Conditions

Transportation

SW Tualatin-Sherwood Road, SW 115th Avenue and SW 120th Ave to the north and SW Tonquin Road and SW Waldo Way to the south serve the SW Tualatin concept area. A future SW 124th Avenue arterial connection is planned to connect Tualatin-Sherwood Road with SW Tonquin Road, and would become a primary point of vehicle access in the future. This connection would be regarded as a community level facility as it would serve both Tualatin and Sherwood. SW 115th Avenue will serve as a secondary north-south access between SW Tualatin-Sherwood Road and SW Tonquin Road. A railroad line boarders the east boundary of the study area.

Water

There are no public water lines in the study area.

Wastewater

No sanitary sewer system of adequate size to serve the proposed development exists on or near the study area.

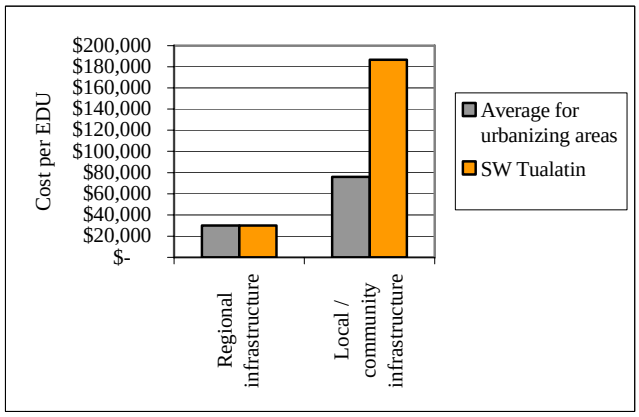
Stormwater

No storm water system exists within the study area. The plan area rises gradually in elevation. Drainage is imperfect, but generally toward the north and toward the south, with a break point at approximately the middle of the Concept Plan area. Drainage in the northern portion around and in the quarry infiltrates through the fragmented basalt. Drainage to the south flows toward Coffee Lake Creek/Seely Ditch, which flows to the Willamette River.

Parks, plazas, public places

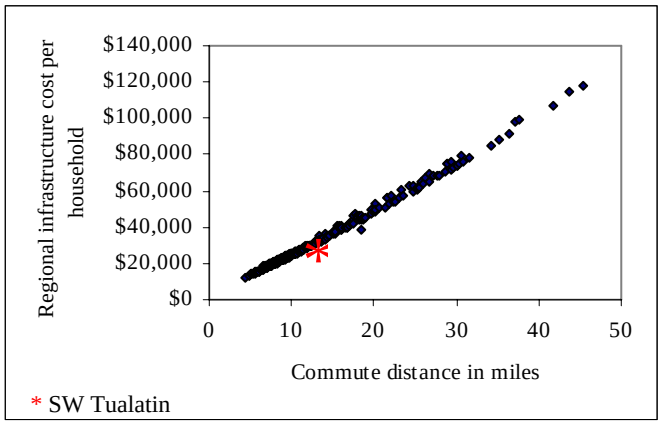
There are no existing parks within the concept area. However, there are long-term plans for a regional trail that would follow the Bonneville Power Administration easement through the area. Additionally, a forested area is envisioned west of a railroad line located in the eastern boundary of the study area to create a transition from residential to industrial uses.

How do SW Tualatin's infrastructure costs compare to the regional average?



SW Tualatin's regional infrastructure costs (highways, bridges, transit, etc) are average for the 7-county region. Its local/community infrastructure costs are about $112,000 per EDU higher than the regional average for urbanizing areas.

What are the factors that influence infrastructure costs in SW Tualatin?

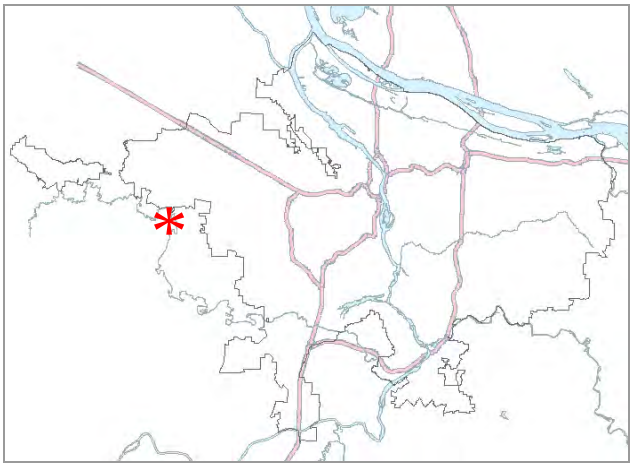


Commute distance: Residents of the census tract that comprises the SW Tualatin area are forecasted to have an average commute distance of 12.36 miles in the year 2035, similar to the 7-county average (12.32 miles).

Transportation: A substantial portion of the local / community infrastructure costs for SW Tualatin are attributable to transportation improvements. Since the writing of the concept plan, estimated costs for 124th Avenue have gone up significantly. Other transportation projects have also increased in cost since 2005, including SW 115 Avenue, SW Blake Street, SW 120 Avenue, Tonquin Road and Waldo Way. Total transportation costs are now estimated at $195,431,000, or about 91% of the total infrastructure costs for the concept area.

Witch Hazel concept area– urbanizing area

Hillsboro, OR



Total acres:	318
Gross buildable acres:	270
Net new population:	5,000
Net new jobs:	0
Total EDUs:	2,000
Avg. EDUs per gross buildable acre:	7.41
Avg. commute miles in the year 2035:	12.20

Estimated capital costs (2008$, including regional costs)

Per EDU:	$ 49,000
Total:	$98,465,000

Proposed Use

The Witch Hazel area is planned as a residential community with mixed-use zones.

Existing Conditions

Transportation

Direct north-south access to the Witch Hazel Village plan area is provided by three county roadways: SW River Road (along the western edge), SW 247th /Brookwood Avenue (at the center), and SW 234th/Century Boulevard (along the eastern edge); and east-west access is provided by one city roadway, SE Alexander Street (along the northern edge). Except for River Road, which has a bike lane, the roads are without sidewalks, curbs and bike/ped infrastructure.

Water

Current residents are on private well systems. When the plan area is annexed to the City and is urbanized, water will be supplied by the City of Hillsboro.

Wastewater

With the exception of the new Witch Hazel Elementary School (which has sewer service), all developed properties within the plan area are currently served by private septic systems.

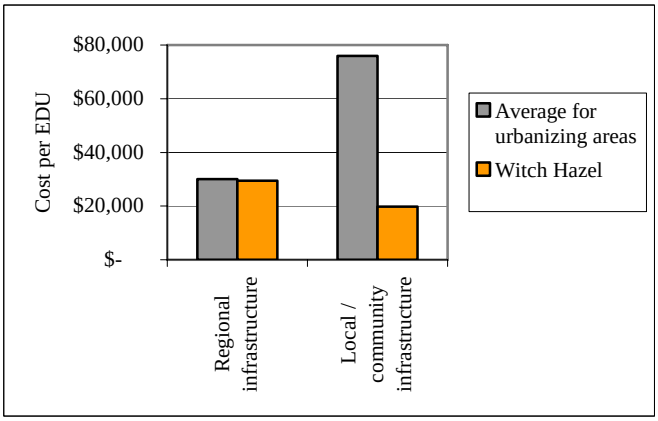
Stormwater

The existing stormwater system within the plan area includes pipes/culverts, subsurface tiling, overland flow, natural swales, irrigation and roadway drainage ditches, all of which flow to Witch Hazel Creek or Gordon Creek, eventually draining to the Tualatin River.

Parks, plazas, public places

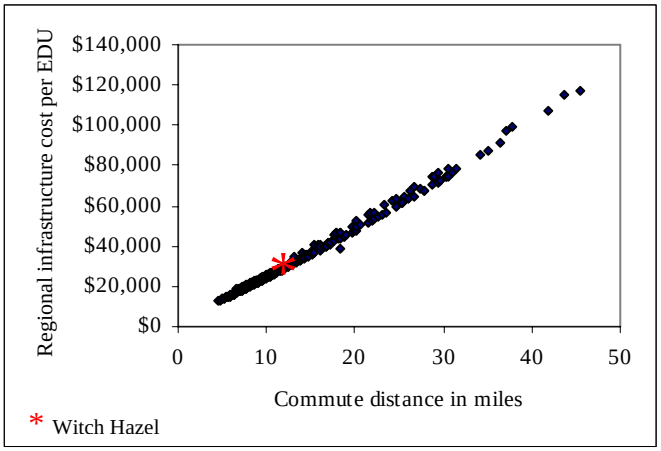
There are no existing public parks within the Witch Hazel Village plan area. However, Clean Water Services owns a wetland area in the northwest portion of the concept area.

How do Witch Hazel's infrastructure costs compare to the regional average?



Witch Hazel's regional infrastructure costs (highways, bridges, transit, etc) are average for the 7-county region. Its local/community infrastructure costs are about $55,000 lower per EDU than the regional average for urbanizing areas.

What are the factors that influence infrastructure costs in Witch Hazel?



Commute distance: Longer travel distances translate into more regional infrastructure needed per household. Residents of the census tract that comprises the Witch Hazel area are forecasted to have an average commute distance of 12.2 miles in the year 2035, similar to the 7-county average (12.32 miles).

Topography: The Witch Hazel area is fairly flat with no substantial riparian zones.

Proximity of existing services: Water and sanitary sewer services exist to the north of the area. There is an existing school on site.

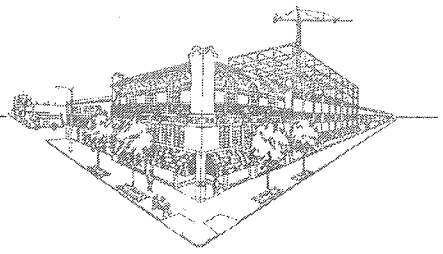
Appendix 1

Preliminary capital costs (000) escalated to 2008$[8]

	Transport	Transit & Bike/Ped	Sewer	Water	Storm	Parks	Subtotal	Other	Total
Coffee Creek I	$4,518	$0	$1,530	$1,140	$300	$570	$8,058	$0	**$8,058**
Springwater	$237,231	$0	$28,894	$35,032	$29,993	$44,642	$375,791	$0	**$375,791**
Damascus	$1,731,623	$0	$162,240	$282,843	$75,712	$390,203	$2,642,621	$476,674	**$3,119,295**
SW Tualatin	$195,431	$0	$9,674	$9,224	$562	$0	$214,891	$0	**$214,891**
Witch Hazel	$6,862	$0	$9,275	$8,575	$10,236	$4,612	$39,559	$0	**$39,559**
Shute Road	$6,350	$0	$967	$619	$1,200	$0	$9,136	$0	**$9,136**
Rock Creek	$33,576	$0	$1,076	$3,185	$4,664	$6,295	$48,796	$0	**$48,796**
Pleasant Valley	$103,823	$0	$22,686	$21,172	$32,213	$70,186	$250,080	$53,993	**$304,073**
North Bethany	$157,723	$0	$13,500	$13,800	$13,800	$38,800	$237,623	$146,000	**$383,623**
Beaver Creek	$66,300	$0	$8,500	$15,900	$25,200	$0	$115,900	$0	**$115,900**
Park Place	$58,400	$0	$5,520	$3,800	$820	$3,220	$71,760	$0	**$71,760**
South Hillsboro	$203,057	$0	$7,550	$11,316	$0	$56,894	$278,817	$16,700	**$295,517**
South Waterfront	$148,445	$29,900	$0	$0	$710	$92,553	$271,607	$51,850	**$323,457**
Lake Oswego Village Cntr	$797	$0	$0	$0	$0	$0	$797	$4,319	**$5,116**
Brewery Blocks	$0	$0	$0	$0	$0	$0	$0	$40,647	**$40,647**
Civic Neighborhood	$3,413	$6,194	$366	$266	$1,365	$0	$11,606	$0	**$11,606**
North Main	$811	$0	$0	$0	$0	$0	$811	$108	**$919**

[8] Escalation assumed to equal 1st Q. 2008 dollars. Change between year of planning estimate and this year, based on 4% annual escalation rate. Costs do not reflect state facilities. SW Tualatin project assumes 50% of 242nd Ave. improvement is allocated to project area.

E. D. Hovee
& Company, LLC
Economic and Development Services



MEMORANDUM

To:	David Unsworth, Jillian Detweiler – TriMet
From:	Tess Jordan, Eric Hovee
Subject:	Portland Light Rail Transit Land Development Experience & Application
Date:	July 28, 2008

Having opened its first light rail line in 1986, the Portland region now has a significant track record from which to draw observations concerning light rail's economic development impacts. Tracking of development by TriMet indicates that a cumulative total of more than $6 billion of development has occurred in light rail station areas along MAX corridors.

While there have been numerous studies in Portland and nationally investigating the linkage between light rail investment and land development, much of this has been focused on documenting increases in property value. Less empirical research to date has addressed how light rail impacts the character of development.

The analysis presented in this memorandum represents an initial effort to provide quantitative documentation of this phenomenon. This report first considers how development patterns changed after light rail was introduced on the *Blue Line* running from Gresham west to downtown Portland and then continuing to Hillsboro.

For this analysis, comparisons are made between development within a one-quarter mile radius circling each light rail transit (LRT) station and development occurring within a broader corridor extending one mile on either side of the LRT alignment. Results of the MAX Blue Line experience are then applied to development characteristics observed to station areas within the proposed Portland- Milwaukie light rail extension to illustrate development that may be realized within planned station areas for this planned new alignment.

This memorandum report is organized to cover the following topics:

Summary of Findings
Research Purpose & Approach
Blue Line Analysis
Milwaukie Line Implications
Detailed Research Methodology

2408 Main Street • P.O. Box 225 • Vancouver, WA 98660
(360) 696-9870 • (503) 230-1414 • Fax (360) 696-8453
E-mail: edhovee@edhovee.com

SUMMARY OF RESEARCH FINDINGS

The primary findings of this preliminary assessment of LRT development experience and application are summarized as follows:

1. For MAX Blue Line light rail transit station areas, development that occurred after light rail investment indicates an average development density or Floor Area Ratio (FAR) of 0.65 *more than* the average FAR experienced for development outside of station areas. *Note:* This means that for every 1,000 square feet of land area, station area taxlots that developed realized an additional 650 square feet of building area beyond the square footage realized in taxlots that developed outside of station areas.
2. The station area capture rate of corridor-wide condominium development increased from 14% to 56% after light rail investment was realized.
3. The rate of development within Blue Line station areas was 69% higher than elsewhere within a one-mile corridor extending along the LRT alignment. Rate of development was calculated as average annual square feet developed after light rail investment divided by existing building stock (in square feet) prior to light rail investment.
4. Vacant land availability does not appear to significantly affect the differences in development noted within and outside of station areas: as of 2007, significant vacant land remained in all geographies (29% of land area within station areas and 21% outside of station areas).
5. Low and moderate value lots within Blue Line station areas redeveloped at twice the redevelopment rate reported for low value lots outside of station areas.

When these results are used to illustrate potential development trends within station areas for the planned Milwaukie alignment, the result is an estimated 18.7 million square feet of projected development. Close to 5 million square feet of this development (or 27%) can be associated with the influence of light rail investment.

Other factors that influence land development within station areas and elsewhere along LRT alignments are described in the body of this memorandum.

RESEARCH PURPOSE & APPROACH

This preliminary research memorandum documents the development realized within two comparison geographies, before and after Portland's light rail transit (LRT) Blue Line was introduced. The geographies are 1) station areas, defined as taxlots within a ¼ mile radius of a light rail station, and 2) non station areas, or all taxlots within a two mile corridor encompassing the Blue Line (excluding station area taxlots). Within these two geographies, the following five variables were quantified:

1. Development density;
2. Percent of condominiums built within station areas (as a percent of total condominiums built within the wider comparison LRT corridor study area geographies);

3. Rate of development as a percentage of existing pre-LRT development (or building stock);
4. Vacant land (as a percentage of total land area) pre and post light rail development; and
5. Rate of land development as a percentage of initial low value land acreage.

This experience is then applied to planned Milwaukie light rail extension station areas. This is an *illustrative exercise* that estimates the development that may be realized within planned station areas within 20 years of light rail implementation – assuming market and other factors similar to those experienced along the existing Blue Line.

This documentation of development realized within Blue Line station areas does not assert causality. Three primary variables affecting development are the focus of this assessment: light rail implementation, proximity to a light rail station and land value.

Land development can also be expected to respond to other variables. These may include factors such as location, access, land configuration, economic cycles, and public sector involvement or incentives. However, in the absence of a more extensive hedonic or regression analysis (which aims to determine the statistical significance of influence of multiple influences), the approach taken with this report is intended to contribute to a better initial understanding of the realized interaction between light rail implementation and urban land development.

Portland's Blue Line is roughly 33 miles long, connecting to Gresham and Hillsboro as the respective eastern and western communities of the metro region. In total, this LRT line extends across 56 stations in suburban, central city and town center environments. The Portland to Gresham portion of the line was completed first (in 1986), followed by the Portland to Hillsboro extension (in 1998).

Taken together, the Blue Line LRT station areas (totaling roughly 3,000 acres) and their comparison 1-mile corridor geographies (roughly 26,800 acres) provide a high degree of variation in terms of the factors that influence real estate development. This post-development analysis is further enhanced by the length of the combined alignment and the 9-21 years since light rail's introduction.

The analysis methodology corresponds with similar research of the transit-development nexus conducted first conducted in 2005 for Portland Streetcar but limited to the Central City portion of the metro area.

BLUE LINE RESEARCH ANALYSIS

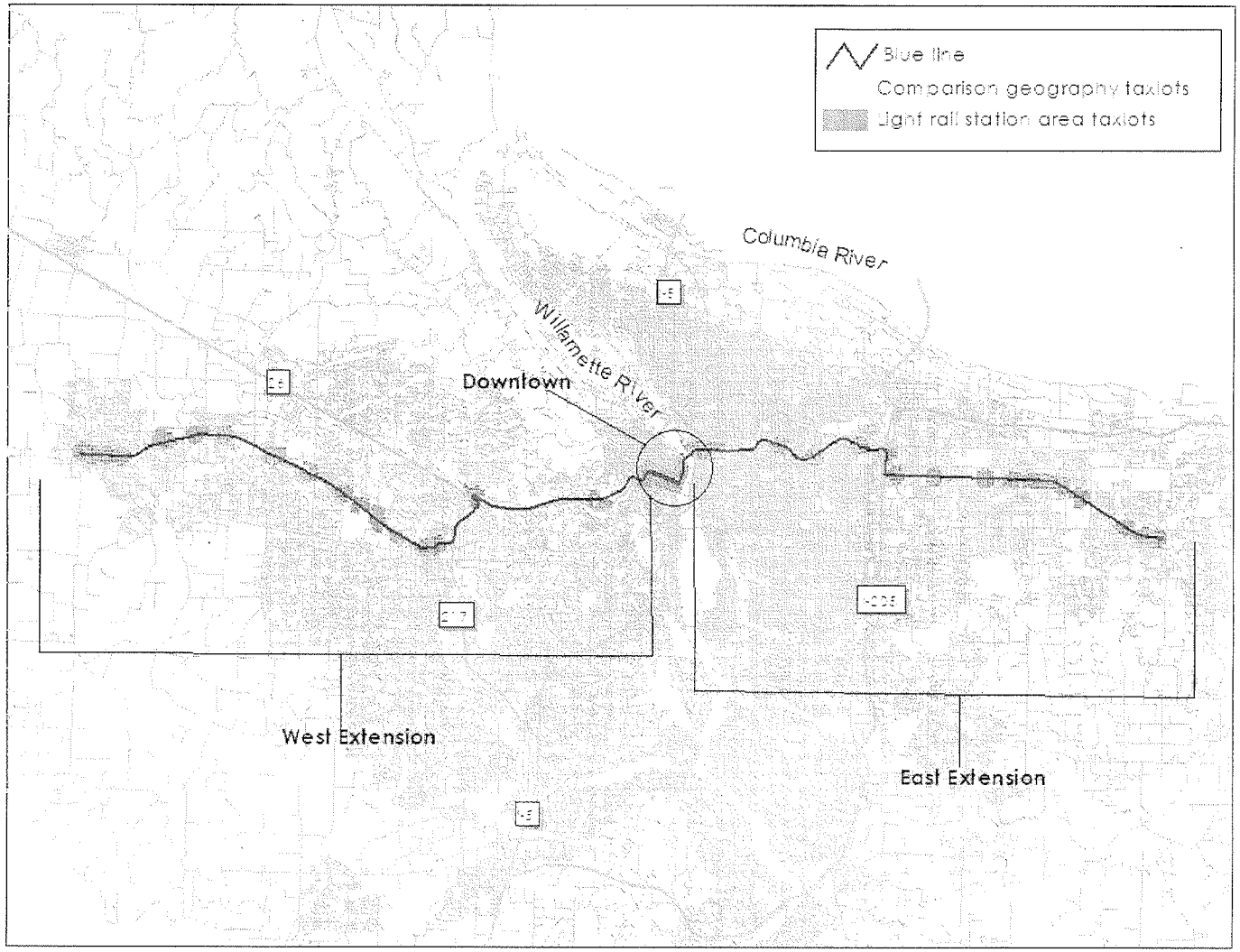
For purposes of this research project, the MAX Blue Line extending from Gresham (on the east) to Hillsboro (west of Portland) was divided into three segments for analysis:

- The *east extension* was completed in 1986 and extends from Gresham west to Portland's Central Eastside, a subdistrict within its Central City. Taxlots within the east extension geography total approximately 13,500 acres (within one mile on each side of the alignment).
- The *downtown geography* encompasses Portland's Central Business District, defined by the Willamette River (to the east) and I-405 (to the west). This is the highest density geography under consideration. The Blue Line extended to the western boundary of this geography in its first phase completed in 1986.

  This is the most complex geography, particularly as the only area that is also affected by other fixed rail transit (streetcar was first introduced in 1999 and runs north-south through the Central Business District and beyond). At around 500 acres for the study area considered, downtown is also significantly smaller than the suburban geographies.
- The *west extension* was completed in 1998, and connects downtown Portland with the Westside cities of Beaverton and Hillsboro. Like the east extension, this segment of the Blue Line runs through more suburban environments as well as non-CBD town centers. Taxlots within the west extension geography total approximately 15,600 acres.

Due to the distinctive character exhibited by each of these three geographies, research results are reported for each separately as well as for the Blue Line alignment in total. Results are reported in terms of *density of development* and also *rate of development*.

Figure 1. Blue Line MAX Corridor Overview



Source: RLIS, E.D. Hovee & Company, LLC.

1. Density of Development

The first variable considered addresses the character of development in proximity to LRT. With this research project development density has been calculated in term of Floor Area Ratio (FAR), the ratio of building square feet to land area. To illustrate this concept, FAR of 1.0 equates to a single story building that covers a lot in its entirety, or a two story building that covers 50% of the lot.

LRT and Increased Development Density. Light rail introduction was found to correlate with increased development density within station areas. In total, the average FAR of development within station areas after the introduction of light rail was 1.18, more than double the FAR of non station areas lots developed within the same time period (0.54).

Table 1. MAX Blue Line Development Densities (Pre- and Post-Light Rail)

	Average Realized FAR	Station Area Premium	Condo Units	Station Area Condo Capture
		Total Alignment		
Post Light Rail				
Station Area	1.18	0.65	2,594	56%
Non Station Area	0.54		4,603	
Pre Light Rail				
Station Area	0.64	0.38	1,052	14%
Non Station Area	0.26		7,541	
		East		
Post Light Rail	0.74	0.30	515	48%
Station Area	0.43		547	
Non Station Area				
Pre Light Rail	0.36	0.09	140	6%
Station Area	0.27		2,398	
Non Station Area				
		Downtown		
Post Light Rail				
Station Area	11.06	7.20	346	13%
Non Station Area	3.86		2,735	
Pre Light Rail				
Station Area	4.18	2.02	153	8%
Non Station Area	2.16		1,853	
		West		
Post Light Rail				
Station Area	0.88	0.47	1,733	57%
Non Station Area	0.41		1,321	
Pre Light Rail				
Station Area	0.43	0.24	759	19%
Non Station Area	0.20		3,290	

Source: RLIS, E.D. Hovee & Company, LLC.

The FAR variable describes taxlots that developed within the time period in question only, rather than for the landscape as a whole. The FAR variable is therefore independent of the vacant land variable: a geography can have significant vacant land and still report a high post light rail FAR average, for example, if all development that occurred after light rail was introduced was high density development.

Pre- and Post-LRT Density of Development. Prior to light rail's introduction, density of development within station areas was already greater than that of non station areas (with an average FAR of 0.64 versus 0.26). This indicates that light rail and at least some station areas were located in areas to which high density development has historically been directed. Examples include town centers (Cities of Hillsboro, Beaverton and Gresham) and the densest retail/office core portion of Portland's Central Business District.

However, the 'FAR premium' associated with light rail station areas also increased after light rail was introduced. This premium is defined as the difference between FAR within a station area versus FAR for the wider corridor. For the Blue Line alignment as a whole, the station area FAR *premium* increased from 0.38 to 0.65. (This means that after the implementation of light rail, the average FAR of station area development was 0.65 above that experienced for non station area development.)

A review of corridor segments indicates that FARs vary significantly along the alignment. Not surprisingly, the highest FARs are indicated for downtown Portland – both within and outside of station areas. For development that occurred after light rail was introduced, the station area FAR premium was a significant 7.2 above non station area development. This compares with a 2.02 FAR premium before light rail was introduced.

More moderate results are shown for the less urban station areas along the east and west Blue Line extensions. Within station areas, average FARs fall within a fairly narrow band: averaging 0.74 for the east extension and 0.88 for the west extension. The FAR premium realized for station area versus non station area development was 0.30 for the eastside and 0.47 for the west.

The downtown Portland experience differs from that of the suburban LRT segments, especially for residential development. This is likely due to factors beyond light rail that increased the attractiveness of residential development in other parts of downtown Portland located away from LRT. Based on other research conducted in Portland's Central City, these factors appear to include streetcar investment coupled with the significant former industrial acreage (at the northern and southern ends of downtown) made available for redevelopment.

In effect, Portland's Central City provides a more complex story due in part to the interaction of multiple transit modes and corridors. The downtown area is also a much denser environment to begin with. Consequently, the FAR premium associated with light rail stations should be considered a measure relative to each station area's existing environment and development character rather than as an absolute measure that can be precisely replicated in stations areas of less similar development character and market opportunity.

In summary, this analysis indicates that the introduction of light rail correlates with density increases within station areas well above what is reported for non station area development.

2. Condo Development

Table 1 also provides information on condominium development, primarily residential condominiums. Condo development is reflected within the FAR calculations, but also reported separately to illustrate the increased capture rate that station areas of what are typically higher-density residential units achieved after the introduction of light rail.

In total, LRT station areas increased their capture of condominiums from 14% of all units developed (within the two comparison study area geographies) before light rail was introduced to 56% after light rail's introduction. This remarkable shift in where condo development occurs becomes even more significant given the increase in average number of condominium units developed annually in the post light rail period – during what has proved to be a very active period of urban residential development.

The east and west suburban extensions report very high station area condominium capture rates (48% and 57% respectively) after light rail is introduced. Downtown station areas also report increased capture, increasing form about 8% to a still relatively modest 13% after light rail was introduced. Again, this lesser rate of growth in downtown market capture can be attributed to the presence of major redevelopment sites at the periphery of downtown which have oriented to introduction of Portland Streetcar service.

3. Rate of Development

The third variable considers the total volume of development and the rate at which new development is realized (relative to the in-place, pre-LRT building stock). This measure is determined by calculating the average annual square feet developed after light rail's introduction as a percentage of the total square feet developed prior to light rail's introduction. In effect, this approach measures average net additions to the total building inventory on the ground.

Table 2 (on the following page) also reports the prevalence of vacant land within and outside of station areas, as availability of vacant land can be a factor in affecting the location of new development.

Annual Rate of Development. Across the full length of the Blue Line alignment, research data indicates that the *average annual rate* of development within station areas was 2.7% of existing development, or about 1.1 million square feet per year. This rate is 69% greater than the rate of development in non station areas (of 1.6% per year).

Station areas captured 27% of all square footage constructed post light rail. By comparison, LRT station areas comprise only 10% of the corridor-wide study area's total acreage (and 14% of vacant acreage).

Table 2. MAX Blue Line Rates of Development (Pre- and Post-Light Rail)

	Land Acres			Building Square Feet				
	Total Land Area	Vacant prior to LRT	% Vacant prior to LRT	Developed Post LRT	Developed Pre LRT	Developed Per Year Post LRT	Annual Rate	Station Area Rate Premium
				TOTAL ALIGNMENT				
Station Area	2,987	1,143	38%	19,673,000	42,187,000	1,143,000	2.7%	69%
Non Station Area	26,760	6,957	26%	46,037,000	195,268,000	3,124,000	1.6%	
Total	29,748	8,100	27%	65,710,000	237,455,000	4,267,000	1.8%	
				EAST				
Station Area	1,484	557	38%	9,045,000	14,480,000	431,000	3.0%	238%
Non Station Area	12,000	2,656	22%	20,663,000	111,723,000	984,000	0.9%	
Total	13,483	3,214	24%	29,708,000	126,203,000	1,415,000	1.1%	
				DOWNTOWN				
Station Area	152	50	33%	7,387,000	18,502,000	352,000	1.9%	-38%
Non Station Area	345	169	49%	10,699,000	16,632,000	509,000	3.1%	
Total	497	219	44%	18,086,000	35,134,000	861,000	2.5%	
				WEST				
Station Area	1,352	535	40%	3,241,000	9,205,000	360,000	3.9%	61%
Non Station Area	14,415	4,132	29%	14,675,000	66,913,000	1,631,000	2.4%	
Total	15,767	4,667	30%	17,916,000	76,118,000	1,991,000	2.6%	

Source: RLIS, E.D. Hovee & Company, LLC.

Central City & Suburban Experience. Rates of development varied across the geographies considered in a similar fashion as development density. The two suburban geographies exhibit more similarities in response to the introduction of light rail than the downtown geography.

For the east and west extension station areas, the rate of development was 3.0% and 3.9% respectively post LRT. Along the east extension, the station area rate of development was significantly higher than in non station areas (238% higher). Along the west extension, the difference was less dramatic (station areas developed 61% more rapidly).

The greater *bump* (or increase) in westside development is likely related to the greater prevalence of greenfields newly available for development on the west side of the region. Greenfield sites offered greater opportunity for more significant increases in the rate of development (on a smaller existing building stock) outside of Westside station areas compared with development outside of eastside station areas (which had less vacant land pre LRT).

In the downtown geography, the rate of development within station areas experienced after LRT introduction was actually lower than in non station areas (1.9% versus 3.1% annually). Again, this is related to factors beyond light rail that increased the attractiveness of development in competing and previously underdeveloped portions of Portland's Central City.

Of particular note are major master planned developments in association with the streetcar corridors in the Pearl District and, more recently, South Waterfront. By comparison, downtown

LRT was constructed through the heart of the already densely developed downtown retail and office core.

4. Vacant Land Availability

Table 2 also provides information on percentage of land vacant within each geography prior to light rail's introduction. Overall, with the exception of downtown, LRT station areas are estimated to have had a higher percentage of vacant land prior to light rail's introduction (38% within station areas, versus 26% outside of station areas). However, the 26% share of acreage in non station areas that was vacant prior to light rail's introduction is still a high enough percentage to have accommodated market-driven development activity.

One test of whether availability of vacant land inhibited development within the time period studied is whether vacant land remains in the comparison geographies or if it was fully absorbed. The proportion of station area land that is vacant is estimated to have declined from 38% pre LRT to 29% within station areas as of 2007, and from 26% of total corridor land area to 21% outside of station areas.

Vacant land has decreased over the time period studied, but significant vacant land remains for both the immediate station area and wider LRT corridor geographies. This suggests opportunities for continuing higher density development in proximity to light rail in the years ahead.

5. Rate of Development of Low Value Lots

As a final measure, the rate of development was also calculated as the percentage of low value lots that redeveloped. Two value categories for redevelopment sites were identified and utilized:

- The first category is termed 'low value', and corresponds to an improvement to land value ratio of less than 0.5 (meaning that any building on a property is worth no more than half of the underlying land value).
- The second is termed 'moderate value' and corresponds to an improvement to land value of 0.5-1.0 (meaning that any building on a property is worth over half the land value but no more than the property's value land).

Data for land and improvements valuation represents real market valuations as determined by respective County assessors. As illustrated by the following chart, the overwhelming majority of lots that have experienced redevelopment fall within these two categories, with about two thirds falling in the lowest value category (of less than 0.5 improvements to land valuation).

This variable is calculated as a basis for application to prospective future development along the Portland-Milwaukie alignment. By adjusting experience of the Blue Line to the varied existing built environments this proposed new light rail corridor, it is possible to better account for the distinctive characteristics of land supply surrounding each station for this new LRT corridor.

A limitation of this approach is that it is based upon a smaller subset of lots as historic value data was not available for all 114,000 taxlots within the MAX Blue Line data set. Lots without

historic data are likely newly created lots through land divisions, land aggregations, or condominium development.

This limitation proved more problematic in some geographies than others. Along the west extension after 1998, for instance, only 5% of station area development is associated with value data. Tax lot data for post light rail development within east extension station areas, in contrast, is 74% populated – making this more useful as a basis for projection of new LRT corridors.

Because the *east extension* (east of downtown) is best populated with value data, its rate of redevelopment for low value land is used as the basis for estimating the redevelopment rate for low value land surrounding the Milwaukie alignment.

Table 3. Eastside Blue Line Redevelopment of Low Value Lots

	Improvement : Land Value Ratio				No Value
	Low Value: <0.5	Moderate Value: .5 - 1	High Value: 1+	Total	Data
Station Area					
Total Acreage	299	122	927	1,348	90
Acres that redeveloped	37	7	11	54	22
Percent redeveloped	12%	6%	1%	4%	25%
Annualized	1.7%	0.8%	0.2%	0.6%	3.5%
Non Station Area					
Total Acreage	1,662	617	8,858	11,136	451
Acres that redeveloped	132	18	24	174	147
Percent redeveloped	8%	3%	0%	2%	33%
Annualized	1.1%	0.4%	0.0%	0.2%	4.7%

Note: The annualized rate divided the percent of acres redeveloped by the applicable number of post light rail years (for the east extension, this is 21).

Source: RLIS, Multnomah County Division of Assessment & Taxation, E.D. Hovee & Company, LLC.

Interaction of Station Proximity & Low Value Lots. In addition to low value lots serving as the source of the majority of development post LRT, not surprisingly these properties also experience the highest rates of redevelopment. Low value lots experience a redevelopment rate of 1.7% per year within station areas, while high value lots redevelop at a rate of only 0.2%.

However, this table also indicates that station area redevelopment cannot be solely explained by a greater prevalence of low and moderate value lots: 12% of low value acreage redeveloped within east extension Blue Line station areas compared with a lower 8% figure for low value non station area acreage. Similarly, 6% of moderate value acreage redeveloped within east extension Blue Line station areas compared with 3% of moderate value non station area acreage.

While there are differences in redevelopment rates due to existing value of improvements, proximity to the LRT station also clearly plays a role. It is the interaction of these two variables – station area proximity and improvement to land value ratios – that are applied to project development potentials for the proposed Portland-Milwaukie alignment. Implications of Table 3 are further discussed in the Portland-Milwaukie Line Implications section of this memo.

PORTLAND-MILWAUKIE LINE IMPLICATIONS

As proposed, the Milwaukie line will extend light rail transit from the southern end of the downtown transit mall (currently under construction), across the Willamette River on a new transit bridge, and south past the City of Milwaukie. The line will total approximately 7.5 miles.

Eleven stations are currently under planning consideration for this line – including eight east of the Willamette (eastside) and three within Portland's Central City on the west side of the Willamette (Westside). The alignment is illustrated on the following page, along with the ¼ mile station area geography.

To illustrate how light rail transit investment may influence development trends, two elements of the Blue Line experience and analytic methodology have been applied to projections of potential development reasonable to expect with the proposed Portland-Milwaukie line:

1. Rate of redevelopment of low and moderate value taxlots within station areas, and
2. FAR premium associated with station area proximity.

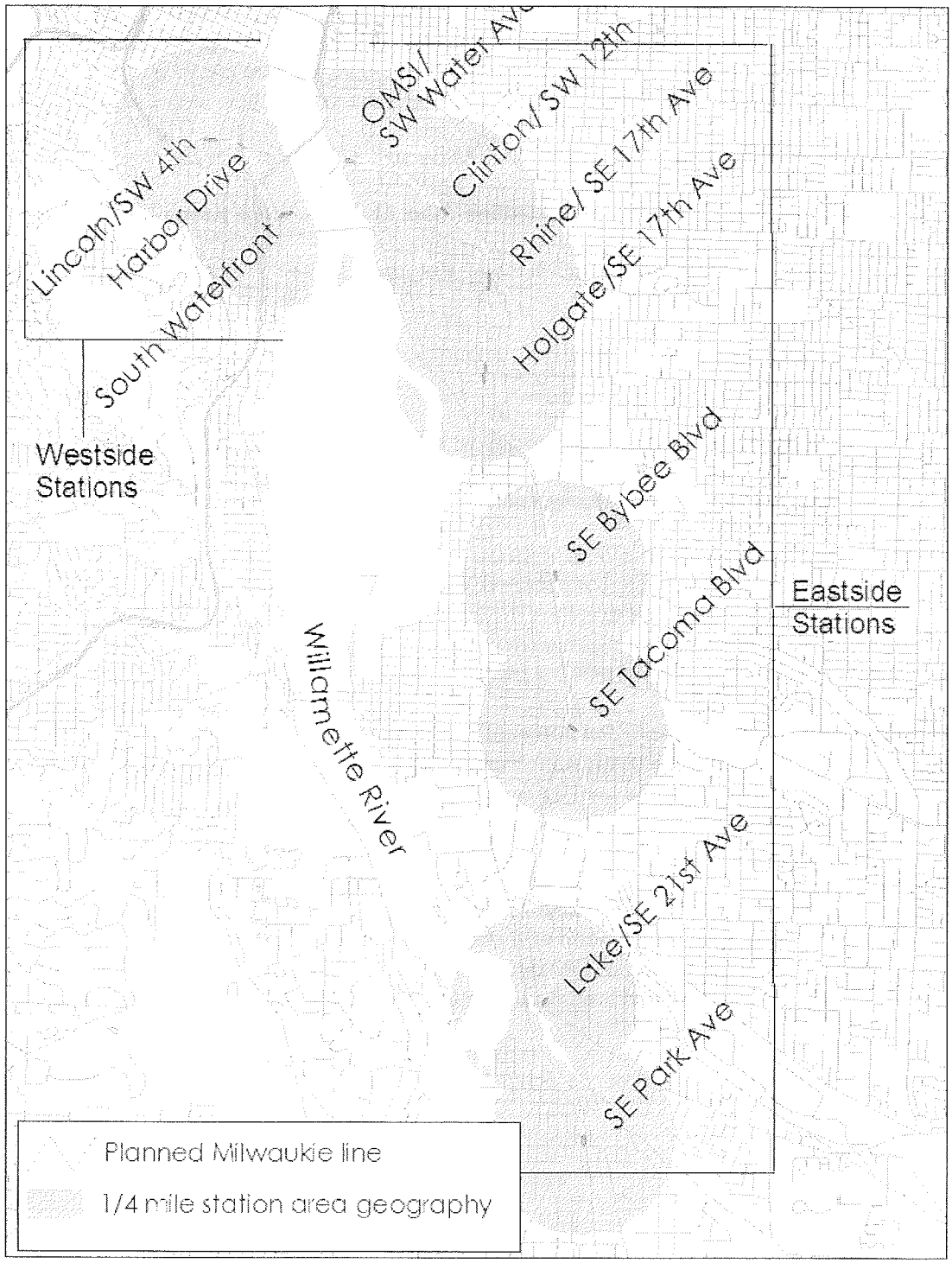
The first variable takes into account land availability within proposed station areas. Observed patterns of development indicate that the bulk of land that redevelops falls within certain low and moderate improvement to land value ratios. Future development within Milwaukie station areas will in part be driven by the availability of sites within these value ratios.

The second variable illustrates the likely character of development that may be anticipated within proposed station areas. This in turn influences the total square footage that may be realized on lots that redevelop.

Observed development in existing station areas also indicates that station areas have achieved higher densities than surrounding development. This premium has been *added to* the average FAR of development surrounding the Portland-Milwaukie line. The formula utilized is:

(Land to Redevelop) x (Projected FAR) = (Square Footage of Added Development)

Figure 2. Portland-Milwaukie Line Station Areas



Source: RLIS, Tri-Met, E.D. Hovee & Company, LLC.

Land Availability

Within a one-quarter mile radius of the Portland-Milwaukie line's eight eastside station areas there are a total of 210 acres identified as being of low and moderate value (in terms of improvement to land value ratios). In its three Westside station areas there are 93 acres, for a total of 303 acres within all station areas.

Table 4. Low Value Lots within Portland-Milwaukie Station Areas

Improvement: Land Value	Acres per Station Area: Eastside Station Areas								
	Park	Lake	Tacoma	Bybee	Holgate	Rhine	Clinton	OMSI*	Subtotal
Low Value: <0.5	15.4	30.7	28.7	1.0	12	12.0	11.5	14.5	126.1
Moderate Value: 0.5 - 1.0	28.9	3.3	18.2	1.3	10	10.2	8.5	3.8	83.8
Total	44.3	34.0	46.9	2.3	22.0	22.2	19.9	18.3	210.0

*Note: Low value land owned by OMSI has been removed from this area, as institutional development has been projected through a separate methodology described below.

Source: RLIS, Tri-Met, E.D. Hovee & Company, LLC.

Land Exclusions. Land owned by two institutions – Oregon Museum of Science and Industry (OMSI) and Oregon Health & Science University (OHSU) – has been removed from this tally, as institutional development is expected to reflect institutional planning and funding availability rather than more typical market-driven and generalized economic/development trends. Development potential for the OMSI/OHSU sites is estimated separately.

Redevelopment Potential. The redevelopment rate for low and moderate value land observed within Blue Line east extension station areas has been applied to Portland-Milwaukie station areas. The result illustrates the total acreage that could reasonably be expected to redevelop within Portland-Milwaukie station areas over an approximate 20 year time period.

The annual rate of redevelopment observed for the east Blue Line extension as applied to the Portland-Milwaukie line for low value acreage is 1.7%, twice the redevelopment rate for moderate value acreage (0.8%). Application of these observed eastside rates results in close to 100 acres of Portland-Milwaukie station area development over 20 years, at which point about 200 acres of low and moderate valued land would remain undeveloped (or not redeveloped).

Table 5. Potential Redevelopment within Portland-Milwaukie Station Areas

Improvement : Land Value	Acres per Station Area: Westside Station Areas: South Waterfront*	Harbor Drive	Lincoln	Subtotal	Total Low Value Acres	Total Alignment: Development Rate	Total Acres Developed	Remaining Low Value Acres
Low Value: <0.5	34.0	14.7	18.2	67.0	193.1	1.7%	79.9	113.3
Moderate Value: 0.5 - 1.0	3.0	9.1	14.0	26.2	110.0	0.8%	18.6	91.3
Total	37.0	23.9	32.3	93.1	303.1	1.4%	98.5	204.6

*Note: Low value land owned by OHSU has been removed from this area, as institutional development has been projected through a separate methodology described below.

Source: RLIS, Tri-Met, E.D. Hovee & Company, LLC.

Resulting Station Area Development

The density of development that 100 acres of land may produce is illustrated through both observed FARs and the FAR premium realized within Blue Line station areas. The current FAR of station areas varies significantly between eastside and downtown stations. Lots developed within eastside Blue Line stations indicate low, suburban densities of 0.24 whereas downtown lots report densities nine times as high (2.21).

An FAR *premium* of 0.35 – the average of the east and west Blue Line extensions – was applied to both geographies of the proposed Portland-Milwaukie alignment. While Blue Line downtown stations reported an FAR premium of 7.2, the more conservative suburban average was utilized instead given the complexities of development impacts and varying FAR limits within the downtown geography (as previously described).

Table 6. Illustrative Development for Portland-Milwaukie Station Areas

Geography	Current FAR	LRT Premium	Post LRT FAR	Acres to Redevelop	Post LRT Building SF	Building SF Without LRT	Building SF Premium
Eastside Station Areas	0.24	0.35	0.58	210.0	5,330,000	2,171,000	3,159,000
Westside Station Areas	2.21	0.35	2.55	98.5	10,958,000	9,476,000	1,482,000
Institutions							
OMSI (Eastside)				25.5	450,000	200,000	250,000
OHSU (Westside)				7.7	2,000,000	1,898,000	89,000
Total	2.45	0.69	3.14	341.7	18,726,000	13,745,000	4,980,000
Light Rail Premium (added to SF w/o LRT)							+ 36%

Source: RLIS, Tri-Met, OMSI, OHSU, E.D. Hovee & Company, LLC.

The resulting illustrative FAR of future Portland-Milwaukie station area development is 0.58 for eastside station areas and 2.55 for downtown station areas. Application of these FARs results in a combined estimate of 18.7 million square feet of new development within Portland-Milwaukie LRT corridor station areas.

A portion of this potential development square footage is associated with a light rail transit premium corresponding to the light rail FAR bonus. The building square footage that may be realized *without* light rail investment has been calculated as [Acres to Redevelop x Current FAR].

The difference between this number and the Post Light Rail Transit building SF [Acres to Redevelop x Post LRT FAR] is dubbed the *light rail premium.* In total, this premium accounts for 27% of post light rail development, or *an added 36%* of development above what could be expected to occur in the absence of LRT development.

The estimated LRT premium is considerably higher for Milwaukie-Portland line eastside station areas (estimated at an added 146%). By comparison, the Milwaukie-Portland line westside station area premium is considerably lower (estimated at an added 16%). This is in part due to a larger *institutional bump* associated with the OMSI master plan (eastside) than for OHSU (westside). Institutional development adjustments are further described further below.

This can be viewed as an inherently conservative approach, because it projects the results of past development trends forward into a new and increasingly urban era of development. For example, it can be expected that the development environment will be increasingly land-constrained, leading to densities of development above those projected based on historical experience to date.

Institutional Development. As noted, institutional development has been treated separately, due to the presence of the OMSI and OHSU institutions – each with significant vacant acreage in close proximity to two planned light rail stations:

- OMSI controls over 25 vacant acres within the OMSI station area. The institution's plans call for two phases of future development. Phase I plans call for a 100,000 square foot museum expansion and a 100,000 square foot science academy to be run in partnership with Oregon Health & Science University and attract high school students from throughout the state.

  Phase II plans expand the institution's current initiatives into office development compatible with its science focus. Construction is currently planned for the 2013-2014 time period. Current zoning would enable the development of over one million square feet. To err on the conservative side, this analysis assumes that one-quarter as much square footage is actually developed over a 20-year period.

  Of OMSI's future planned development, the estimated 250,000 square feet associated with Phase II has been attributed to light rail development due to the pivotal role that light rail will play in connecting OMSI's property directly with OHSU – across the Willamette River – and surrounding CBD office development. OMSI's light rail premium is high due to the dramatic increase in connectivity that light rail investment will bring between Portland's Central Business District and the OMSI campus. This LRT premium can be deemed as pivotal in OMSI's plans to venture into a new development arena.

- OHSU controls close to eight vacant acres within the South Waterfront station area, an area with a high base FAR zoning limit of 6:1. A March 2008 draft program summary for

this acreage – known as the Schnitzer Campus – calls for almost 2 million square feet of development at full built out.

Of this development, 4.5% has been attributed to light rail based upon mode split projections obtainable at the time this memo was completed. DKS Engineering has estimated transit ridership in the northern section of the South Waterfront district at full build out (2030).

In 2030, nine percent of employees are projected to arrive at work via transit in this district with limited road access capacity. Planned transit includes buses, streetcar and light rail. Due to its greater ridership capacity, LRT service is assumed to accommodate about half of these commuters, or 4.5% of employees. As a percentage of building square feet, this equates to 89,000 square feet. The light rail premium estimated for OHSU based on this analysis is therefore significantly more conservative than that estimated for OMSI's planned development.

Institutional land ownership has been projected separately for the Portland-Milwaukie station areas because development of this land can be expected to respond to institutional master planning and institutional funding availability more than general economic trends in job and housing growth. The two station areas that are dominated by institutional land ownership within the proposed Portland-Milwaukie alignment can be considered as unique to the MAX light rail system.

Similar patterns of extensive institutional land holdings in direct proximity have not yet occurred to the same degree along the east or west extensions of the Blue Line. There are examples of institutions near Blue Line stations, such as Providence and Adventist Hospitals or the Gresham and Hillsboro civic center complexes – but not in as direct proximity nor with the same degree of land available for added institutional expansion.

Valuation of Development

Cumulative market valuation associated with new development potentials identified over an approximate 20-year post-LRT time period is estimated at $3.86 billion for Portland-Milwaukie station areas. Without light rail, the added property valuation anticipated estimated is $930 million less at $2.93 billion. Valuation estimates are expressed in terms of real market value (RMV) based on current construction and related development costs for similar project types and locations in the Portland metro area.

Table 7. Potential Valuation of New Development in Portland-Milwaukie LRT Station Areas

	Millions of 2008 $
Total Potential w/LRT	$3,860
Without LRT	$2,930
LRT Premium	$930
LRT Premium %	+32%

Source: E.D. Hovee & Company, LLC.

In effect, potential valuation increases by nearly one-third (32%) above what could be expected in the absence of the planned LRT investment. This 32% add-on represents the *LRT premium* for a more rapid rate and higher density of development that could reasonably be anticipated with Portland-Milwaukie LRT consistent with observed Blue Line development experience.

Portland-Milwaukie Line Implications Summary

In total, the 342 acres of low and moderate value land associated with Portland-Milwaukie line station areas as illustrated are projected to support an estimated approximately 18.7 million square feet of new residential and employment development within 20 years of light rail investment. In the absence of light rail investment, the new development estimate decreases to 12.5 million square feet.

The difference between these two estimates is close to 5 million square feet. This difference equates to a 36% increase above baseline projections without LRT. This can be considered as the *development premium* potentially associated with Milwaukie line transit oriented investment.

Additional Development Influences

As stated in the introduction to this MAX light rail and development analysis, land development typically responds to a wide range of influences. This analysis has focused on three of importance for the LRT system: light rail investment, proximity to light rail stations and land value.

Several additional influences are discussed below to provide a brief overview of how these factors may also affect future development that may accompany Portland-Milwaukie line transit investment in ways that vary with observed development surrounding Blue Line stations.

- **Economic cycles**: In general, both land development and real estate appreciation will respond positively to overall regional job growth. East extension development encompasses a time frame (1986-2007) that includes significant regional job growth during the mid and late 90s. Some of these growth years also correspond to the post light rail period for the Westside extension (1998-2007), especially for residential and associated mixed use. The Westside experience is moderated in part by regional job losses in 2002 and 2003.

  Given the fairly long time frames utilized for this analysis – of 9-21 years that the west and east segments of the MAX Blue Line experience represent and the 20 year time horizon as applied for projected Milwaukie line investment – economic cycles are not expected to significantly distinguish observed development trends from future development trends over this longer term (two decade) planning horizon.

- **Housing boom**: The rapid rise in housing prices experienced through mid-2007 surpassed all housing booms on record (since roughly mid century). This generated high rates of housing development as investors sought new instruments for their money and took advantage of the buying power provided by historically low interest rates. While the pace of residential development experienced during the peak years of the recent housing

boom will not likely be replicated within the 20 years of Portland-Milwaukie line light rail investment, the fundamentals of continued residential demand appear to be in place once the housing market rebounds.

An aging population combined with continued in-migration means that housing needs will continue to change, albeit in ways that may be less predictable than in recent years. Consequently, this variable should be considered as a risk factor that may serve to depress the future pace of development below observed development trends.

- **Land configuration/lot size**: Land configuration influences development because larger, regularly shaped lots are generally easier to develop than smaller and/or irregularly shaped lots. This is not a factor that has been directly evaluated or documented as part of this analysis.

  For Blue Line station areas that were constructed through greenfield areas (as with Orenco Station and Gresham Town Center), large site master planning helped to facilitate development that could best respond to light rail investment. However, while a handful of Blue Line station areas were largely undeveloped, the majority of stations were introduced into largely built environments (as in the downtowns of Beaverton and Hillsboro and the residential neighborhoods of east Portland and Gresham).

  Most of the Portland-Milwaukie station areas can also be described as largely built out, but also representing a variety of land uses and with at least 30% of their combined acreage estimated to be vacant. Due to the variety represented with the existing 56 Blue Line stations and 11 prospective Portland-Milwaukie line stations, this variable is not considered a substantial risk factor that would cause future Milwaukie development to diverge substantially from observed Blue Line development.

- **Access and proximity to households, employment and retail amenities**: Development is more attractive – yielding higher returns to developers and investors – when locational amenities are high. Nearby retail represents an amenity increasingly sought by both housing (particularly non single family housing) and employment uses. Station area development can be expected when amenity-rich environments are provided.

  Within Blue Line station areas, amenity levels varied widely. Blue Line stations include smaller, historic downtowns and shopping districts struggling to attract and retain tenants and as well as stations within downtown Portland, the region's largest office market and the primary source of the region's recent and dramatic investment in condominium development.

  The proposed Portland- Milwaukie line station areas encompass a similar diversity of environments. These include the City of Milwaukie's historic downtown, newly available formerly industrial land in southeast Portland, the successful neighborhood shopping district of Bybee-Sellwood, and two stations currently dominated by vacant institutional land ownership. In effect, varying amenity levels are not considered a risk factor causing future development to diverge from observed development.

- **Public-private partnerships**: Public planning commitment and investment can propel development sooner and at greater densities than the market would otherwise deliver on its own. These partnerships have been important in the Central City, especially with major master planned developments as with Hoyt Street Yards in the Pearl District and the Central District in South Waterfront.

  While comparably sized site developments have not been as widely experienced outside the Central City, other public-private partnerships scaled to the properties available, local government capacities and the market have played a role along the Blue Line. Examples range from Orenco Station in Hillsboro to Russellville in East Portland and the Civic Station in Gresham.

  With this analysis, it is assumed that similar efforts may be made in Milwaukie station areas, especially within Urban Renewal Areas (which encompass the downtown Portland station areas and the OMSI station area). These efforts will be particularly important in the early years after light rail is introduced – for early phase catalyst projects.

- **Regulatory constraints**: Development throughout the metro area must respond to local jurisdiction comprehensive planning and zoning. This generally is not considered a limiting factor, as zoning along the Blue Line generally allowed for far greater development (higher FARs) than was actually realized. An exception is noted for station areas with high proportions of single family use for which land use designations remained largely unchanged.

  A brief review of zoning within Milwaukie station areas indicates that zoning constraints along this planned alignment also generally should not limit planned development, at least as far as building size is concerned. Whether zones are otherwise conducive to development in terms of the uses allowed and site design requirements has not been directly evaluated as part of this overview research assignment.

  Parking requirements have been eliminated for properties in Portland adjacent to light rail. Similarly, the City of Milwaukie has minimum and maximum parking requirements that give transit-oriented development more flexibility in providing parking, a factor that can otherwise be a potentially significant constraint for the development community in achieving higher transit-supportive densities.

DETAILED RESEARCH METHODOLOGY

The methodology for this analysis is separated into documentation of Blue Line development trends and the transference of these trends onto the Milwaukie station areas.

Observed Development Trends: Blue Line

Two study areas were employed:

1. Existing station areas, defined as taxlots with their center within one-quarter of a mile of an existing light rail station. Taxlots within station areas comprise 2,987 acres.
2. Non station areas, a comparison geography defined as a corridor extending one mile on either side of the Blue Line, excluding station areas. In total, taxlots within the non station area geography total 26,760 acres.

Together, the study areas total roughly 114,000 taxlots. The following attributes were determined for each taxlot:

1. Whether developed. A taxlot was classified as undeveloped if:
    - It had no associated year built or building square footage data, and
    - Building value was $35,000 or less
    - Lots that could be identified as parks – through ownership or property class ID – were removed from the tally of vacant of undeveloped land.
2. If developed, in what year (to determine if developed pre or post light rail.)
3. If developed, total square footage
4. Estimated market value of taxlots, 1999 and 2007

Taxlots were divided into three databases that correspond both to different light rail opening years and development contexts. These databases are:

1. East of the Willamette (Gresham to Portland's Central Eastside, light rail opened in 1986);
2. Downtown (the Central Business District, light rail opened in 1986); and
3. West of I-405 (from the CBD to the City of Hillsboro; light rail opened in 1998).

The break off for 'pre' or 'post' light rail development thus differs along the alignment.

Table 8. Blue Line Study Areas Taxlot Summary

	East of the Willamette	Downtown	West of I-405	Total
		Excludes condos		
Post Light Rail				
Station Area	790	43	866	1,699
Non Station Area	4,246	106	6,859	11,211
Pre Light Rail				
Station Area	3,042	425	1,566	5,033
Non Station Area	42,512	419	24,972	67,903
Undeveloped Lots				
Station Area	737	158	440	1,335
Non Station Area	3,685	219	4,074	7,978
Lots with Insufficient Data				
Station Area	52	25	393	470
Non Station Area	168	47	1,153	1,368
Public Use Lots (Washington County only)				
Station Area			179	179
Non Station Area			1,266	1,266
Total Lots	55,218	1,442	41,768	98,428
		Condo units only		
Post Light Rail				
Station Area	515	346	1,733	2,594
Non Station Area	547	2,735	1,321	4,603
Pre Light Rail				
Station Area	140	153	759	1,052
Non Station Area	2,398	1,853	3,290	7,541
Total condos	3,600	5,087	7,103	15,790

Source: RLIS, E.D. Hovee & Company, LLC.

Taxlots attributed were determined via RLIS data (Regional Land Information System), May 2008 update, packaged by Metro Regional Government. Less than 2% of taxlots – excluding condos – had insufficient data to determine the year in which the lots was developed and its total built square footage. These lots were removed from the tally of developed lots, from which the rate and density of post and pre light rail development was calculated.

Condominiums: Condominiums were identified via tax assessor property class (several property classes describe different types of condominiums). Condominium taxlots were then identified as land or building via Geographic Information Systems (GIS) software, so that this property type could be used in Floor Area Ratio calculations.

Within the downtown geography – which has realized the greatest numbers of new condominiums in recent years – if some units within a building were missing year built or building square footage data, this was supplied. If no units had year built or building square footage information, the condo was excluded from the analysis. This was the case for approximately 65 downtown condominium units, likely very recently completed.

Converted space was not included in the condominium tally, only newly built square footage. This means that condominium projects that were formerly warehouses or apartments were not counted, as the focus of this analysis is change in the characteristics of net added development rather than use change.

Floor Area Ratio Calculations: Reported Floor Area Ratios are weighted for property/building size by summing up building square feet within a geography and timeframe (e.g. station areas pre light rail) and dividing by the sum of land area within the same geography.

Value Data: Value appreciation was calculated between 1999 and 2007 as 1999 was the earliest year for which historical assessment data was readily available. Historic data was provided by Multnomah County Division of Assessment and Taxation and by Washington County Department of Assessment and Taxation. Historic data could not be provided for lots created after 1999 (for instance, taxlots created through land divisions, or condominiums, which create a taxlot for each unit). Historic value data was provided for 75,601 taxlots out of 85,839 taxlots identified as developed (88%).

Rate of Low Value Lot Development: Historic value data was also used to determine the value of lots prior to their development. Lots that developed between 2000 and 2007 for which historic value data was available were classified into low and moderate value pre-development. These are defined through an improvement to land value ratio, the ratio of building value to the value of the land with which the building is associated.

The rate of low value lot development was based upon a smaller subset of taxlots, because historic value data was not available for a significant number of taxlots, particularly lots within Washington County (within the 'westside' database).

Beyond value data, lots were also removed that could readily be identified as parks as well as land owned by transportation organizations, railroads and utilities including Portland General Electric, as these ownerships correlate with a significantly reduced likelihood of land redevelopment.

Table 9. Developed Taxlots with Historic Value Data

	Percent of Developed Taxlots with Value Data			
Geography	East	Downtown	West	Total
Post Light Rail				
Station Area	74%	65%	5%	34%
Non Station Area	86%	69%	29%	45%
Pre Light Rail				
Station Area	98%	99%	87%	95%
Non Station Area	99%	99%	91%	96%

Source: RLIS, E.D. Hovee & Company, LLC.

The significantly lower percentage of Westside lots with associated historic value data could be due to a greater prevalence of lot divisions in that geography, particularly within station areas.

Projected Development Trends: Portland-Milwaukie Line

Only land within Portland-Milwaukie station areas (one quarter mile surrounding each station) was considered for this analysis. This equates to roughly 6,200 taxlots (including condominiums) comprising roughly 701 acres. The attributes assigned to these taxlots include:

1. Whether developed
2. If developed, total square footage
3. Whether a condominium
4. Improvement and land value 2007

The criteria for determining these attributes are as described for the Blue Line analysis.

A detailed break down of land availability within Milwaukie station areas is provided below by zone, although zone was not a variable utilized in this analysis. The table includes low value lots only (improvement to land value ratio of 0.5 or less).

Added valuation is projected based on current construction and related development (i.e. soft) associated with similar product types as of mid-2008. Square foot averages are applied to the development uses indicated as typical for eastside and westside residential and commercial uses plus institutional activities as represented by OMSI and OHSU. Construction cost data is from published estimates of the cost estimating firm Rider Levett Bucknall for the Portland metro area, as of the 2nd quarter of 2008.

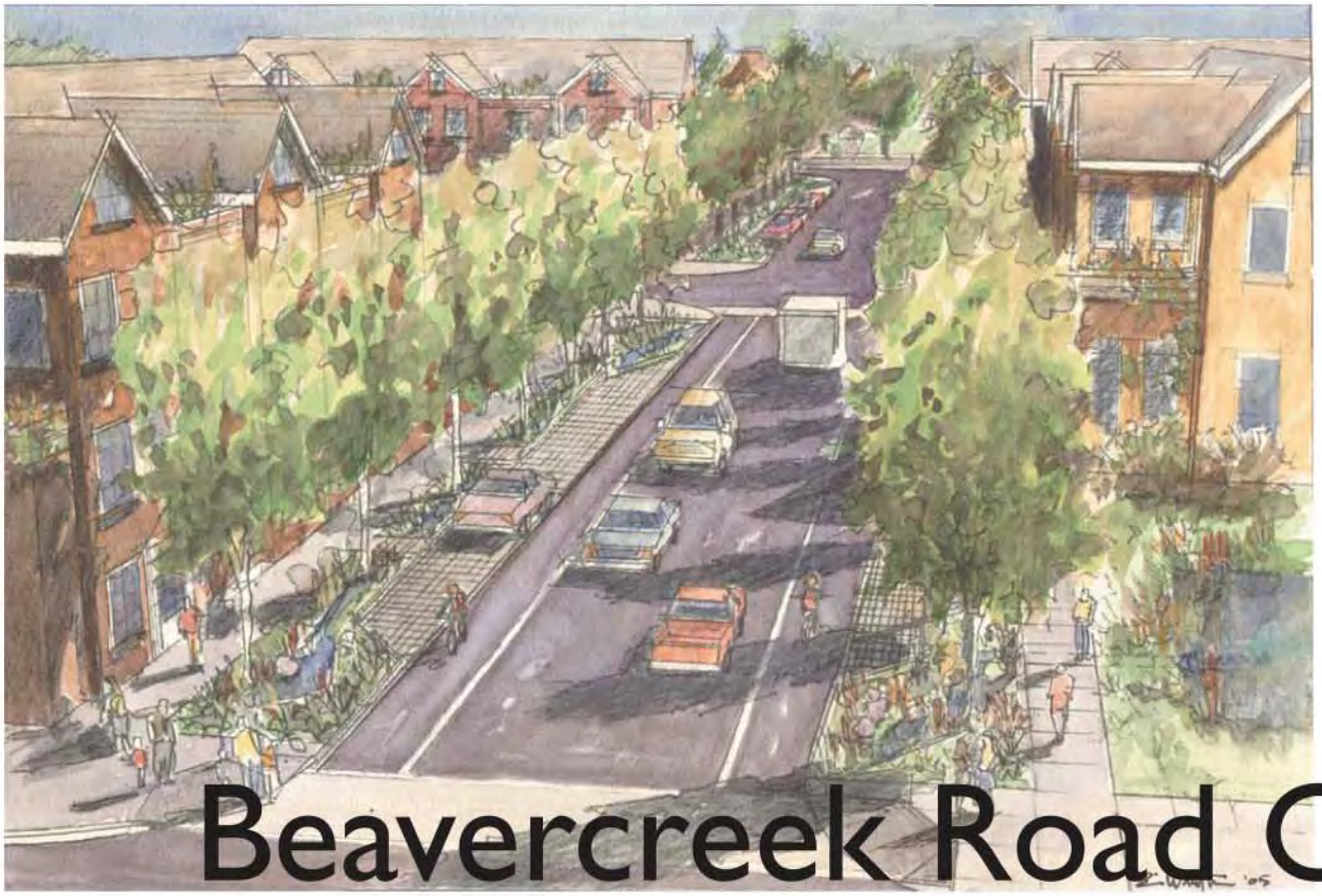
Potential appreciation in land values that might occur with higher density development is not included with the estimates provided. From this perspective, the LRT development premiums calculated can be viewed as conservative estimates of the added valuation that might be realized.

Table 10 Portland-Milwaukie Station Area Low Value Lot Detail

		Park Ave		Lake Rd		Tacoma		Bybee		Holgate		Rhine		Clinton		OMSI		South Waterfront		Harbor Drive		Lincoln		Total	
	Zone	Lots	Avg Size	Lots	Avg Size	Lots	Avg Size	Lots	Avg Size	Lots	Avg Size	Lots	Avg Size	Lots	Avg Size	Lots	Avg Size	Lots	Avg Size	Lots	Avg Size	Lots	Avg Size	Lots	Avg Size
County Milwaukie City	R1B			3	0.1																			3	0.1
	CL			1	0.2																			1	0.2
	M					24	0.3																	24	0.3
	DO			12	0.6																			12	0.6
	DOS			17	0.8																			17	0.8
	DR			3	0.4																			3	0.4
	DS			5	0.2																			5	0.2
	R2			6	1.2																			6	1.2
	R5	5.0	0.3	3	0.1	10	0.4																	18	0.3
	C3	14	0.7																					14	0.7
	HDR	3	0.2																					3	0.2
	MR1	2	0.2																					2	0.2
	R10	10	0.2																					10	0.2
	R7	10	0.2																					10	0.2
Portland City	CG					13	0.3			10	0.6	18	0.1	10	0.1									51	0.2
	CO2																	6	0.2	5	0.2			11	0.2
	CS													2	0.1							9	0.1	11	0.1
	CX																	9	2.1	24	0.6	1	0.0	34	1.0
	EG1									4	0.1	11	0.1	3	0.2			2	0.1					20	0.1
	EG2					4	2.1									1	1.2							5	2.0
	EX													18	0.1	25	0.2							43	0.2
	IG1									8	0.5	50	0.2	24	0.3									82	0.2
	IG2					2	0.2									10	1							12	0.6
	R1							1	0.1	14	0.1	1	0.9	2	0.0									18	0.2
	R2					4	0.1							2	0.1			1	0.0					7	0.1
	RH																	2	0.1			15	0.2	17	0.2
	RX																					57	0.3	57	0.3
	R2.5									1	0.1	1	0.1	4	0.1									6	0.1
	R5							3	0.3	37	0.3	2	0.1	3	0.0									45	0.3
	Total Lots/ Acreage	44	15.1	50	30.7	57	24.2	4	1.0	74	24.6	83	11.9	68	11.5	36	14.5	20	20.4	29	14.7	82	22.6	547	191.3
	Low Value % of Total Acreage		20%		36%		42%		1%		7%		15%		15%		27%		32%		23%		41%		18%

Note: Grey shading indicates single family residential zones.

Source: RLIS, E.D. Hovee & Company, LLC.



Beavercreek Road Concept Plan

Envisioning a Complete and Sustainable Community

Concept Plan Report, Summary and Recommendations

Final Plan August 2008



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Beavercreek Road Concept Plan

Summary and Recommendations

Final Plan - August 2008

Funding provided by:

City of Oregon City

Oregon Department of Transportation -
Transportation and Growth Management Program

Consultant Team

ECONorthwest

Environmental Sciences Associates, Inc.

Jeanne Lawson Associates

Kittelson and Associates

Otak Project No. 13599

Project Participants

Citizen Advisory Committee

Dave Prideaux	Natural Resources
Elizabeth Graser-Lindsey	The Hamlet of Beavercreek
Dan Lajoie	Planning Commission
Mike Riseling	Oregon City School District
Mary Smith	Transportation Advisory Committee
Bill Leach	Clackamas Community College
Lynda Orzen	Resident, Caufield Neighborhood
Ron Estes	Resident, Caufield Neighborhood
Rose Holden	Property Owner, Oregon City Golf Course
Ken Allen	Development Interest, Representing Hall family
Richard Mudgett/ Patty Jacobs (alt)	Representing Hall family
Phil Gentemann	Development Interest, Property Owner
Renate Mengelberg	Clackamas County, Economic Development
Beverly Thacker	State of Oregon, Economic Development
Amber Holveck	Oregon City Chamber of Commerce, Business
Doug Neeley	Transportation Advisory Committee

Technical Advisory Committee

Ray Valone	Metro
Ben Baldwin	Tri-Met
Gail Curtis	Oregon Department of Transportation
Stacy Humphrey	Department of Land Conservation and Development
Joe Marek	Clackamas County Transportation
Nancy Kraushaar	Oregon City Public Works Department
Renate Mengelberg	Clackamas County
Lorranine Gonzales	Clackamas County
Dan Drentlaw	Oregon City Community Development

City Staff

Dan Drentlaw, Community Development Director
Tony Konkol, Senior Planner and City Project Manager
Nancy Kraushaar, Public Works Director
Laura Butler, Planner

Consultant Team

Otak

Joe Dills, AICP, Project Manager
Michelle Stephens, Planner
Kathryn Yagodinski, Project Assistant
Martin Glastra van Loon, Urban Designer
Chunlin Yang, Urban Designer
Del Leu, GIS
Dan Antonson, GIS
Jerry Markisino, PE, Engineer
Amanda Owings, PE, Engineer
Kevin Timmins, PE, Water Resource Engineer
Mandy Flett, Planner

ECONorthwest

Terry Moore
Anne Fifield
Sarah Graham
Radcliffe Dacanay
Jacob Holcombe

Environmental Sciences Associates

Wallace Leake

Kittelson and Associates

Phillip S.D. Worth
Nick Foster

Jeanne Lawson Associates

Kristin Hull
Kalin Schmoldt

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Appendix

Technical Appendix (Under Separate Cover)

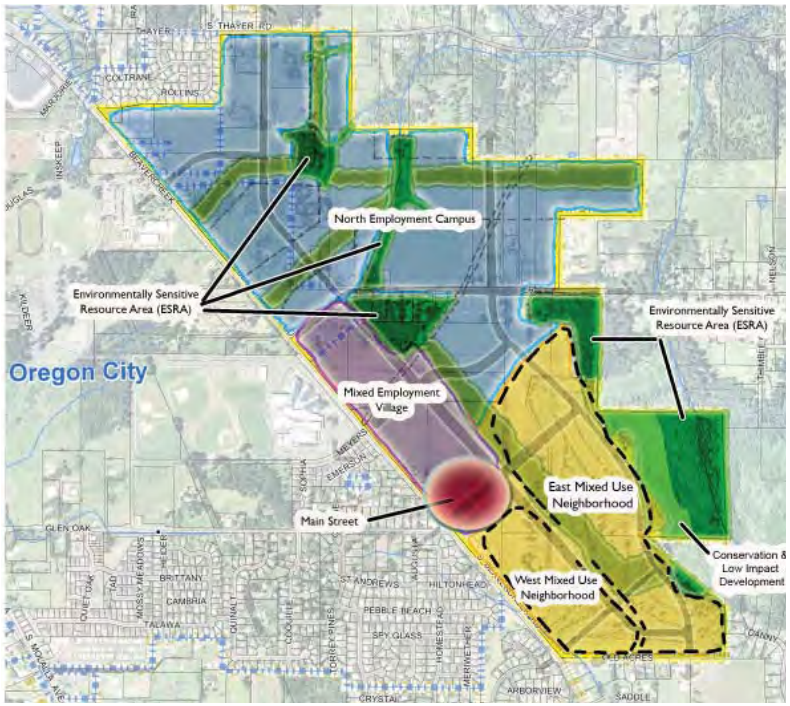
I. Introduction

Summary

The Beavercreek Road Concept Plan is a guide to the creation of a complete and sustainable community in southeast Oregon City. Most of the 453 acre site along Beavercreek Road was added to the regional urban growth boundary by Metro in 2002 and 2004. The plan envisions a diverse mix of uses (an employment campus north of Loder Road, mixed use districts along Beavercreek Road, and two mixed use neighborhoods) all woven together by open space, trails, a network of green streets, and sustainable development practices. Transit-oriented land uses have been strategically located to increase the feasibility of transit service in the future. The plan has been carefully crafted to create a multi-use community that has synergistic relationships with Clackamas Community College, Oregon City High School, and adjacent neighborhoods.

Key features of the Concept Plan are:

- *A complete mix of land uses, including:*
  - A North Employment Campus for tech flex and campus industrial uses, consistent with Metro requirements for industrial and employment areas.
  - A Mixed Employment Village along Beavercreek Road, between Meyers Road and Glen Oak Road, located as a center for transit-oriented densities, mixed use, 3-5 story building scale, and active street life.
  - A 10-acre Main Street area at Beavercreek Road and Glen Oak Road, located to provide local shops and services adjacent neighborhoods and Beavercreek sub-districts.
  - A West Mixed Use Neighborhood along Beavercreek Road, intended for medium to high density (R-2) housing and mixed use.
  - An East Mixed Use Neighborhood, intended for low density residential (R-5) and appropriate mixed use. The East Neighborhood has strong green edges and the potential for a fine grain of open space and walking routes throughout.



Proposed Land Use Sub-districts

- *Policy support for employment and program connections with Clackamas Community College.*
- *Sustainability strategies, including:*
  - Mixed and transit supportive land uses.
  - A sustainable stormwater management plan that supports low impact development, open conveyance systems, regional detention, and adequate sizing to avoid downstream flooding.
  - Green street design for all streets, including the three lane boulevard design for Beavercreek Road.
  - A preliminary recommendation supporting LEED certification or equivalent for all commercial and multi-family buildings, with Earth Advantage or equivalent certification for single family buildings. This recommendation includes establishment of a Green Building Work Group to work collaboratively with the private sector to establish standards.
  - Open spaces and natural areas throughout the plan. North of Loder Road, these include the power line corridors, the tributary to Thimble Creek, and a mature tree grove. South of Loder Road, these include an 18-acre Central Park, the east ridge area, and two scenic view points along the east ridge.
- *A trail framework that traverses all sub-districts and connects to city and regional trails.*
- *A street framework that provides for a logical and connected street pattern, parallel routes to Beavercreek Road, and connections at Clairmont, Meyers, Glen Oak, and the southern entrance to the site.*
- *A draft Beavercreek Road Zone development code to implement the plan.*

Purpose of this Report and Location of Additional Information

This report is a summary of the Plan, with emphasis on describing key elements and recommendations. Many of the recommendation are based on technical reports and other information that is available in the Technical Appendix to this report.

Beavercreek Road Concept Plan Area - Existing Conditions

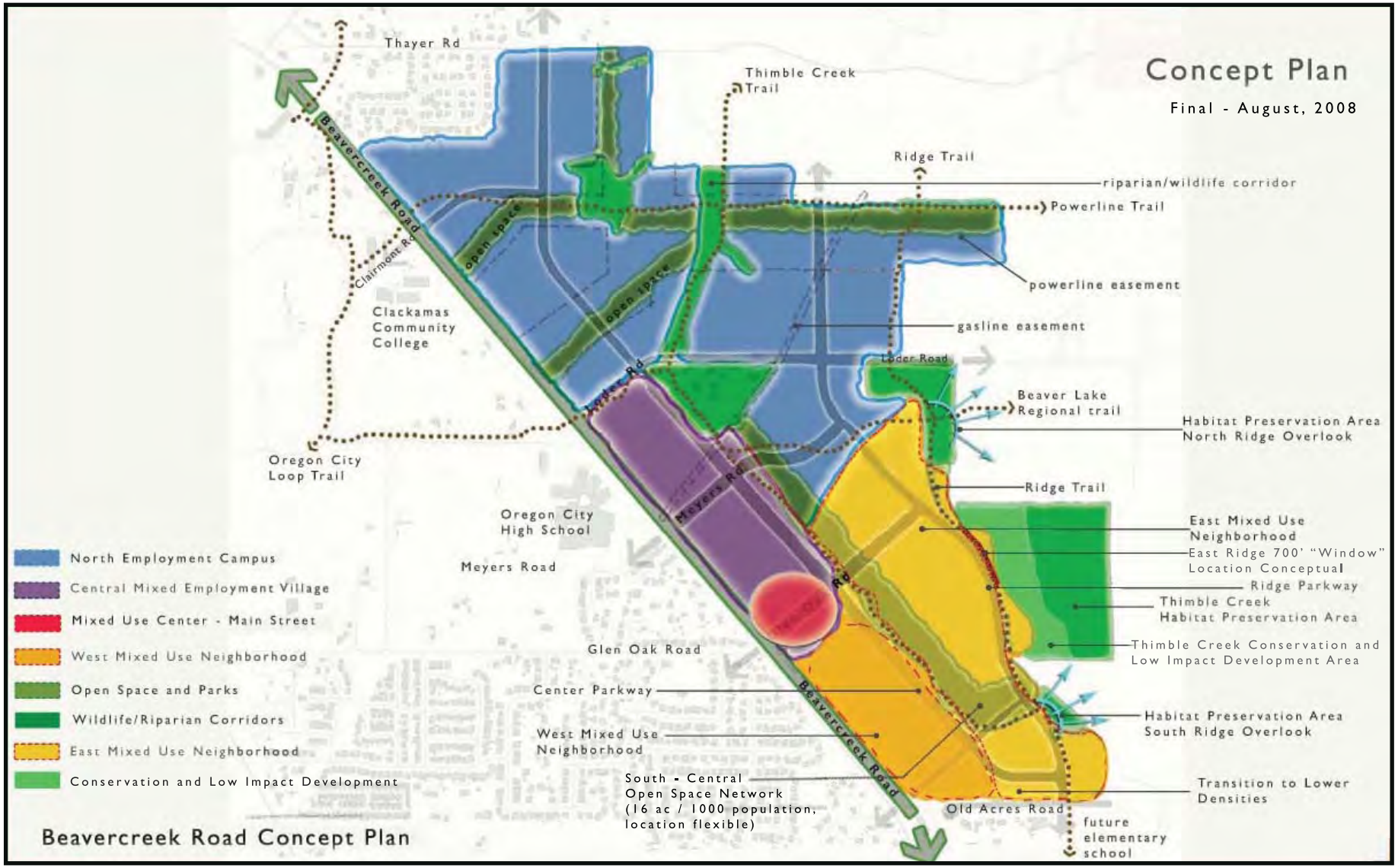


Figure 1 - Composite Concept Plan

II. Purpose and Process

The purpose of the Beavercreek Road Concept Plan is to provide a conceptual master plan to be adopted as an ancillary document to the City of Oregon City's Comprehensive Plan. As such, it provides a comprehensive and cohesive guide to future development, in three parts:

- Framework plan maps, goals and policies – These elements will be adopted as part of the Oregon City Comprehensive Plan. Compliance will be required for all land use permits and development.
- Ancillary report materials – The descriptive text, graphics and technical appendix of this report will be adopted as an "ancillary document" to the Comprehensive Plan, which provides "operational guidance to city departments in planning and carrying out city services" (Oregon City Comprehensive Plan, page 4). These documents include information for updating the City's utility master plans and Transportation System Plan.
- Draft development code – A working draft development code was prepared as part of the Concept Plan. Once final, it will be adopted as part of the Oregon City Code. Compliance will be required for all land use permits and development. The Beavercreek Zone code relies on master planning to implement the concepts in the Plan.

The Concept Plan was developed by a 15-member Citizen Advisory Committee (CAC) and 9-member Technical Advisory Committee (TAC) (see Project Participants list at the beginning of this report). The committees met twelve times between June 2006 and July 2007.

Design Workshop Participants

In addition to the Committee meetings, additional process steps and community involvement included:

- Study area tour for CAC and TAC members
- Two public open houses
- Market focus group
- Sustainability focus group
- Employment lands coordination with Metro
- Community design workshop
- Website
- Project posters, site sign, email notice, and extensive mailing prior to each public event

The major steps in the process were:

- Inventory of base conditions, opportunities, constraints for land use, transportation, natural resources, market conditions, infrastructure and sustainability.
- Establishment of project goals.
- Extensive discussion of employment lands questions: how much, what type and where?
- Following the community workshop, preparation of three alternative concept plans (sketch level), addition of a fourth plan, prepared by a CAC member, and narrowing of the alternatives to two for further analysis.
- Evaluation of the alternatives (including transportation modeling) and preparation of a hybrid Concept Plan (framework level).
- Preparation of detailed plans for water, sewer, storm water, and transportation facilities.
- Preparation of a draft development code.
- Committee action to forward the Concept Plan package to the Planning Commission and City Commission.

For additional information please see Technical Appendix, Sections A, D, E, and F.

Design Workshop Plan

III. Vision, Goals and Principles

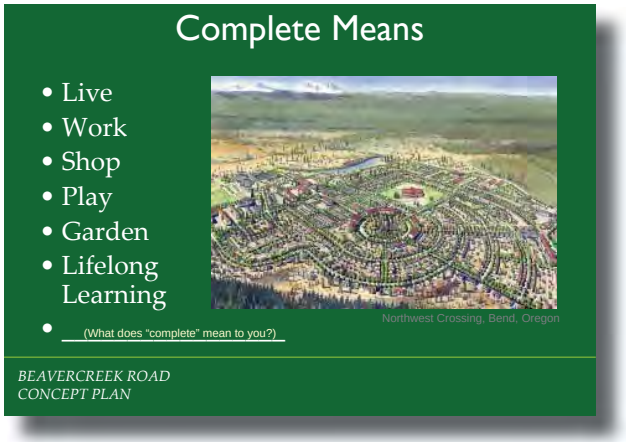
The overall vision for the Beavercreek Concept Plan is to create "A Complete and Sustainable Community". The images shown on this page were displayed throughout the process to convey the project's intent for this vision statement.

Regarding the meaning of sustainability, the vision statement is based in part on the definition of sustainability originally developed by the United Nations Brandtland Commission: "A sustainable society meets the needs of the present without sacrificing the ability of future generations to meet their own needs".

The following project goals were developed by the Citizen Advisory Committee. The Committee also added objectives to each of the goals – please see Appendix 1 for the objectives.

The Beavercreek Road Concept Plan Area will:

- Create a complete and sustainable community, in conjunction with the adjacent land uses, that integrates a diverse mix of uses, including housing, services, and public spaces that are necessary to support a thriving employment center;
- Be a model of sustainable design, development practices, planning, and innovative thinking;
- Attract "green" jobs that pay a living wage;
- Maximize opportunities for sustainable industries that serve markets beyond the Portland region and are compatible with the site's unique characteristics;
- Incorporate the area's natural beauty into an ecologically compatible built environment;
- Provide multi-modal transportation links (such as bus routes, trails, bike-ways, etc.) that are connected within the site as well as to the surrounding areas;



- Implement design solutions along Beavercreek Road that promote pedestrian safety, control traffic speeds and access, and accommodate projected vehicular demand;
- Promote connections and relationships with Oregon City High School and Clackamas Community College;
- Have a unique sense of place created by the mix of uses, human scale design, and commitment to sustainability; and
- Ecological Health – Manage water resources on site to eliminate pollution to watersheds and lesson impact on municipal infrastructure by integrating ecological and man-made systems to maximize function, efficiency and health.

The following 10 Principles of Sustainable Community Design were submitted by a CAC member, supported by the committee, and used throughout the development of the Concept Plan:

1. Mix Land Uses - Promote a mix of land uses that support living wage jobs and a variety of services.
2. Housing Types - Create a range of housing choices for all ages and incomes.
3. Walk-ability - Make the Neighborhood "walkable" and make services "walk-to-able."
4. Transportation - Provide a range of transportation options using a connected network of streets and paths.
5. Open Space - Protect and maintain a functioning green space network for a variety of uses.
6. Integrate Systems - Integrate ecological and man-made systems to maximize function, efficiency and health.
7. Watershed Health - Manage water resources on site to eliminate pollution to watershed and lesson impact on municipal infrastructures.
8. Reuse, Recycle, Regenerate - Reuse existing resources, regenerate existing development areas
9. Green Buildings - Build compact, innovative structures that use less energy and materials
10. Work Together - Work with community members and neighbors to design and develop.

Thimble Creek Tributary

IV. Regional and Local Context

The Beavercreek Road Concept Plan area is 453 acres of land located at the southeast edge of Oregon City and the Urban Growth Boundary (UGB). It marks a transition point between the City's current edge of urbanization and rural and resource lands to the south and east.

The majority of the site (245 acres) was added to the Metro UGB in December 2002 and an additional 63 acres were added to the UGB in 2004. The remaining site acreage was in the UGB and/or the Oregon City limits prior to 2002. The Concept Plan area carries Metro design type designations of Employment, Industrial, and Outer Neighborhood on the Region 2040 Growth Concept Map. The properties with the Outer Neighborhood designation have been in the UGB since 1980. Employment design type areas, as defined by Metro, allow various types of employment with some residential development and limited commercial uses. Industrial design type areas are set aside by Metro primarily for industrial activities with limited supporting uses.

During the update of Oregon City's Comprehensive Plan, a policy was adopted acknowledging the jobs-related importance of the site to Oregon City and the region, while also allowing some flexibility in the project area's land use. Comprehensive Plan policy 2.6.8 states:

"Require lands east of Clackamas Community College that are designated as Future Urban Holding to be the subject of concept plans, which is approved as an amendment to the Comprehensive Plan, would guide zoning designations. The majority of these lands should be designated in a manner that encourages family-wage jobs in order to generate new jobs and move towards meeting the City's employment goals."

There are relatively limited employment centers within this area of Oregon City and Clackamas County. This imbalance of jobs and housing contributes to Clackamas County's pattern of approximately 60% of the work force traveling outside of the County to work.

The site is surrounded by residential and undeveloped properties within the city limits, including the Hamlet of Beavercreek, and rural Clackamas County. The nearest commercial area is the Berry Hill Shopping Center at the intersection of Beavercreek Road and Highway 213. Clackamas County College (CCC) and Oregon City High School are across Beavercreek Road adjacent to the site. These institutional uses offer a unique opportunity to plan synergistic land uses that connect the properties, reinforce an identity for the area, and help localize trips. A Tri-Met transit hub is located on the CCC property.

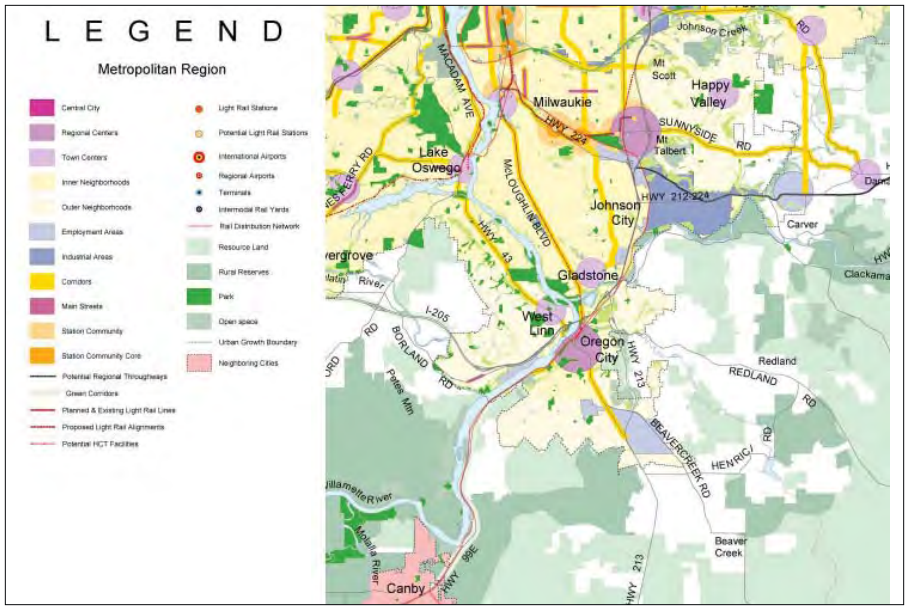


Figure 2 - Regional Context

Like all additions to the Portland Metropolitan Area Urban Growth Boundary, the Beavercreek Road area is inextricably tied to it's place in the region and its place within Oregon City. The Concept Plan responds to this context in multiple ways.

From a regional perspective, the Beavercreek Road area is currently a transition point from urban to rural use. Whether this "hard line" of transition will remain in the future cannot be established with certainty. The CAC openly acknowledged this issue in its discussions and sought to balance the needs of creating a great urban addition to Oregon City with sensitivity to adjacent areas. Examples of this balance include:

- The plan has land use and transportation connections that support future transit. This will link the Beavercreek Road area, via alternative transportations, to Clackamas Community College (CCC), the Oregon City Regional Center (downtown and adjacent areas) and the rest of the region.
- Trails and green spaces have been crafted to link into the broader regional network.
- The plan recommends lower densities and buffer treatments along Old Acres Road.
- The north south collector roads are coalesced to one route that could (if needed) be extended south of Old Acres Road.
- The recommended street framework provides for a street that parallels Beavercreek Road, connecting Thayer Road to Old Acres Road, and potentially north and south in the future. This keeps options open: if the UGB extends south, the beginning of a street network is in place. If it does not, the connection is available for rural to urban connectivity if desired.
- As with the street network described above, the East Ridge trail is extended all the way to Old Acres Road, and therefore, potentially beyond.

This will provide a connection from rural areas to the open spaces and trail network of Beavercreek Road area and the rest of the region.

From a City and local neighborhood perspective, the Beavercreek Road area offers an opportunity to establish a new complete and sustainable community within Oregon City. Specific linkages include the following:

- Oregon City needs employment land. The Beavercreek Concept Plan provides 156 net acres of it in two forms: 127 net acres of tech flex campus industrial land, 29 acres of more vertical mixed use village and main street. Additional employment will be available on the Main Street and as mixed use in the two southern neighborhoods.
- The street framework connects to all of the logical adjacent streets. This includes Thayer, Clairmont, Meyers, Glen Oak, and Old Acres Roads. This connectivity will disperse traffic to many routes, but equally important, make Beavercreek Road connected to, rather than isolated from, adjacent neighborhoods, districts and corridors.
- The plan provides for a complete community: jobs, varied housing, open space, trails, mixed use, focal points of activity, trails, and access to nature.
- The plan provides for a sustainable community, in line with the City's

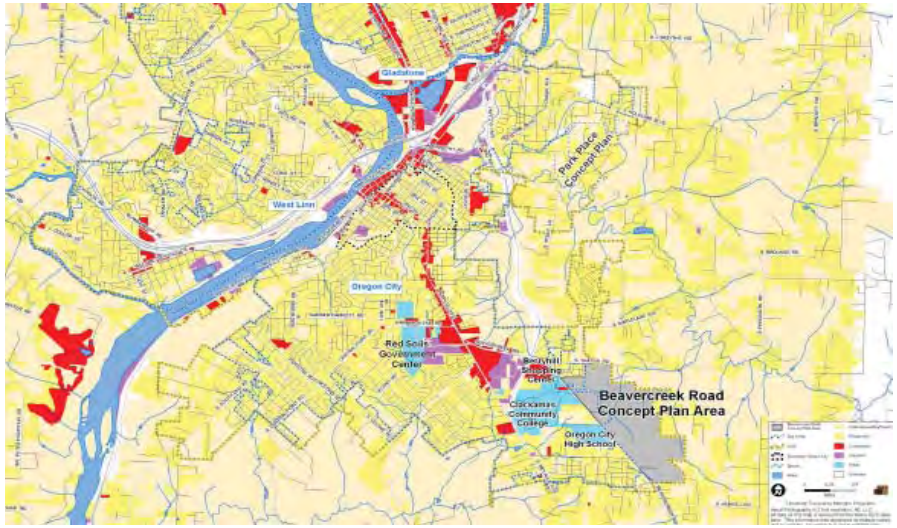


Figure 3 - Oregon City Context

Comprehensive Plan support for sustainability. This takes the form of mixed land uses, transportation options, green streets, sustainable storm water systems, and LEED or equivalent certification for buildings. Much more can certainly be done – the Concept Plan offers an initial platform to work from.

- Physical linkages have been provided to Oregon City High School and Clackamas Community College. These take the form of the planned 3-lane green street design for Beavercreek Road and the intersections and trails at Clairmont, Loder and Meyers Roads. The physical linkages are only the beginning – the City, School District and College need to work together to promote land uses on the east side of Beavercreek Road that truly create an institutional connection.

For additional information, see Existing Conditions, Opportunities and Constraints Reports, Technical Appendix C.

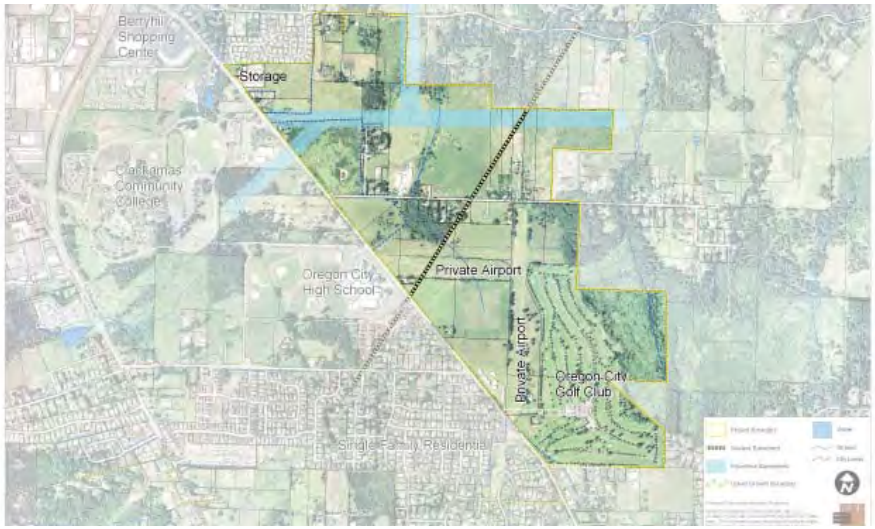


Figure 4 - Existing Conditions

Site Conditions and Buildable Lands

A portion of the study area (approximately 50 acres) is currently within the existing city limits and zoned Campus Industrial (CI). The study area's northern boundary is Thayer Road and the southern boundary is Old Acres Lane. Loder Road is the only existing road that runs through the project area.

Currently, the project area is largely undeveloped, which has allowed the site to retain its natural beauty. There are 448 gross acres in the project area, not including the right-of-way for Loder Road (approximately five acres). The existing land uses are primarily large-lot residential with agricultural and undeveloped rural lands occupying approximately 226 acres of the project area. The Oregon City Golf Club (OCGC) and private airport occupy the remaining 222 acres.

There are several large power line and natural gas utility easements within the project boundaries. These major utility easements crisscross the northern and central areas of the site. The utility easements comprise approximately 97 acres or 20% of the project area.

There are 51 total properties ranging in size from 0.25 acres to 63.2 acres. Many of these properties are under single ownership, resulting in only 42 unique property owner names (Source: Clackamas County Assessor). There are several existing homes and many of the properties have outbuildings such as, sheds, greenhouses, barns, etc. , which result in 127 existing structures on the site (Source: Clackamas County Assessor).

A key step in the concept planning process is the development of a Buildable Lands Map. The Buildable Lands Map was the base map from which the concept plan alternatives and the final recommended plan were. "Buildable" lands, for the purpose of the Beavercreek Road Concept Plan, are defined as the gross site area minus wetlands, steep slopes, other Goal 5 resources, public utility easements, road rights-of-way, and committed properties (developed properties with an assessed improvement value

greater than $350,000). Properties with an assessed improvement value of less than$350,000 (based on County assessment data) are considered redevelopable over the long-term as the existing structures are converted to higher value uses. The OCGC has an improvement value over $350,000, but has been included as buildable lands (minus the clubhouse) because the owners may wish to redevelop the property in coordination with the recommended concept plan over time. The private airport has also been included as buildable over the long-term, recognizing that the owners may choose to continue the airport's use for many years.

When land for power lines, the natural gas line, natural resources, and committed structures are removed the net draft buildable acreage is approximately 292 acres. The CAC reviewed the Preliminary Buildable Lands map and approved a three-tier system to define the buildable lands. Tier A or "Unconstrained" has approximately 292 acres, Tier B or "Low Impact Development Allowed with Review" has approximately 28 acres, and Tier C "Constrained" has approximately 131 acres. The "Low Impact" area was later further evaluated and recommended for conservation under a Environmentally Sensitive and Resource Area designation on the plan.

The Buildable Lands Map was reviewed at the July 20th and August 17th Citizen and Technical Advisory Committee (CAC/TAC) meetings, as well as at the August 24th, 2006 Open House. The draft buildable land boundaries and acreages shown in Figure 6 reflect the input received from the advisory committee members, property owners, and citizen input.

For additional information, see Existing Conditions, Opportunities and Constraints Reports, Technical Appendix C.

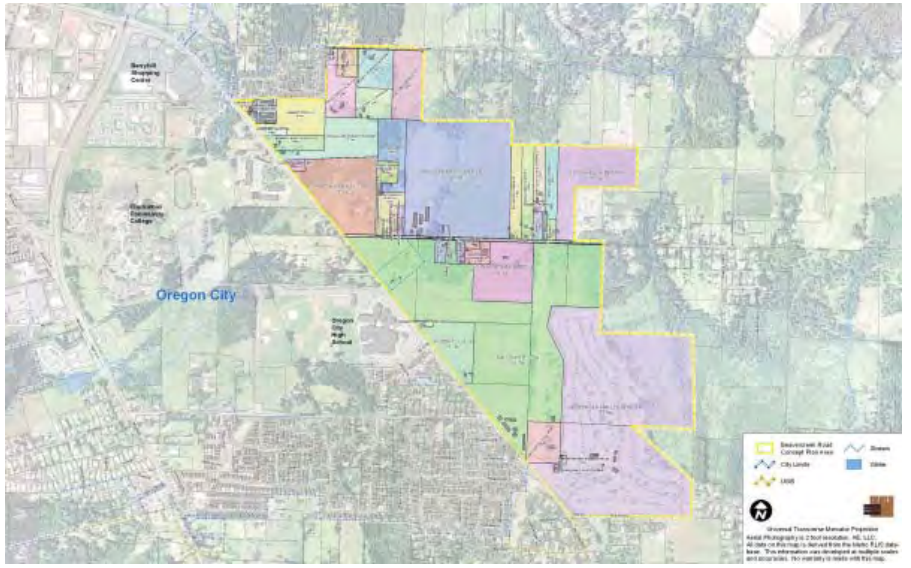


Figure 5 - Ownerships

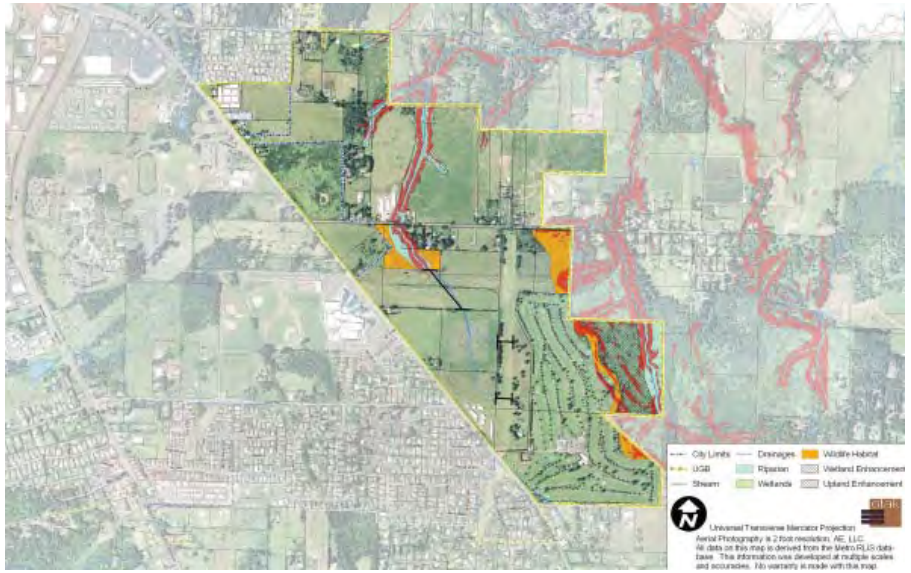


Figure 6 - Natural Resource Inventory

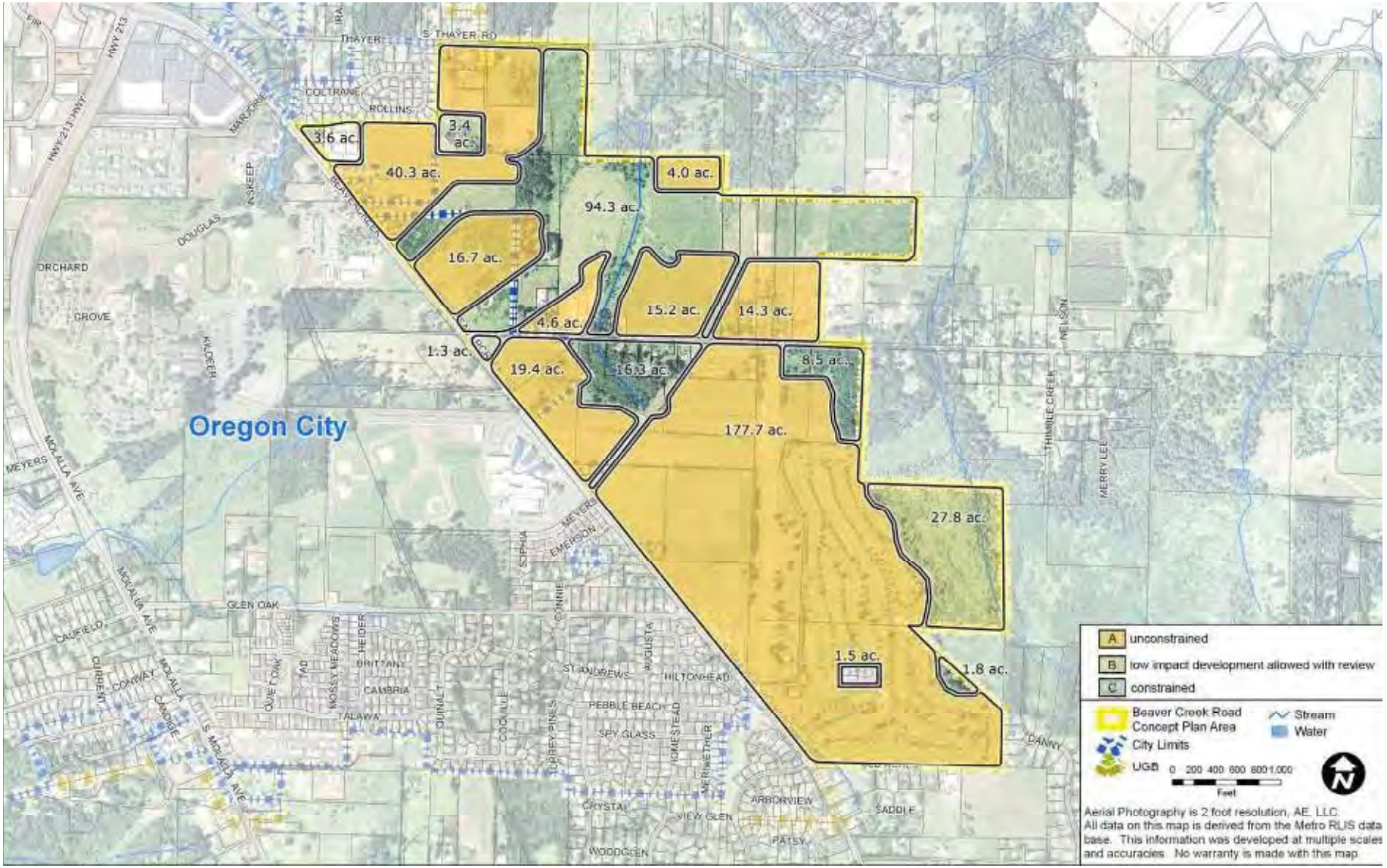


Figure 7 - Buildable Lands

Employment – A Key Issue

How much employment? What type? And where? These questions were extensively discussed during the development of the Concept Plan. Three perspectives emerged as part of the discussion:

Oregon City Perspective

Prior to initiating the Concept Plan process, the City adopted a comprehensive plan policy which emphasizes family wage employment on the site. The policy reads: "Require lands east of Clackamas Community College that are designated as Future Urban Holding to be the subject of concept plans, which is approved as an amendment to the Comprehensive Plan, [and will] guide zoning designations. The majority of these lands should be designated in a manner that encourages family-wage jobs in order to generate new jobs and move towards meeting the City's employment goals." Oregon City Comprehensive Plan, Policy 2.6.8.

Metro Perspective

Metro brought the majority of the concept plan area (245 gross acres) into the UGB in 2002 and 2004 to fulfill regional industrial employment needs. These areas (308 gross acres) are designated as the Industrial Design Type on Metro's 2040 Growth Concept Map. As part of its land need metrics reported to the region and state, Metro estimated 120 net acres of the Beavercreek Road Concept Plan's land would be used for employment uses. Metro representatives met with the Concept Plan CAC and emphasized: (1) it was important to Metro for the Concept Plan to fulfill their original intent for providing Industrial land; and, (2) that there was flexibility, from Metro's perspective, for the local process to evaluate creative ways to meet that intent.

Citizen Advisory Committee Perspective

The CAC discussed extensively the issues and options for employment lands. Many sources of information were consulted: a market analysis by ECONorthwest (See Appendix __), a developer focus group, land inventory and expert testimony submitted by property owners, the Metro perspective cited above, and concerns of neighbors. The advice ranged from qualified optimism about long term employment growth to strong opposition based on shorter term market factors and location considerations. Some members of the CAC advocated for a jobs target (as opposed to an acreage target) to be the basis for employment planning.

At it's meeting on September 14th, 2006, the CAC developed a set of "bookends" for the project team to use while creating the plan alternatives.

a. At least one plan alternative will be consistent with the Metro Regional Growth Concept.

b. At least one plan alternative (may be the same as above) would be designed consistent with Policy 2.6.8.

c. Other alternatives would have the freedom to vary from "a" and "b" above, but would also include employment.

d. No alternative would have heavy industrial, regional warehousing or similar employment uses".

After evaluating alternatives, the CAC ultimately chose a hybrid employment strategy. The recommended Concept Plan includes: (1) about 127 net acres of land as North Employment Campus, which is consistent with Metro's intent and similar to Oregon City's Campus Industrial designation; (2) about 29 acres as Mixed Employment Village and Main Street, which allows a variety of uses in a village-oriented transit hub; and, (3) mixed use neighborhoods to the south that also provide for jobs tailored to their neighborhood setting.

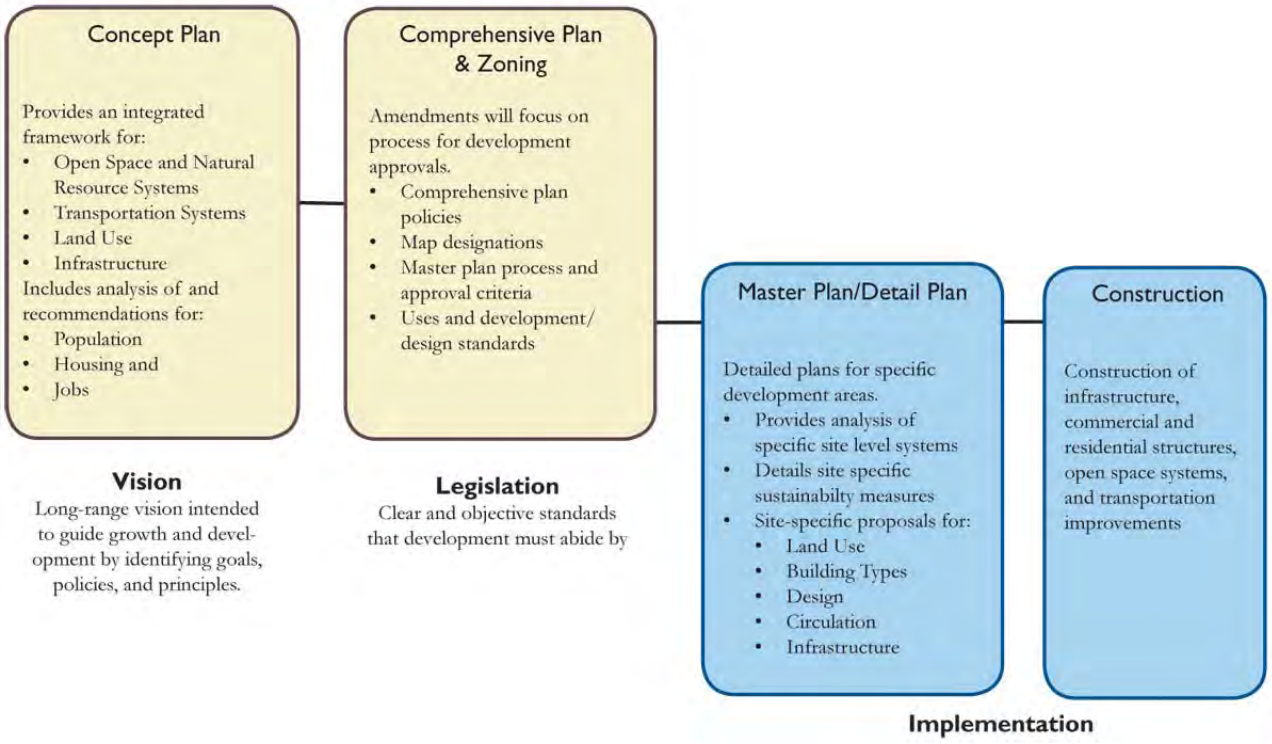
V. Concept Plan Summary

The Framework Plan Approach

The Beavercreek Road Concept Plan is a framework for a new, urban community. The plan is comprised of generalized maps and policies that integrate land use, transportation, open space, and green infrastructure. The framework maps and policies are supported by detailed code and requirements for master planning and design review. The approach here is to set the broad framework and intent on the figures and text in this Plan. Detailed development plans demonstrating compliance with the Concept Plan are required in the implementing code.

The framework plan approach is intended to:

- Ensure the vision, goals and standards are requirements in all land use decisions
- Provide for flexibility in site specific design and implementation of the Plan and code
- Allow for phased development over a long period of time (20+ years)



The code describes many detailed requirements such as street connectivity, block configuration, pocket parks, building scale, pedestrian connections, low impact development features, tree preservation, and sustainable buildings. These design elements will be essential to the success of the area as a walkable, mixed use community. The expectation of this Plan is that the flexibility is coupled with a high standard for sustainable and pedestrian-oriented design.

Land Use Sub-Districts

Figure 8 illustrates the five land-use "sub-districts" of the concept plan area. Each has a specific focus of land use and intended relationship to its setting and the plan's transportation and open space systems. Each is briefly described below and illustrated on Figures 9 through 12.

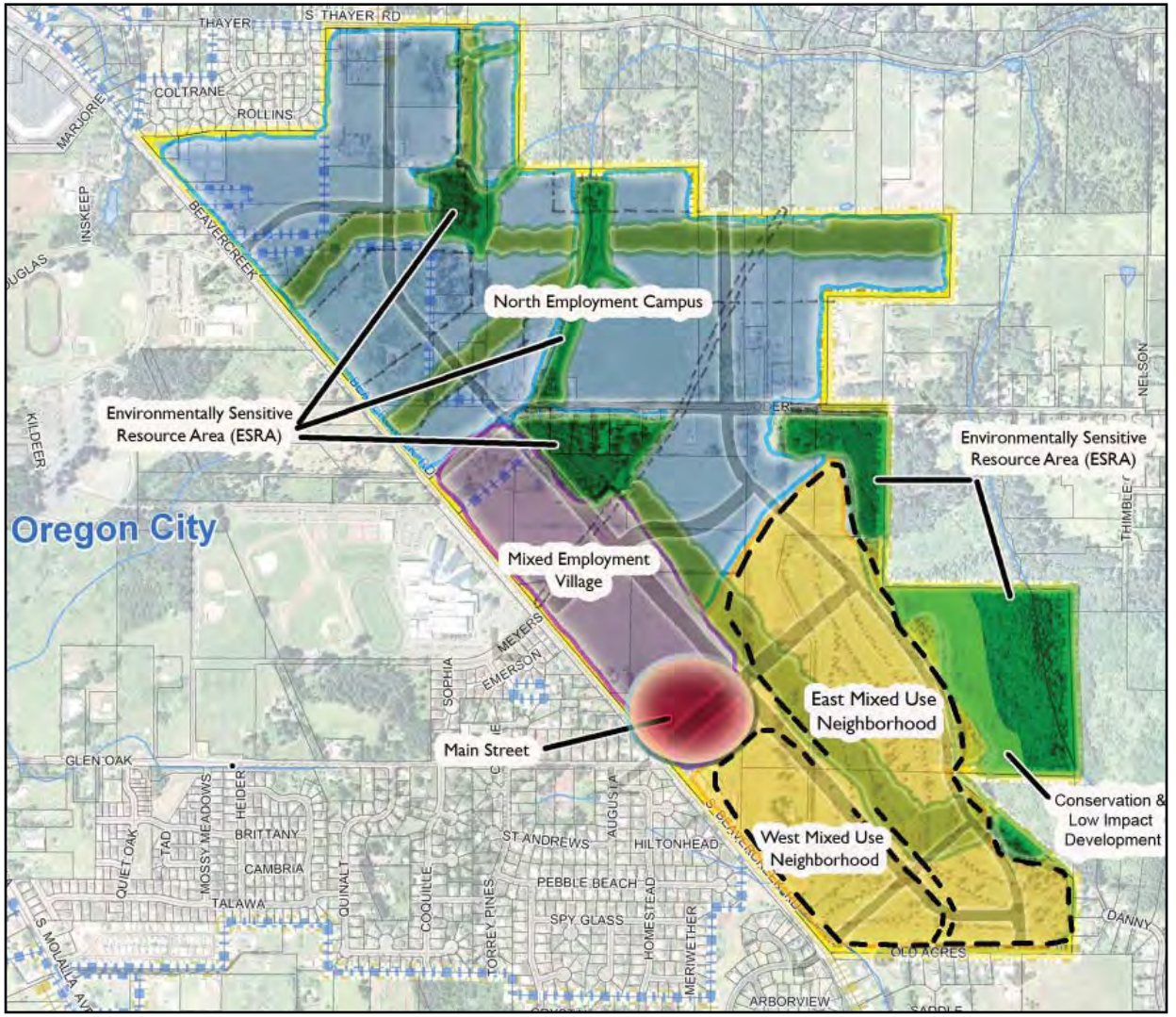


Figure 8 - Land Use Sub-districts

North Employment Campus – NEC

The purpose of the North Employment Campus is to provide for the location of family wage employment that strengthens and diversifies the economy. The NEC allows a mix of clean industries, offices serving industrial needs, light industrial uses, research and development and large corporate headquarters. The uses permitted are intended to improve the region's economic climate, promote sustainable and traded sector businesses, and protect the supply of sites for employment by limiting incompatible uses. The sub-district is intended to comply with Metro's Title 4 regulations. Site and building design will create pedestrian-friendly areas and utilize cost effective green development practices. Business and program connections to Clackamas Community College (CCC) are encouraged to help establish a positive identity for the area and support synergistic activity between CCC and NEC properties. Businesses making sustainable products and utilizing sustainable materials and practices are encouraged to reinforce the identity of the area and promote the overall vision for the Beavercreek Road area.

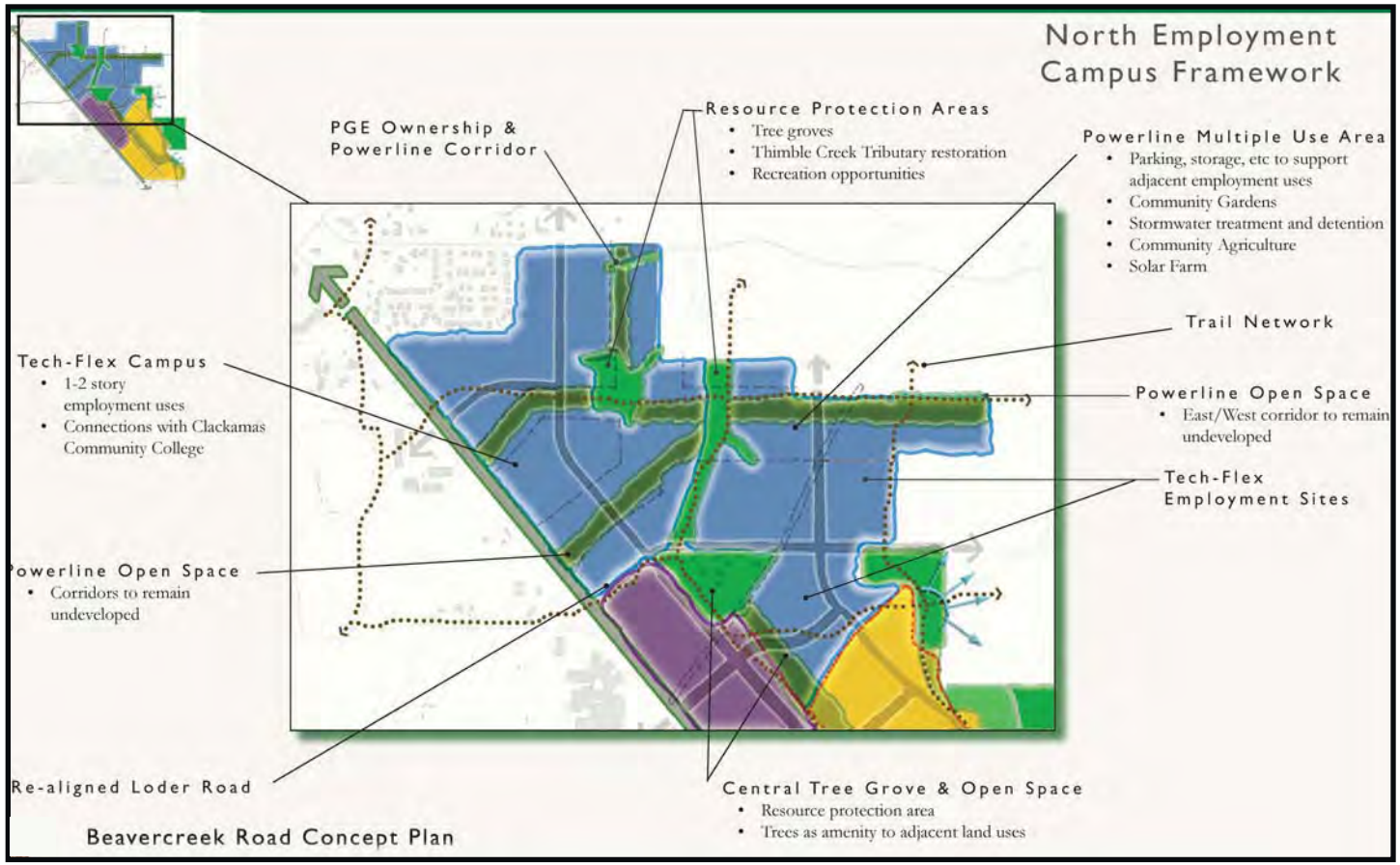


Figure 9 - North Employment Campus Framework

Mixed Employment Village – MEV

The purpose of the Mixed Employment Village is to provide employment opportunities in an urban, pedestrian friendly, and mixed use setting. The MEV is intended to be transit supportive in its use mix, density, and design so that transit remains an attractive and feasible option. The MEV allows a mix of retail, office, civic and residential uses that make up an active urban district and serve the daily needs of adjacent neighborhoods and Beavercreek Road sub-districts. Site and building design will create pedestrian-friendly areas and utilize cost effective green development practices. Business and program connections to Clackamas Community College and Oregon City High School are encouraged. Businesses making sustainable products and utilizing sustainable materials and practices are encouraged to reinforce the identity of the area and promote the overall vision for the Beavercreek Road area.

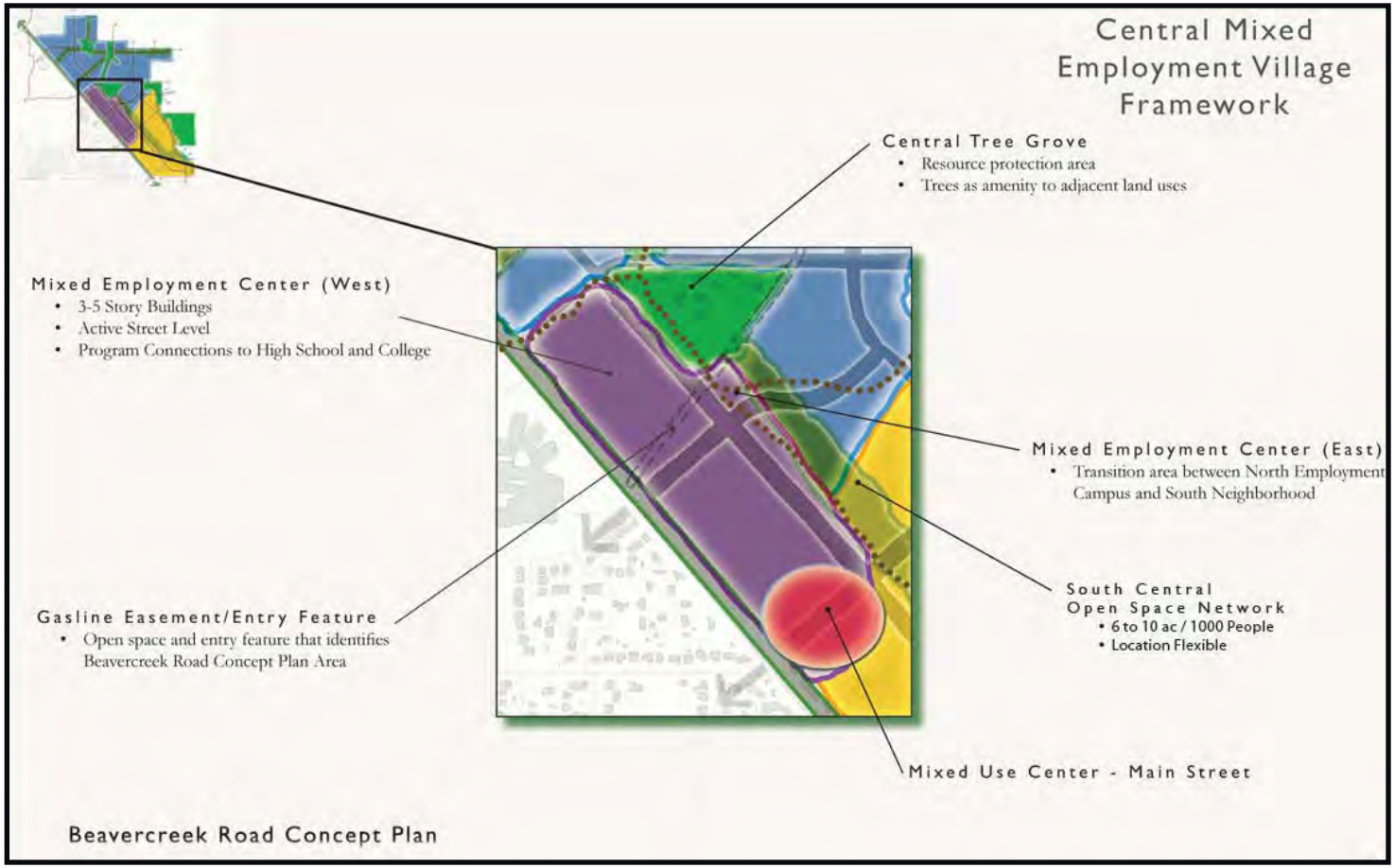


Figure 10 - Central Mixed Employment Village Framework

Main Street – MS

The purpose of this small mixed-use center is to provide a focal point of pedestrian activity. The MS allows small scale commercial, mixed use and services that serve the daily needs of the surrounding area. "Main Street" design will include buildings oriented to the street, an minimum of 2 story building scale, attractive streetscape, active ground floor uses and other elements that reinforce pedestrian oriented character and vitality of the area.

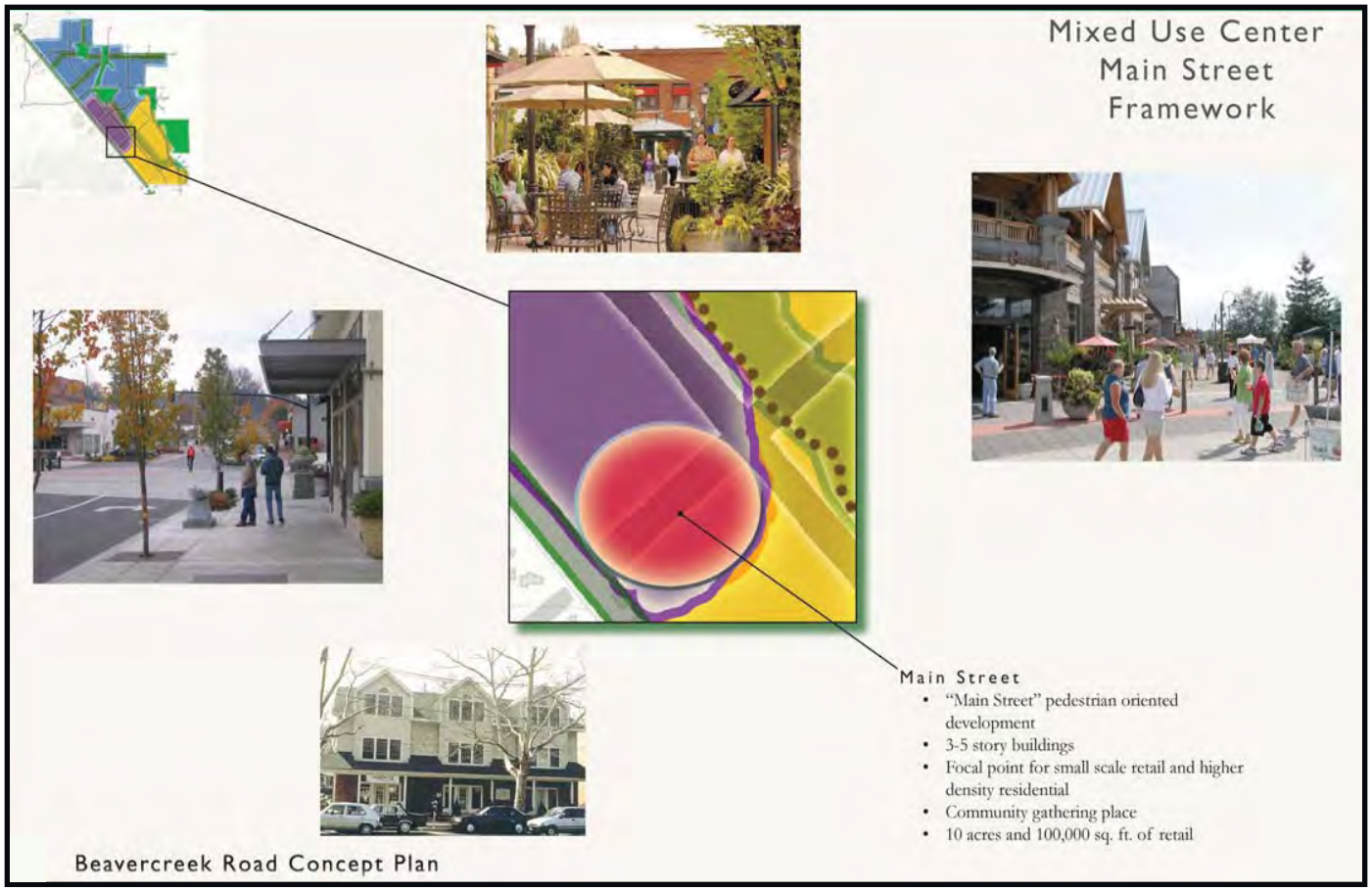


Figure 11 - Main Street Framework

West Mixed Use Neighborhood – WMU

The West Mixed Use Neighborhood will be a walkable, transit-oriented neighborhood. This area allows a transit supportive mix of housing, live/work units, mixed use buildings and limited commercial uses. A variety of housing and building forms is required, with the overall average of residential uses not exceeding 22 dwelling units per acre. The WMU area's uses, density and design will support the multi-modal transportation system and provide good access for pedestrians, bicycles, transit and vehicles. Site and building design will create a walkable area and utilize cost effective green development practices.

East Mixed Use Neighborhood – EMU

The East Mixed Use Neighborhood will be a walkable and tree-lined neighborhood with a variety of housing types. The EMU allows for a variety of housing types while maintaining a low density residential average not exceeding densities permitted in the R-5 zone. Limited non-residential uses are permitted to encourage a unique identity, sustainable community, and in-home work options. The neighborhood's design will celebrate open space, trees, and relationships to public open spaces. The central open space, ridge open space scenic viewpoints, and a linked system of open spaces and trails are key features of the EMU. Residential developments will provide housing for a range of income levels, sustainable building design, and green development practices.

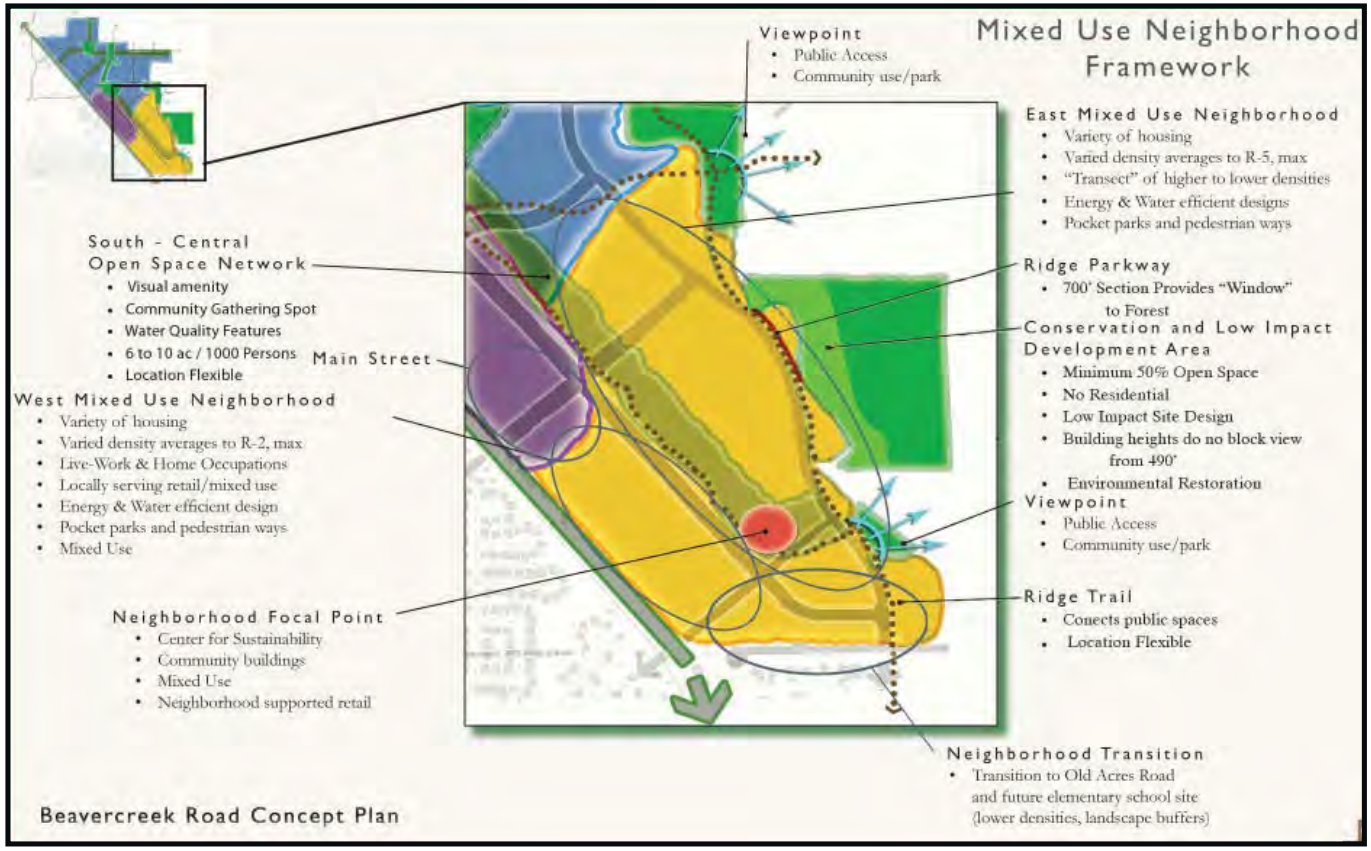


Figure 12 - West and East Mixed Use Neighborhoods

Open Space

The Open Space Framework illustrated on Figure 13 provides a network of green spaces intended to provide:

- A connected system of parks, open spaces and natural areas that link together and link to the Environmentally Sensitive Resource Areas.
- Scenic and open space amenities and community gathering places
- Access to nature
- Tree and natural area preservation
- Locations where storm water and water quality facilities can be combined with open space amenities, and opportunities to implement sustainable development and infrastructure
- Green spaces near the system of trails and pedestrian connections
- Open spaces which complement buildings and the urban, built environment

Power Line Open Spaces

The power line corridors and gas line corridor comprise 97 acres of land. The power line corridors north of Loder Road are a dominant feature. They are a dominant feature because they define open corridors and have a significant visual impact related to the towers. They also have a influence on the pattern of land use and transportation connections. In response to these conditions, the Concept Plan includes four main strategies for the use of the power line corridors:

- Provide publicly accessible open spaces. The implementing code includes a minimum 100 foot-wide open space and public access easement would be required at the time of development reviews, or, obtained through cooperative agreements with the utilities and property owners.
- Provide trails. A new east-west trail is shown on Figure 13 that follows the main east-west corridor. This corridor has outstanding views of Mt. Hood.
- Allow a broad array of uses. Ideas generated by the CAC, and permitted by the code, include: community gardens, urban agriculture, environmental science uses by CCC, storage and other "non-building" uses by adjacent industries, storm water and water quality features, plant nurseries, and solar farms.
- Link to the broader open space network. The power line corridors are linked to the open spaces and trail network in the central and southern areas of the plan.

South-Central Open Space Network

Park spaces in the central and southern areas of the plan will be important to the livability and sustainability goals for the plan. The basic concept is to assure parks are provided, provide certainty for the total park acreage, guide park planning to integrate with other elements, and provide flexibility for the design and distribution of parks.

The following provisions will apply during master planning and other land use reviews:

- Park space will be provided consistent with the City's Park and Recreation Master Plan standard of 6 to 10 acres per 1000 population.
- The required acreage may be proposed to be distributed to a multiple park spaces, consistent with proposed land uses and master plan design.
- A central park will be provided. The location and linearity of the park was first indicated by Metro's Goal 5 mapping. It was illustrated by several citizen groups during the design workshop held in October, 2006. This open space feature is intended as a connected, continuous and central green space that links the districts and neighborhoods south of Loder Road. The code provides for flexibility in its width and shape, provided there remains a clearly identifiable and continuous open space. It may be designed as a series of smaller spaces that are clearly connected by open space. It may be designed

as a series of smaller spaces that are clearly connected by open space. If buildings are incorporated as part of the central park, they must include primary uses which are open to the public. Civic buildings are encouraged adjacent to the central park. Streets may cross the park as needed. The park is an opportunity to locate and design low impact storm water facilities as an amenity for adjacent urban uses.

East Ridge

The East Ridge is a beautiful edge to the site that should be planned as a publicly accessible amenity and protected resource area. The natural resource inventory identified important resources and opportunities for habitat restoration in the riparian areas of Thimble Creek. In addition, Lidar mapping and slope analysis identified steeper slopes (greater than 15%) that are more difficult to develop than adjacent flat areas of the concept plan. The sanitary sewer analysis noted that lower areas on the east

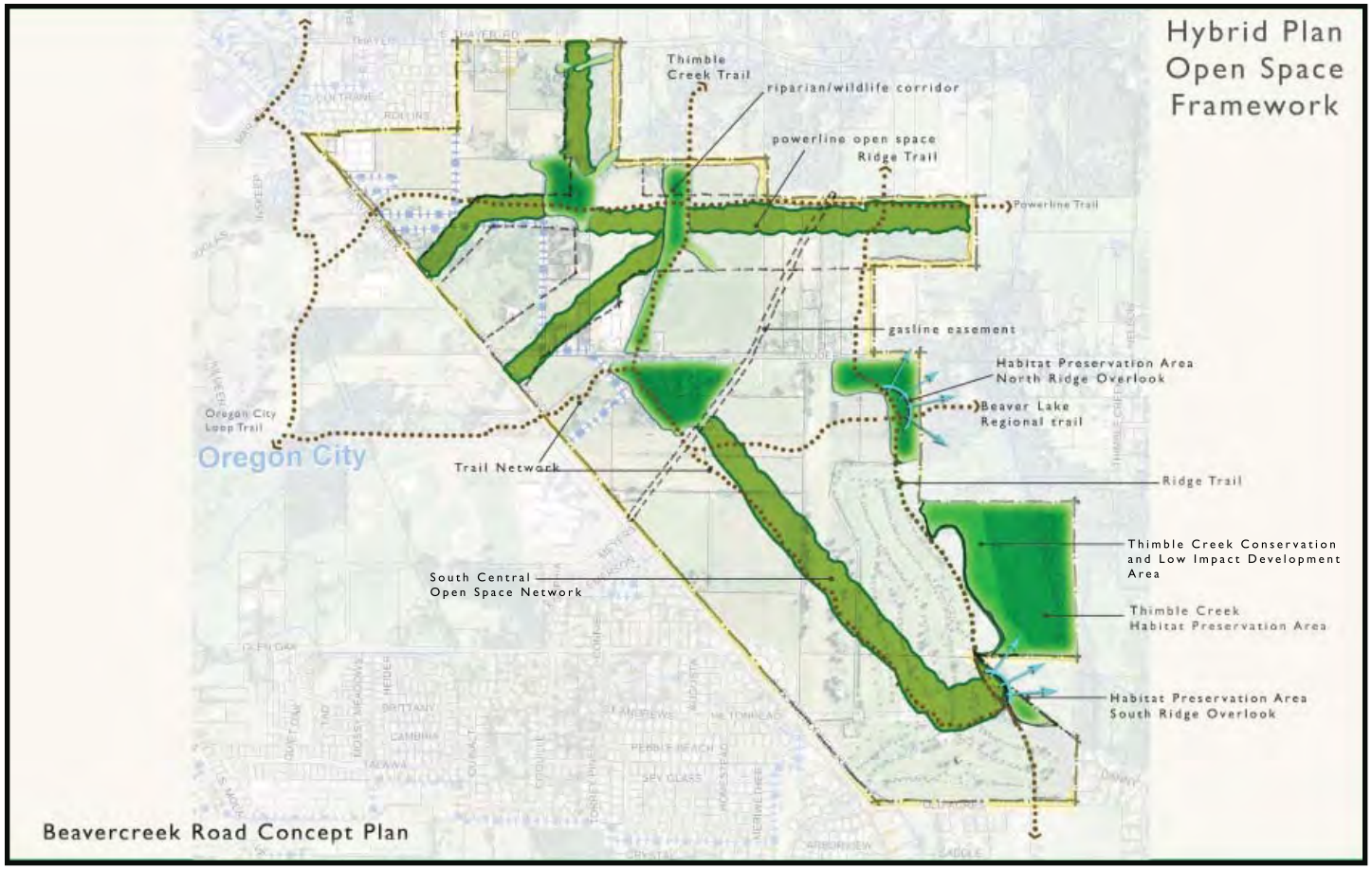


Figure 13 - Open Space Framework

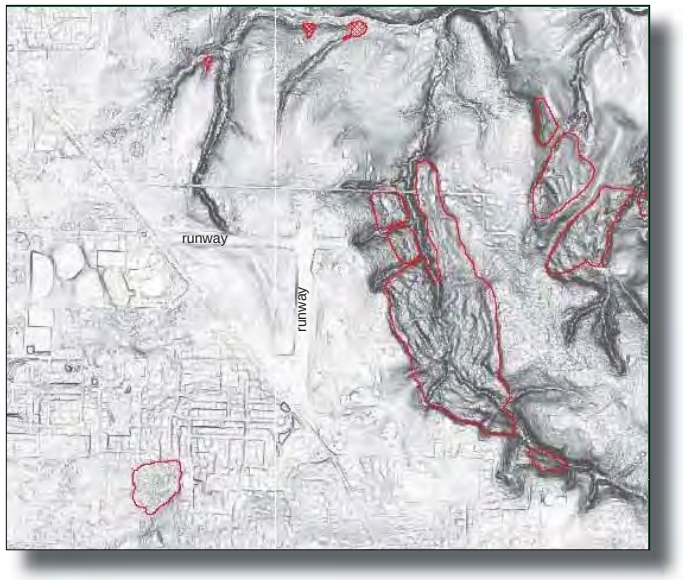


Figure 13A - East Ridge Lidar and 490 foot elevation

ridge could not be readily served with gravity systems - they would require private pump facilities. For all of these reasons, it is recommended here that an East Ridge open space and conservation area be designated.

The plan and code call for:

- Establishing the Class I and II Riparian area (per Metro mapping) plus 200 feet as a protected open space area. No development is permitted, except for very limited uses such as trails.
- Between the west edge of the above referenced protected open space area and the 490 foot elevation (MSL), establish a conservation area within which the following provisions apply:

  a. A minimum of 50% of the conservation area must be open space. No residential uses are permitted.

  b. All development must be low impact with respect to grading, site design, storm water management, energy management, and habitat.

  c. Building heights must not obscure views from the 490 foot elevation of the ridge.

  d. Open space areas must be environmentally improved and restored.

- Establishing a limit of development that demarks the clear edge of urban uses and a "window" to adjacent natural areas. In the central area of the est ridge, the "window" must be a minimum of 700 feet of continuous area and publicly accessible. The specific location of the "window" is flexible and will be establishing as part of a master plan.
- Creating two scenic view points that are small public parks, located north and south of the central area.
- Creating an East Ridge Trail - the location of the trail is flexible and will be established during master planning. It will be located so as to be safe, visible, and connect the public areas along the ridge. Along the "window" area described above, it will be coordinated with the location of the adjacent East Ridge Parkway.

Transportation

In summary, the key elements of the Concept Plan transportation strategy are to:

- Plan a mixed use community that provides viable options for internal trip making (i.e. many daily needs provided on-site), transit use, maximized walking and biking, and re-routed trips within the Oregon City area.
- Improve Beavercreek Road as a green street boulevard.
- Create a framework of collector streets that serve the Beavercreek Road Concept Plan area.
- Require local street and pedestrian way connectivity.
- Require a multimodal network of facilities that connect the Beavercreek Road Concept Plan area with adjacent areas and surrounding transportation facilities.
- Provide an interconnected street system of trails and bikeways.
- Provide transit-attractive destinations.
- Provide a logical network of roadways that support the extension of transit services into the Beavercreek Road Concept Plan area.
- Use green street designs throughout the plan.
- Update the Oregon City Transportation System Plan to include the projects identified in the Beavercreek Road Concept Plan, provide necessary off-site improvements, and, assure continued compliance with Oregon's Transportation Planning Rule.

Streets

Figure 14 illustrates the street plan. Highlights of the plan include:

- *Beavercreek as a green boulevard.* The cross-section will be a 5 lane arterial to Clairmont, then a 3 lane arterial (green street boulevard) from Clairmont to UGB. The signalization of key intersections is illustrated on the Street Plan.
- *Center Parkway as a parallel route to Beavercreek Road.* This new north-south route provides the opportunity to completely avoid use of Beavercreek Road for trips between Old Acres and Thayer Road. This provides a much-needed separation of local and through trips, as well as an attractive east-side walking and biking route. Major cross-street intersections, such as Loder, Meyers and Glen Oak may be treated with roundabouts or other treatments to help manage average speeds on this street. Minor intersections are likely to be stop-controlled on the side street approaches. The alignment of Center Parkway along the central open space is intended to provide an open edge to the park. The cross-section for Center Parkway includes a multi-use path on the east side and green street swale. Center Parkway is illustrated as a three-lane facility. Depending on land uses and block configurations, it may be able to function well with a two lane section and left turn pockets at selected locations.
- *Ridge Parkway as a parallel route to Center Parkway and Beavercreek Road.* The section of Ridge Parkway south of the Glen Oak extension is intended as the green edge of the neighborhood. This will provide a community "window" and public walkway adjacent to the undeveloped natural areas east of the parkway. Ridge Parkway should be two lanes except where left turn pockets are needed. Major intersections south of Loder are likely to only require stop control of the side street, if configured as "tee" intersections. Mini roundabouts could serve as a suitable option, particularly if a fourth leg is added.
- *Ridge Parkway.* Ridge Parkway was chosen to extend as the through-connection south of the planning area to Henrici Road. Center Parkway and Ridge Parkway are both recommended for extension to the north as long-term consideration for Oregon City and Clackamas County during the update of respective Transportation System Plans. It is beyond the scope of this study to identify and determine each route and the feasibility of such extensions. Fatal flaws to one or both may be discovered during subsequent planning. Nonetheless, it is prudent at this level of study, in this area of the community, to identify opportunities to efficiently and systematically expand the transportation system to meet existing and future needs.

- *Extensions of Clairmont, Meyers, Glen Oak Roads and the south entrance through to the Ridge Parkway.* These connections help complete the network and tie all parts of the community to adjacent streets and neighborhoods.
- *Realignment of Loder Road at its west end. Loder is recommended for re-configuration to create a safer "T" intersection.* The specific location of the intersection is conceptual and subject to more site specific planning.

The streets of the Concept Plan area are recommended to be green streets. This is an integral part of the storm water plan and overall identity and vision planned for the area. The green street cross-sections utilize a combination of designs: vegetated swales, planter islands, curb extensions, and porous pavement. Figures 15 – 19 illustrate the recommended green street cross-sections. These are intended as a starting point for more detailed design.

Trails

Figure 14 also illustrates the trail network. The City's existing Thimble Creek Trail and Metro's Beaver Lake Regional Trail have been incorporated into the plan. New trails include the Powerline Corridor Trail, multi-use path along Center Parkway, and the Ridge Trail.

Transit

The Concept Plan sets the stage for future transit, recognizing that how that service is delivered will play out over time. Specifics of transit service will depend on the actual rate and type of development built, Tri-Met resources and policies, and, consideration of local options. Three options have been identified:

1. A route modification is made to existing bus service to Clackamas Community College (CCC) that extends the route through CCC to Beavercreek Road via Clairmont, then south to Meyers or Glen Oak, back to HWY 213, and back onto Molalla to complete the normal route down to the Oregon City Transit Center. To date, CCC has identified Meyers Road as a future transit connection to the college.
2. A new local loop route that connects to the CCC transit center and serves the Beavercreek Road Concept Planning area, the High School, the residential areas between Beavercreek and HWY 213, and the residential areas west of HWY 213 (south of Warner Milne).
3. A new "express" route is created from the Oregon City Transit Center, up/down HWY 213 to major destinations (CCC, the Beavercreek Road Employment area, Red Soils, Hilltop Shopping Center, etc.).

It is the recommendation of this Plan that the transit-oriented (and Use mix), density, and design of the Beavercreek Road area be implemented so that transit remains a viable option over the long term. The City should work with Tri-Met, CCC, Oregon City High School, and developers within the Concept Plan area to facilitate transit.

Connectivity

The street network described above will be supplemented by a connected local street network. Consistent with the framework plan approach, connectivity is required by policy and by the standards in the code. The specific design for the local street system is flexible and subject to master plan and design review. Figure 20 illustrates different ways to organize the street and pedestrian systems. These are just three examples, and are not intended to suggest additional access to Beavercreek Road beyond what is recommended in Figure 14. The Plan supports innovative ways to configure the streets that are consistent with the goals and vision for the Beavercreek Concept Plan area.

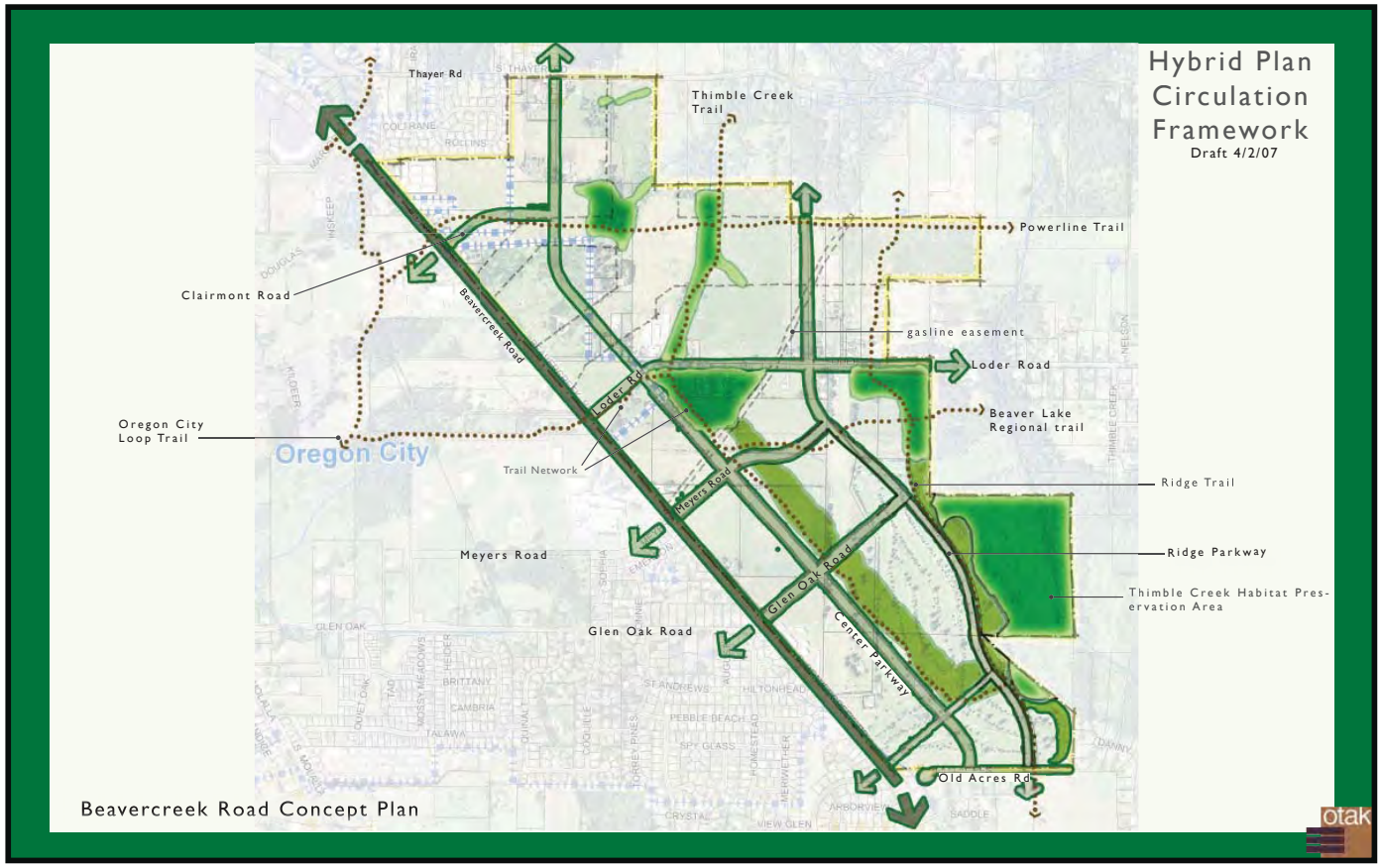


Figure 14 - Circulation Framework

Figure 20 - Connectivity Diagrams

Conceptual only - See Figure 14 for recommended access points to Beavercreek Road.

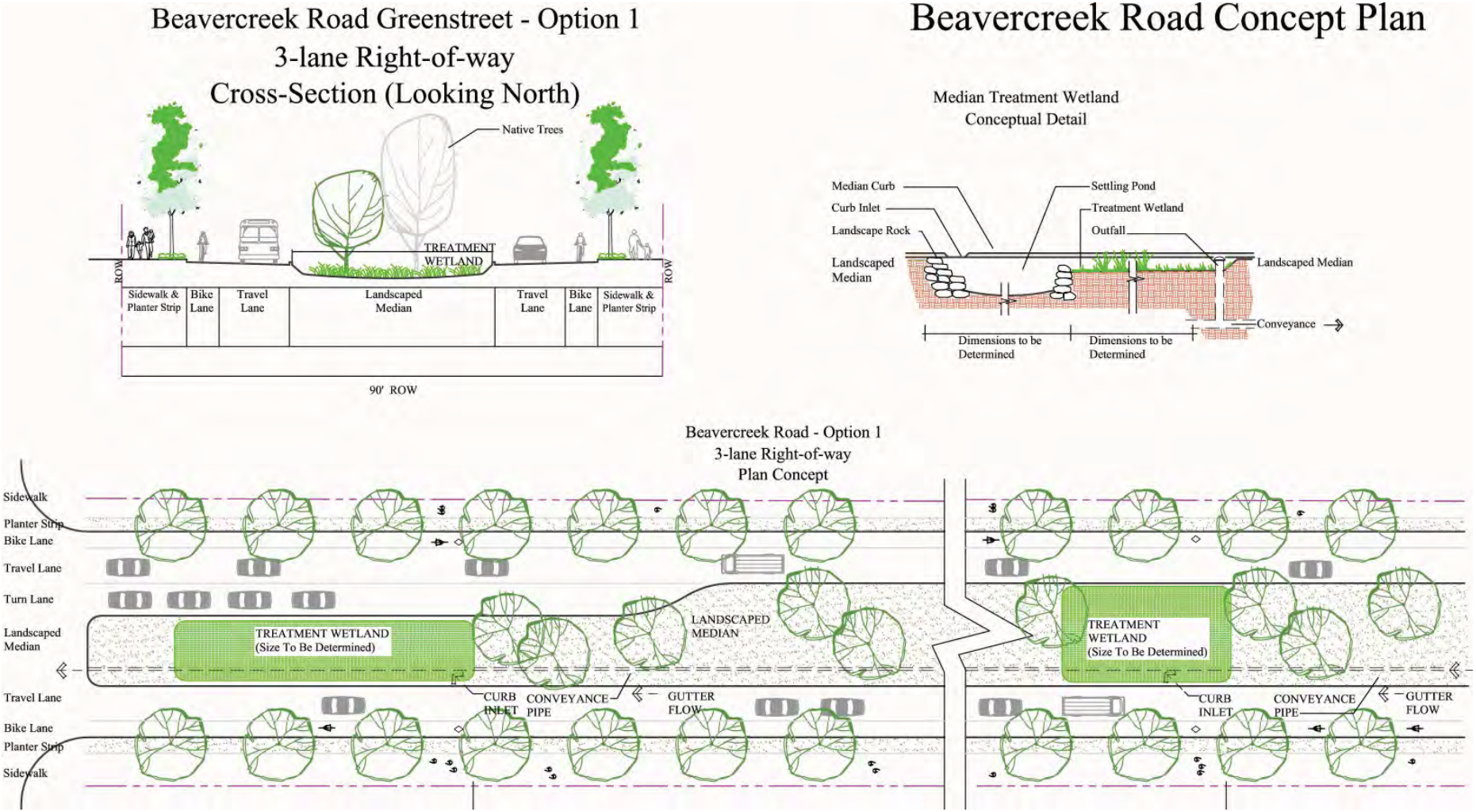


Figure 15 - Beavercreek Road Green Street

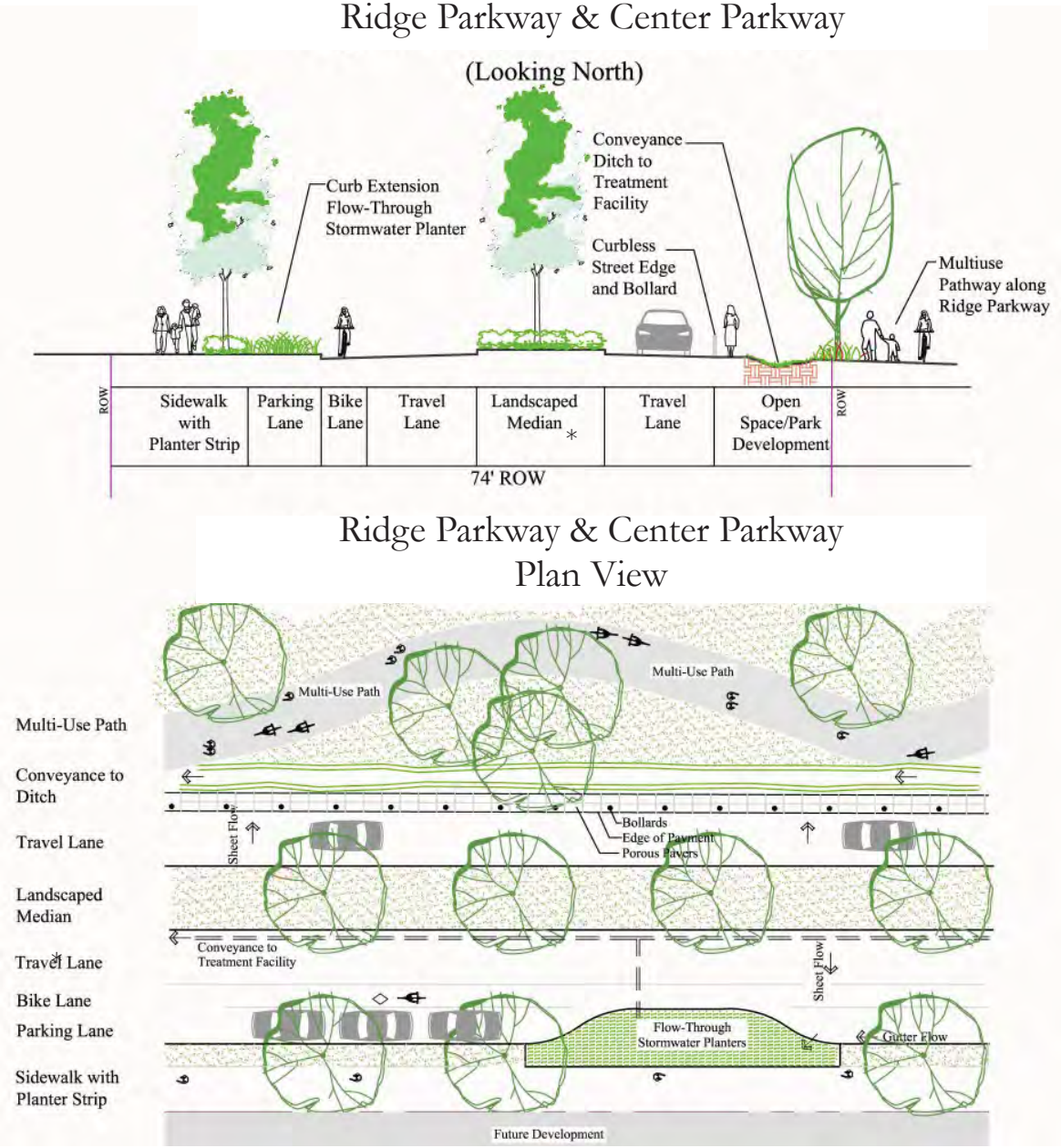


Figure 16 - Ridge Parkway and Central Parkway Green Streets

*Center median is optional for Ridge Parkway.

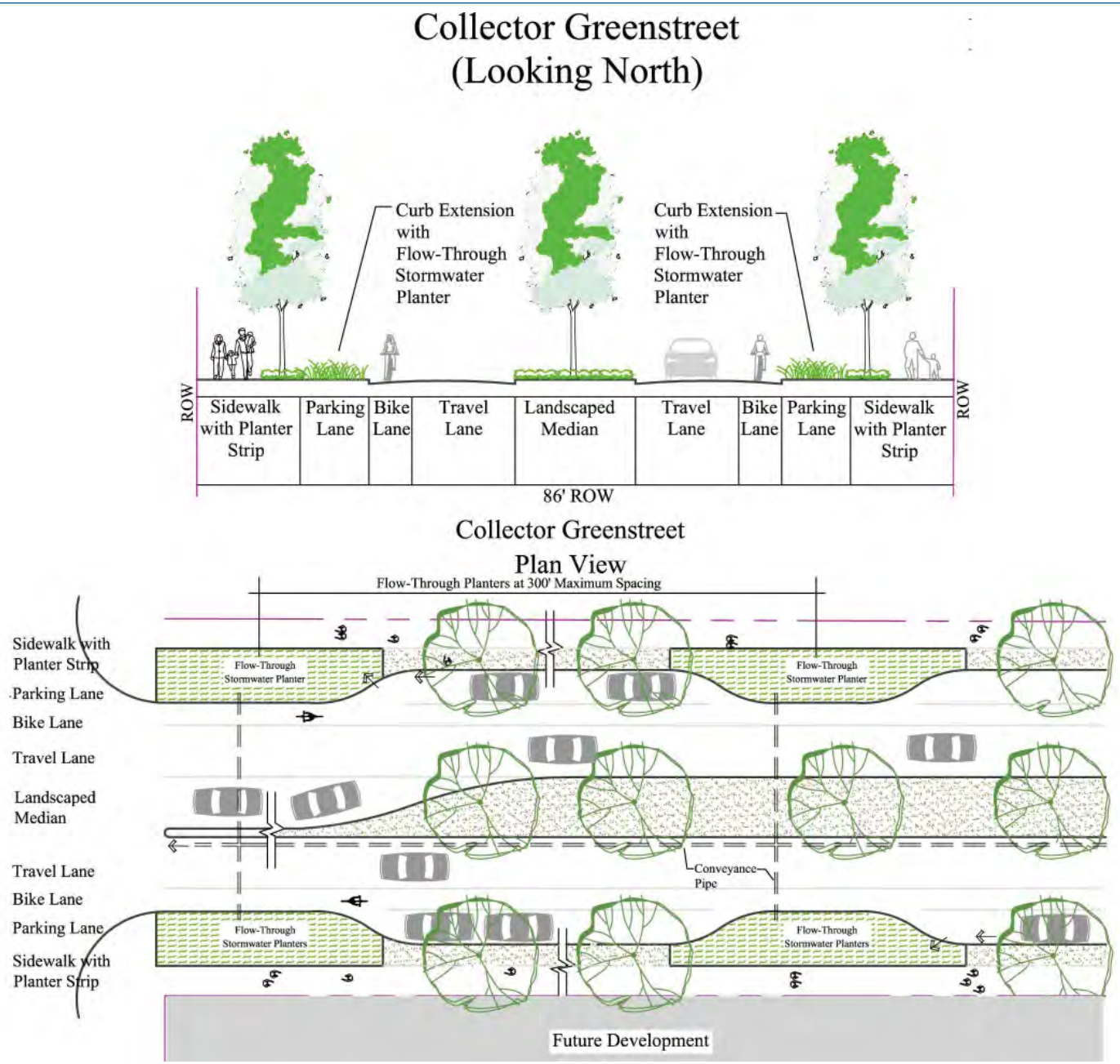


Figure 17 - Collector Green Street

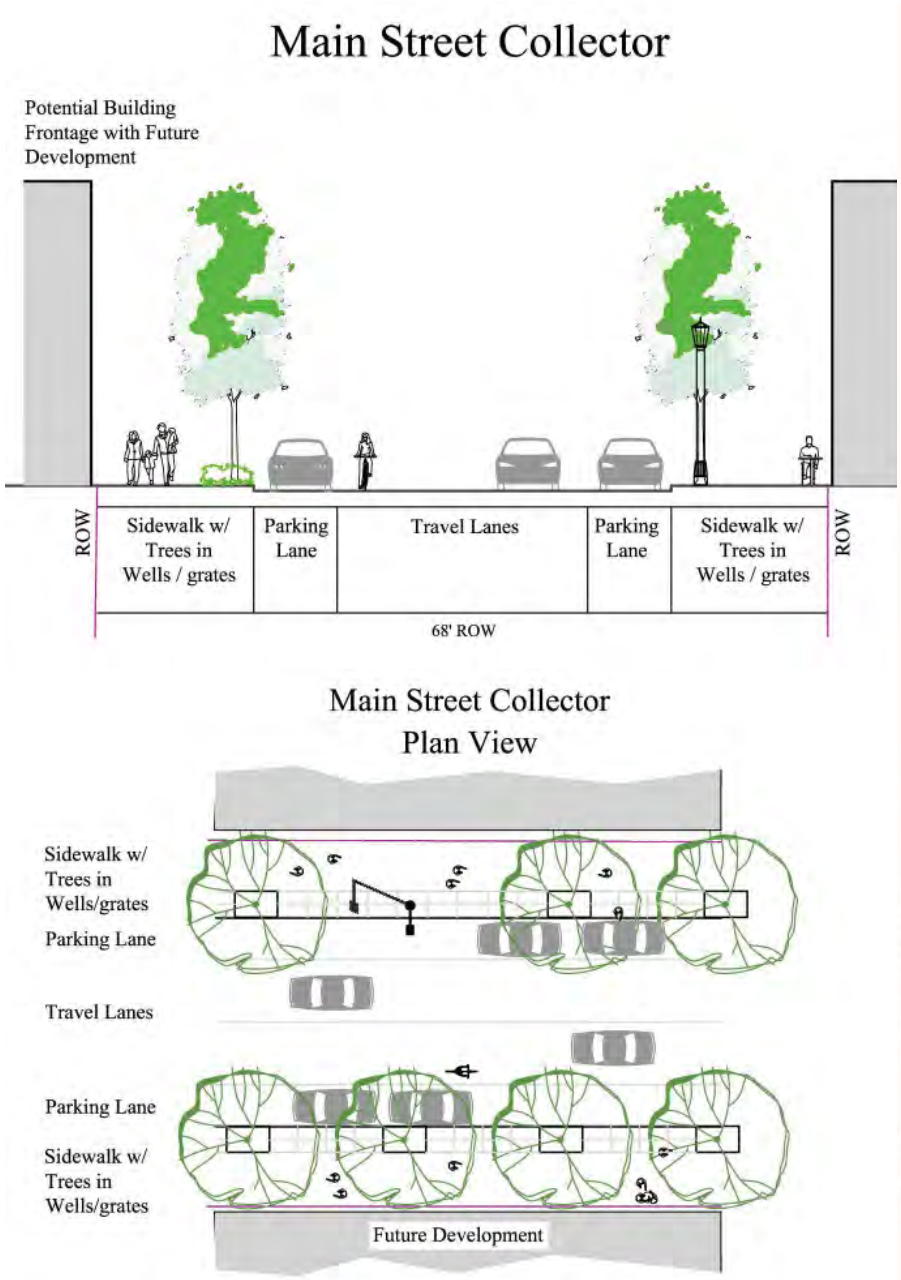


Figure 18 - Main Street Green Street

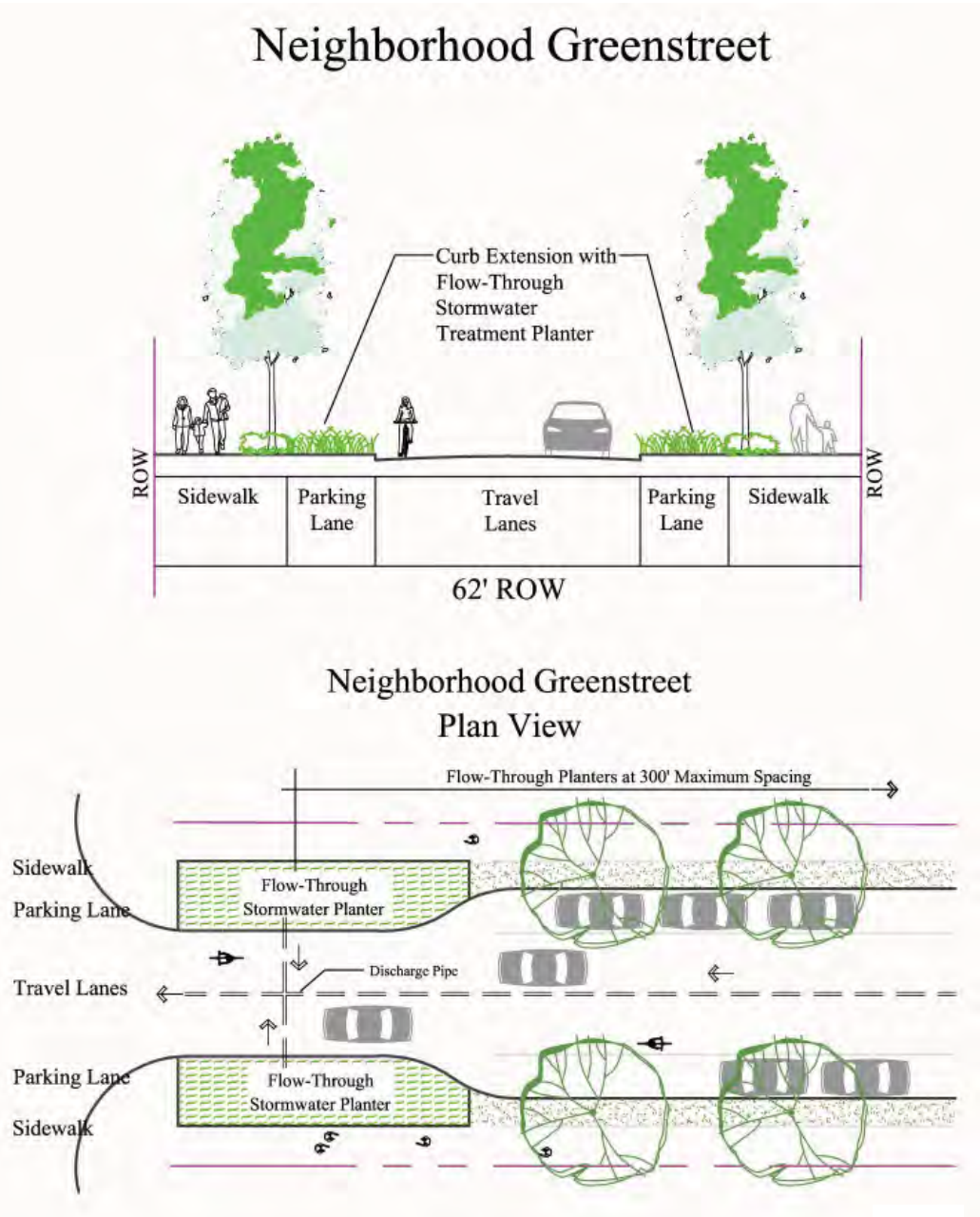


Figure 19 - Neighborhood Green Street

Cost Estimate

A planning-level cost estimate analysis was conducted in order to approximate the amount of funding that will be needed to construct the needed improvements to the local roadway system, with the build-out of the Beavercreek Road Concept Plan. The table below lists these improvements and their estimated costs. These generalized cost estimates include assumptions for right-of-way, design, and construction.

For additional information, please see Technical Appendix, Sections C2 and G.

Roadway Improvements	Improvement	Estimated Cost
Beavercreek Road: Marjorie Lane to Clairmont Drive	Construct 5-lane cross-section to City standards	$6,300,000
Beavercreek Road: Clairmont Drive to Henrici Road	Construct 3-lane cross-section to City standards	$12,300,000
Clairmont Drive: Beavercreek Road – Center Parkway	Construct new 3-lane collector to City standards and modify signal at Beavercreek Road	$2,400,000
Loder Road: Beavercreek Road to Center Parkway	Construct 3-lane cross-section to City standards and signalize Beavercreek Road intersection	$1,400,000
Loder Road: Center Parkway – East Site Boundary	Construct 3-lane cross-section to City standards	$4,200,000
Meyers Road: Beavercreek Road – Ridge Parkway	Construct new 3-lane collector to City standards and modify signal at Beavercreek Road	$3,500,000
Glean Oak Road: Beavercreek Road – Ridge Parkway	Construct new 3-lane collector to City standards and modify signal at Beavercreek Road	$3,400,000
Center Parkway	Construct new 3-lane collector with 12' multi-use path	$17,700,000
Ridge Parkway	Construct new 3-lane collector	$9,800,000
Total Roadway Improvements		**$61,000,000**
Intersection Only Improvements	**Improvement**	**Estimated Cost**
Beavercreek Road/Maplelane	Road Construct new WB right-turn lane	$250,000
Beavercreek Road/ Meyers Road	Construct new NB and SB through lanes	$5,000,000
Total Intersection Improvements		**$5,250,000**
TOTAL IMPROVEMENTS		***$66,250,000***

Transportation Cost Estimate

Figure 21 - Sustainable Stormwater Plan

Storm Water and Water Quality

This Beavercreek Road stormwater infrastructure plan embraces the application of low-impact development practices that mimic natural hydrologic processes and minimize impacts to existing natural resources. It outlines and describes a stormwater hierarchy focused on managing stormwater in a naturalistic manner at three separate scales: site, street, and neighborhood.

Tier 1 – Site Specific Stormwater Management Facilities (Site)

All property within the study area will have to utilize on-site best management practices (BMPs) to reduce the transport of pollutants from their site. Non-structural BMPs, such as source control (e.g. using less water) are the best at eliminating pollution. Low-impact structural BMPs such as rain gardens, vegetated swales, pervious surface treatments, etc. can be designed to treat stormwater runoff and reduce the quantity (flow and volume) by encouraging retention/infiltration. They can also provide beneficial habitat for wildlife and aesthetic enhancements to a neighborhood. These low-impact BMP's are preferred over other structural solutions such as underground tanks and filtration systems. Most of these facilities will be privately maintained.

Tier 2 – Green Street Stormwater Management Facilities (Street)

Green Streets are recommended for the entire Beavercreek Concept Plan area. The recommended green street design in Figures 15 - 19 use a combination of vegetated swales or bioretention facilities adjacent to the street with curb cuts that allow runoff to enter. Bioretention facilities confined within a container are recommended in higher density locations where space is limited or is needed for other urban design features, such as on-street parking or wide sidewalks. The majority of the site is underlain with silt loam and silty clay loam. Both soils are categorized as Hydrologic Soil Group C and have relatively slow infiltration rates.

The recommended green streets will operate as a collection and conveyance system to transport stormwater from both private property and streets to regional stormwater facilities. The conveyance facilities need to be capable of managing large storm events that exceed the capacity of the swales. For this reason, the storm water plan's conveyance system is a combination of open channels, pipes, and culverts. Open channels should be used wherever feasible to increase the opportunity for stormwater to infiltrate and reduce the need for piped conveyance.

Tier 3 – Regional Stormwater Management Facilities (Neighborhood)

Regional stormwater management facilities are recommended to manage stormwater from larger storms that pass through the Tier 1 and Tier 2 facilities. Figure 21 illustrates seven regional detention pond locations. Coordinating the use of these for multiple properties will require land owner cooperation during development reviews, and/or, City initiative in advance of development.

The regional facilities should be incorporated into the open space areas wherever possible to reduce land costs, and reduce impacts to the buildable land area. Regional stormwater facilities should be designed to blend with the other uses of the open space area, and can be designed as a water feature that offers educational or recreational opportunities. Stormwater runoff should be considered as a resource, rather than a waste stream. The collection and conveyance of stormwater runoff to regional facilities can offer an opportunity to collect the water for re-use.

Discharge Locations

Post-development stormwater runoff rates from the Beavercreek Road Concept Plan Area will need to match pre-development rates at the existing discharge locations, per City Stormwater Design Standards. Since there are several small discharge locations to Thimble Creek, flow control facilities may not be feasible at all discharge locations. In this situation, over-detention is needed at some discharge locations to compensate for the un-detained areas so that flows in Thimble Creek at the downstream point of compliance meet City Stormwater Design Standards for flow control.

The stormwater infrastructure for the Beavercreek Road Concept Plan Area is estimated to cost between $7.8 million and $9.4 million for base construction. When construction contingencies, soft costs (engineering, permitting, construction management), and land acquisition, the total cost is estimated at $15 to $23 million.

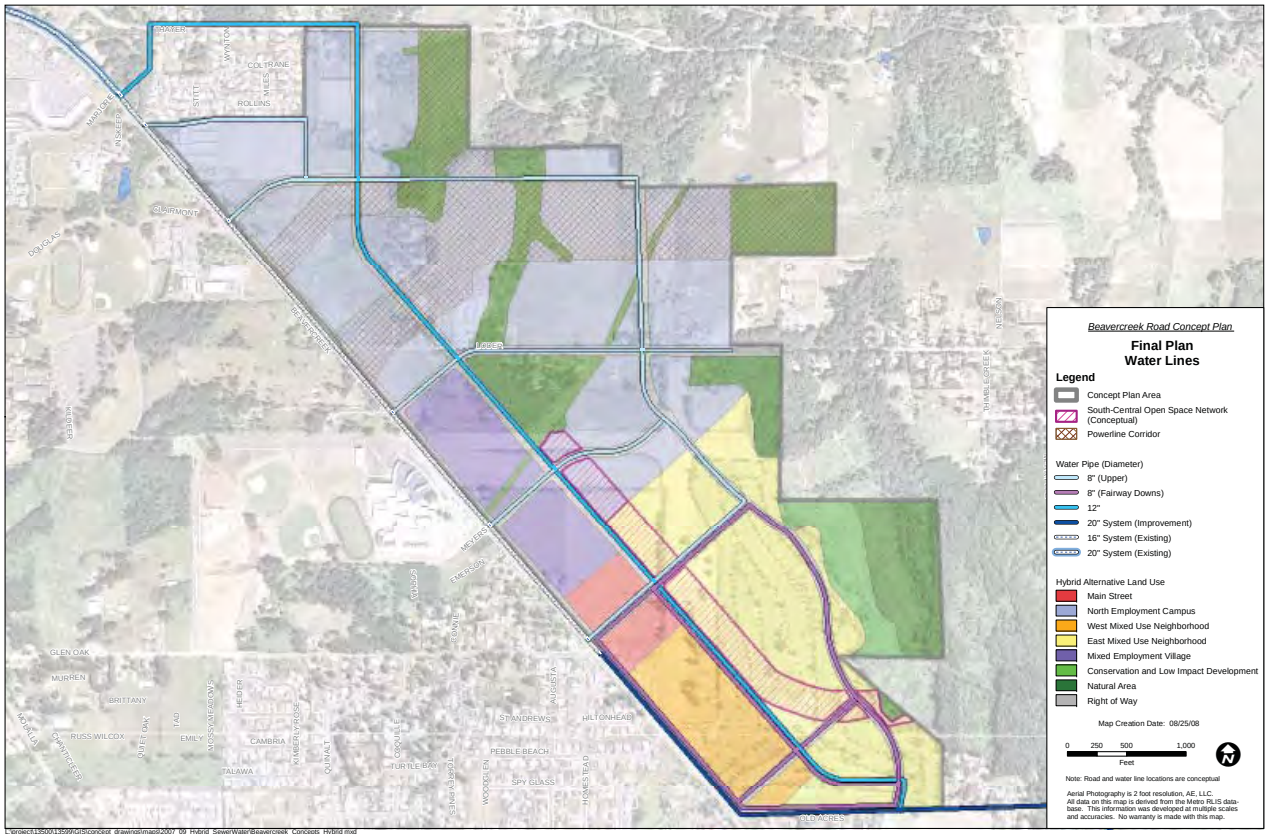


Figure 22 - Water Plan

Water

The proposed water infrastructure plan creates a network of water supply pipelines as the "backbone" system. In addition, as individual parcels are developed, a local service network of water mains will be needed to serve individual lots.

Since there are two pressure zones in the concept plan area, there will need to be a network of pipes for each of the two zones. These systems are illustrated on Figure 22. The Fairway Downs Pressure Zone will serve the south one-third of the concept plan area. This zone receives water from the system reservoirs. But, because this zone is at the highest elevation in the entire water system, pressure from the reservoir system is insufficient to maintain a usable pressure to customers in this part of the system. The water pressure is increased by using a booster pump station located at the intersection of Glen Oak Road and Beavercreek Road.

In the Fairway Downs Pressure Zone, the majority of the water mains will be installed in the proposed public rights-of-way. However, a small portion of the system may need to be in strip easements along the perimeter of the zone at the far southeast corner of the concept plan area. The system layout shown is preliminary and largely dependent on future development and the final system of internal (local) streets. Additional mains may be needed or some of the water mains shown may need to be removed. For instance, if the development of the residential area located at the southeast end of the site, adjacent to Old Acres Road, includes internal streets, the water mains shown along the perimeter of the site may be deleted because service will be provided from pipes that will be installed in the internal street system.

Some of the planned streets in the Fairway Downs Pressure Zone will contain two water mains. One water main will provide direct water service to the area from the booster pump system. The other water main will carry water to the lower elevation areas in the Upper Pressure Zone.

The Upper Pressure Zone will serve the north two-thirds of the concept plan area. The "backbone" network for the Upper Pressure Zone will have water mains that are pressured from the Henrici and Boynton reservoirs. A single 12-inch water main will run parallel with Beavercreek Road through the middle of concept plan area. This water conduit will serve as the "spine" for the Upper Pressure Zone. A network of 8-inch water pipes will be located in the public rights-of-way and will provide water to the parcels that are identified for development. The system can be extended easterly on Loder Road, if needed.

The preliminary design ensures that the system is looped so that there are no dead-end pipes in the system. Along a portion of the north perimeter, approximately 1,600 feet of water pipe will be needed to complete a system loop and provide water service to adjacent lots. This pipe will share a utility easement with a gravity sanitary sewer and a pressure sewer. There may also be stormwater facilities in this same alignment.

In the Water Master Plan, under pipeline project P-201, there is a system connection in a strip easement between Thayer Road and Beavercreek Road at the intersection with Marjorie Lane. Consideration should be given to routing this connection along Thayer Road to Maplelane Road and then onto Beavercreek Road. This will keep this proposed 12-inch main in the public street area where it can be better accessed.

The estimated total capital cost for the "backbone" network within the concept plan area will be in the area of $5,400,000. This estimate is based the one derived for Alternative D, which for concept planning purposes, is representative of the plan and costs for the final Concept Plan. This is in addition to the $6.9 million of programmed capital improvement projects that will extend the water system to the concept plan area. All estimates are based on year 2003 dollars. Before the SDC can be established, the estimates will need to be adjusted for the actual programmed year of construction.

For additional information, please see Technical Appendix, Sections C6 and H3.

Sanitary Sewer

The northern half of the concept area drains generally to the north and follows the natural land contours formed by the uppermost portion of Thimble Creek. The proposed sanitary sewer system in the vicinity of Loder Road will follow the north-south street rights-of-way. This part of the system will terminate at the low point of the concept plan area in a wetwell. A sanitary lift station over the wetwell will pump the wastewater uphill in a westerly direction to a point that it can be discharged into a gravity sewer that will flow west to the trunk sewer in Beavercreek Road. The lift station and pressure sewer project has been identified in the Sanitary Sewer Master Plan as projects BC-COL-5 and 6. A utility bridge that will carry the pressure pipe and gravity sewer pipe over Thimble Creek is anticipated.

A short road access to the pump station that is parallel to Thimble Creek will also be needed.

The majority of the southern half of the concept area will have a gravity sanitary sewer system that will convey waste water to the existing 2,400-foot long trunk sewer in Beavercreek Road, which currently extends from Highway 213 to approximately 800 feet south of Marjorie Lane. This portion of the system can be built in the planned roadways and in the existing Beavercreek Road right-of-way. This portion of the system can be built in the planned roadways. A portion of the system, approximately 900 feet long, will need to be built in the current alignment of Loder Road so that the gravity sewer can be connected to the trunk sewer in Beavercreek Road. The circulation plan includes a realignment of Loder Road. Therefore, a sewer easement will need to be retained across the future parcel that now includes the current Loder Road alignment.

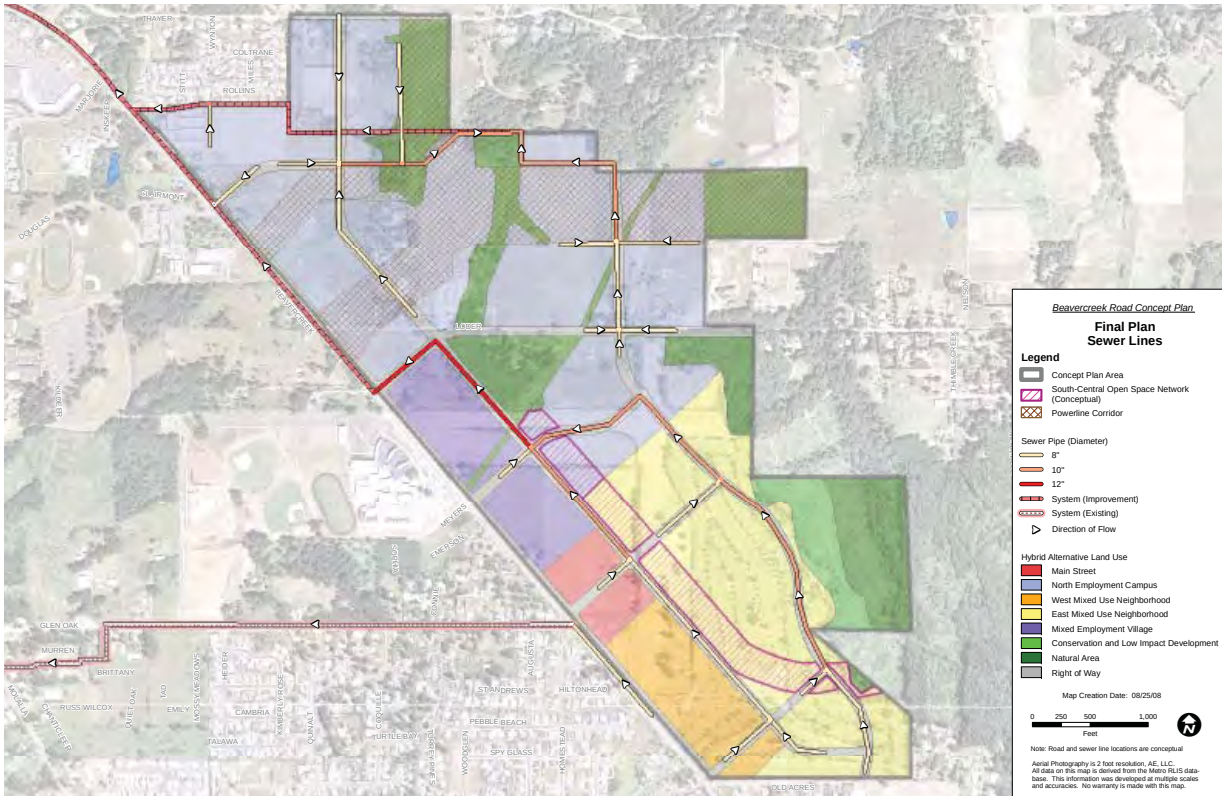


Figure 23 - Sewer Plan

The approximate elevation of 490 ft (MSL) is important in the southern half of the concept plan area relative to gravity sewer service. Roadways and development constructed above 490 ft will most likely allow for gravity sewer service. If land uses requiring sanitary sewer service (or roadways with sewer underneath) are located lower than 490 ft, individual pump stations and pressurized services may be required.

The estimated total capital cost will be in the vicinity of $4,400,000. This estimate is based on the cost analysis for Alternative D, which is comparable. This is in addition to the $2.3 million in sanitary sewer master plan capital costs that needed to bring the sanitary sewers to the concept plan area. These estimates are based on year 2003 dollars. The estimates will need to be adjusted for the programmed year of construction.

For additional information, please see Technical Appendix, Sections C6 and H2.

Funding strategies

For water, sewer, storm water and parks, there are five primary funding sources and strategies that can be used:

- *System development charges (SDCs)*– Oregon City requires developers to pay SDCs for new development. Developers pay these charges up front based on the predicted impact of the new development on the existing infrastructure and the requirements it creates for new improvements. Although the charges are paid by the developer, the developer may pass on some of these costs to buyers of newly developed property. Thus, SDCs allocate costs of development to the developer and buyers of the new homes or new commercial or industrial buildings.
- *Urban renewal/tax increment financing* - Tax increment financing is the primary funding vehicle used within urban renewal areas (URA). The tax increment revenue is generated within a URA when a designated area is established and the normal property taxes within that area are 'frozen' (often called the frozen base). Any new taxes generated within that area through either property appreciation or new investment becomes the increment. Taxing jurisdictions continue to collect income from the frozen base but agree to release assessed value above the base to the URA. The URA then can issue bonds to pay for identified public improvements. The tax increment is used to pay off the bonds.

Oregon City has the authority to establish an URA. The Beavercreek Road Concept Plan Area would have to meet the definition of 'blight' as defined in ORS 457. It is likely to meet 'blight' standards because its existing ratios of improvement-to-land values are likely low enough to meet that standard.

- *Local Improvement Districts* - Local Improvement Districts (LIDs) are formed for the purpose of assessing local property owners an amount sufficient to pay for a project deemed to be of local benefit. LIDs are a specific type of special assessment district, which more broadly includes any district that is formed within an existing taxing district to assess specific property owners for some service that is not available throughout the larger district. The revenues from the LID assessments are used to pay the debt payments on a special assessment bond or a note payable issued for the capital improvements.

LID assessments increase costs for property owners. Under a LID the improvements must increase the value of the taxed properties by more than the properties are taxed. LIDs are typically used to fund improvements that primarily benefit residents and property owners within the LID.

- *Bonds* - Bonds provide a financing mechanism for local governments to raise millions of dollars for parks and other capital projects. The City could back a bond with revenue from a LID, the Urban Renewal Districts, or property taxes citywide. General obligation (GO) bonds issued by local governments are secured by a pledge of the issuer's power to levy real and personal property taxes. Property taxes necessary to repay GO bonds are not subject to limitation imposed by recent property tax initiatives. Oregon law requires GO bonds to be authorized by popular vote.

Bond levies are used to pay principal and interest for voter-approved bonded debt for capital improvements. Bond levies typically are approved in terms of dollars, and the tax rate is calculated as the total levy divided by the assessed value in the district.

- Developer funded infrastructure – The City conditions land use approvals and permits to include required infrastructure. Beyond

the sources cited above, developers cover the remaining costs for the infrastructure required for their development.

Additional funding tools that could be investigated and implemented within the Concept Plan area include a Road District, a County Service District, Intergovernmental Agreements, an Advance Finance District, a Certificate of Participation, and a Utility Fee. There are benefits and limitations associated with each of the funding options that should be reviewed carefully before implementing.

For transportation infrastructure, the same sources as cited above are available. For larger facilities, such as Beavercreek Road, additional funds may be available. They include Metro-administered federal STP and CMAQ funding, and, regional Metro Transportation Improvement Plan funding. These sources are limited and extremely competitive. County funding via County SCSs should also be considered a potential source for Beavercreek Road. Facilities like Beavercreek Road are often funded with a combination of sources, where one source leverages the availability of another.

Sustainability

One of the adopted goals is: The Beavercreek Road Concept Plan Area will be a model of sustainable design, development practices, planning, and innovative thinking.

Throughout the development of the concept plan, sustainability has been paramount in guiding the CAC, the City, and the consultant team. The final plan assumes that sustainable practices will be a combination of private initiatives (such as LEED certified buildings), public requirements (green streets and low impact development policies), and public-private partnerships. It is recommended that City use incentives, education and policy support as much as possible for promoting sustainability at Beavercreek Road. Some initiatives will require regulation and City mandates, but caution and balance should be used. At the end of the day, it is up to the private sector to invest in sustainable development. The Beavercreek Road's site's legacy as a model of sustainable design will depend, in large part on the built projects that are successful in the marketplace and help generate the type of reputation that the community desires and deserves.

The key to fulfilling the above-listed goal will be in the implementation. For the City's part, implementation strategies that support sustainable design will be included within the Oregon City Comprehensive Plan policies and Code provisions. They will be applied during master plan and design review permitting. Some of these strategies will be "required" while other are appropriate to "encourage." These sustainability strategies include:

- Energy efficiency
- Water conservation
- Compact development
- Solar orientation
- Green streets/infrastructure
- Adaptive reuse of existing buildings/infrastructure
- Alternative transportation
- Pedestrian/Cyclist friendly developments
- Natural drainage systems
- Tree preservation and planting to "re-establish" a tree canopy
- Minimizing impervious surfaces
- Sustainability education (builder, residents, businesses and visitors)
- Collaboration with "local" institutional and economic partners, particularly Clackamas Community College and Oregon City High School
- Community-based sustainable programs and activities

Principles for Sustainable Community Design

The CAC discussed Principles for Sustainable Community Design that were offered by one of the members. These provide a good framework for how the Concept Plan is addressing sustainability.

Mix Land Uses - Promote a mix of land uses that support living wage jobs and a variety of services.

All of the sub-districts are, to some degree, mixed use districts. The Mixed Use Village, Main Street and West Mixed Use Neighborhood allow a rich mix of employment, housing, and services. Taken together, the entire 453 acre area will be a complete community.

Housing Types - Create a range of housing choices for all ages and incomes.

The concept plan includes housing in many forms: mixed use formats in the 3-5 story buildings, high density apartments and condominiums, live-work units, townhomes, small cottage lots, and low density single family homes.

Walk-ability - Make the Neighborhood "walkable" and make services "walk-to-able."

The plan provides a street and trail framework. The code will require a high level of connectivity and maximum block sizes for most sub-districts. Services are provided throughout the plan as part of mixed use areas and a broad range of permitted uses.

Transportation - Provide a range of transportation options using a connected network of streets and paths.

The plan provides for all modes: walking, biking, driving and transit. Transit-supportive land use is specifically required in the Mixed Employment Village, Main Street and West Mixed Use Neighborhoods. The framework of connected streets and paths will be supplemented by a further-connected system of local streets and walking routes.

Open Space - Protect and maintain a functioning green space network for a variety of uses.

Open space is distributed throughout the plan. New green spaces are connected with existing higher-value natural areas.

Integrate Systems - Integrate ecological and man-made systems to maximize function, efficiency and health.

Infrastructure systems (green storm water, multi-modal transportation) are highly integrated with the open space network and array of land uses. It will be important for the implementation of the plan to further integrate heating, cooling, irrigation and other man-made systems with the Concept Plan framework.

Ecological Health - Manage natural resources to eliminate pollution to watersheds and lesson impact on habitat and green infrastructure.

Methods to achieve this principle are identified in the Stormwater Infrastructure Report. Additionally, the code requires measures to preserve natural resources and eliminate pollution to watersheds necessary to achieve this principle.

Reuse, Recycle, Regenerate - Reuse existing resources, regenerate existing development areas.

The principle will be applied primarily at time of development and beyond.

Green Buildings - Build compact, innovative structures that use less energy and materials.

The draft code includes provisions for green buildings. This is a new area for the City to regulate, so a public-private Green Building Work Group is recommend to explore issues, build consensus, and develop specific code recommendations.

Work Together - Work with community members and neighbors to design and develop.

The development of the alternatives and the recommended plan has been a collaborative process with all project partners. The concept plan process through implementation and subsequent project area developments will continue to be a collaborative process where all stakeholders are invited to participate.

For additional information, please see Technical Appendix, Sections C3, D, and F.

Metrics

Land Use

The following table summarizes the acreages for major land uses on the Concept Plan.

Land Use Category (acres)	Hybrid
North Employment Campus (adjusted gross acreage)*	149
Mixed Employment Village	26
Main Street	10
West Mixed Use Neighborhood	22
East Mixed Use Neighborhood	77
Total Acres of "built" land use	**284**
Other Land Uses (not "built")	
Parks/Open Space/Natural Areas (Total)**	113
Major ROW+	56
Existing Uses (unbuildable)	0
Total Project Area Gross Acres	**453**

***Adjusted gross acreage** is the sum of 50% of the employment land use shown under the powerline easement plus all other unconstrained employment land use areas. Calculations shown below:

Land Use Category (acres)	Hybrid
Total North Employment Campus	175
Unconstrained NEC	**123**
Employment with powerline overlay	52
Useable portion of powerline overlay (50%)	**26**
North Employment Campus (adjusted gross acreage)*	**149**

Housing and Employment Estimates

The Concept Plan has an estimated capacity for approximately 5000 jobs and 1000 dwellings. The following table displays the estimates and assumptions used to estimate jobs and housing. On a net acreage, these averages are 33 jobs/ net developable acre and 10.3 dwellings/ net developable acre.

Land Use Category	Hybrid Gross Acres	Hybrid Net Acres*	FAR/Acre**	SF/Job**	# of Jobs***	Avg. Units/Acre	# of Units+
North Employment Campus (adjusted gross acreage)	149	127	0.3	450	3,678		
Mixed Employment Village	26	21	0.44	350	1,139		
Main Street****	10	8	0.44	350	219	25	100
West Mixed Use Neighborhood	22	18			15	22	387
East Mixed Use Neighborhood	77	62			21	8.7	536
Total # of Jobs					**5,073**		
Total # of Housing Units							**1,023**
Total Acres of Developed Land++	**284**	**235**					

***For Hybrid -** Net acres equals gross acres minus 15% for local roads and easements in Employment. Mixed Employment, Mixed Use, and residential areas assume 20% for local roads and easements

* *Based on Metro 2002-2022 Urban Growth Report: An Employment Land Need Analysis. Includes total on site employment (full and part time). Mixed Employment FAR and job density reflects a mix of office, tech/flex, and ground floor retail.

***Number of Jobs in Employment, Mixed Employment, Mixed Use calculated by multiplying total acres by the FAR; Converting to square feet; and dividing by number of jobs/square foot. Jobs in residential areas (Work at Home Jobs) estimated at 4% (potential could be as high as 15%).

**** Mixed Use land use assumes 50% of acreage devoted to commercial uses and the remaining 50% devoted to vertical mixed use.

+Number of units calculated by multiplying total net acres of residential land use by average units per acre

++Includes 50% of useable power line corridor (26 acres total) as part of developed land (included in Employment land area)

+++Does not include powerline corridor acreage as part of developed land

VI. Goals and Policies

The following goals and policies are recommended for adoption into the Oregon City Comprehensive Plan. The goal statements are those developed by the Citizen Advisory Committee as goals for the plan.

Goal 1 Complete and Sustainable Community

Create a complete and sustainable community, in conjunction with the adjacent land uses, that integrates a diverse mix of uses, including housing, services, and public spaces that are necessary to support a thriving employment center.

Policy 1.1

Adopt new comprehensive plan and zone designations, and development code, that implement the Beavercreek Concept Plan. Require all development to be consistent with the Concept Plan and implementing code.

Policy 1.2

Establish sub-districts to implement the Concept Plan. The sub-districts are:

North Employment Campus – NEC

The purpose of the North Employment Campus is to provide for the location of family wage employment that strengthens and diversifies the economy. The NEC allows a mix of clean industries, offices serving industrial needs, light industrial uses, research and development and large corporate headquarters. The uses permitted are intended to improve the region's economic climate, promote sustainable and traded sector businesses, and protect the supply of sites for employment by limiting incompatible uses. The sub-district is intended to comply with Metro's Title 4 regulations. Site and building design will create pedestrian-friendly areas and utilize cost effective green development practices. Business and program connections to Clackamas Community College (CCC) are encouraged to help establish a positive identity for the area and support synergistic activity between CCC and NEC properties. Businesses making sustainable products and utilizing sustainable materials and practices are encouraged to reinforce the identity of the area and promote the overall vision for the Beavercreek Road area.

Mixed Employment Village – MEV

The purpose of the Mixed Employment Village is to provide employment opportunities in an urban, pedestrian friendly, and mixed use setting. The MEV is intended to be transit supportive in its use mix, density, and design so that transit remains an attractive and feasible option. The MEV allows a mix of retail, office, civic and residential uses that make up an active urban district and serve the daily needs of adjacent neighborhoods and Beavercreek Road sub-districts. Site and building design will create pedestrian-friendly areas and utilize cost effective green development practices. Business and program connections to Clackamas Community College and Oregon City High School are encouraged. Businesses making sustainable products and utilizing sustainable materials and practices are encouraged to reinforce the identity of the area and promote the overall vision for the Beavercreek Road area.

Main Street – MS

The purpose of this small mixed-use center is to provide a focal point of pedestrian activity. The MS allows small scale commercial, mixed use and services that serve the daily needs of the surrounding area. "Main Street" design will include buildings oriented to the street, and minimum of 2 story building scale, attractive streetscape, active ground floor uses and other elements that reinforce pedestrian oriented character and vitality of the area.

West Mixed Use Neighborhood – WMU

The West Mixed Use Neighborhood will be a walkable, transit-oriented neighborhood. This area allows a transit supportive mix of housing, live/work units, mixed use buildings and limited commercial uses. A variety of housing and building forms is required, with the overall average of residential uses not exceeding 22 dwelling units per acre. The WMU area's uses, density and design will support the multi-modal transportation system and provide good access for pedestrians, bicycles, transit and vehicles. Site and building design will create a walkable area and utilize cost effective green development practices.

East Mixed Use Neighborhood – EMU

The East Mixed Use Neighborhood will be a walkable and tree-lined neighborhood with a variety of housing types. The EMU allows for a variety of housing types while maintaining a low density residential average not exceeding the densities permitted in the R-5 zone. Limited non-residential uses are permitted to encourage a unique identity, sustainable community, and in-home work options. The neighborhood's design will celebrate open space, trees, and relationships to public open spaces. The central open space, ridge open space scenic viewpoints, and a linked system of open spaces and trails are key features of the EMU. Residential developments will provide housing for a range of income levels, sustainable building design, and green development practices.

Policy 1.3

Within the Northern Employment Campus sub-district, support the attraction of family wage jobs and connections with Clackamas Community College.

Policy 1.4

Within the Mixed Employment Village and Main Street sub-districts, promote job creation, mixed use and transit oriented development. Adopt minimum densities, limitations on stand-alone residential developments, and other standards that implement this policy.

Policy 1.5

The Main Street sub-district may be located along the extension of Glen Oak Road and not exceed 10 gross acres. The specific configuration of the MS sub-district may be established as part of a master plan.

Policy 1.6

Within the West and East Mixed Use Neighborhoods, require a variety of housing types. Allow lot size averaging and other techniques that help create housing variety while maintaining overall average density.

Policy 1.7

Within the MEV, MS, WMU and EMU sub-districts, require master plans to ensure coordinated planning and excellent design for relatively large areas (e.g. 40 acres per master plan). Master plans are optional in the NEC due to the larger lot and campus industrial nature of the area.

Goal 2 Model of Sustainable Design

Be a model of sustainable design, development practices, planning, and innovative thinking.

Policy 2.1

Implement the Sustainable Storm Water plan recommended in the Concept Plan. During site specific design, encourage innovative system design and require low impact development practices that manage water at the site, street and neighborhood scales.

Policy 2.2

Storm water facilities will be designed so they are amenities and integrated into the overall community design.

Policy 2.3

Support public and private sector initiatives to promote sustainable design, development practices and programs, including but not limited to:

- Energy efficiency
- Water conservation
- Compact development
- Solar orientation
- Green streets/infrastructure
- Adaptive reuse of existing buildings/infrastructure
- Alternative transportation
- Pedestrian/Cyclist friendly developments
- Natural drainage systems
- Tree preservation and planting to "re-establish" a tree canopy
- Minimizing impervious surfaces
- Sustainability education (builder, residents, businesses and visitors)
- Collaboration with "local" institutional and economic partners, particularly Clackamas Community College and Oregon City High School
- Community based sustainable programs and activities

Policy 2.4

Work with stakeholders and the community to develop LEED or equivalent green building standards and guidelines to apply in the Concept Plan area.

Goal 3 Green Jobs

Attract "green" jobs that pay a living wage.

Policy 3.1

Coordinate with county, regional and state economic development representatives to recruit green industry to the Concept Plan area.

Policy 3.2

Promote the Concept Plan area as a place for green industry.

Policy 3.3

Work with Clackamas Community College to establish programs and education that will promote green development within the Concept Plan area.

Goal 4 Sustainable Industries

Maximize opportunities for sustainable industries that serve markets beyond the Portland region and are compatible with the site's unique characteristics.

Policy 4.1

As master plans are approved, ensure there is no net loss of land designated North Employment Campus.

Policy 4.2

Coordinate with County, regional and state economic development representatives to recruit sustainable industries that serve markets beyond the Portland region.

Goal 5 Natural Beauty

Incorporate the area's natural beauty into an ecologically compatible built environment.

Policy 5.1

Incorporate significant trees into master plans and site specific designs. Plant new trees to establish an extensive tree canopy as part of the creation of an urban community.

Policy 5.2

Provide scenic viewpoints and public access along the east ridge.

Policy 5.3

Protect views of Mt Hood and locate trails and public areas so Mt Hood can be viewed within the community

Policy 5.4

Establish open space throughout the community consistent with the Open Space Framework Plan. Allow flexibility in site specific design of open space, with no net loss of total open space area.

Policy 5.5

Protect steeply sloped and geologically sensitive areas along the east ridge from development.

Goal 6 Multi-modal Transportation

Provide multi-modal transportation links (such as bus routes, trails, bike-ways, etc.) that are connected within the site as well as to the surrounding areas.

Policy 6.1

Work with Tri-Met and stakeholders to provide bus service and other alternatives to the Concept Plan area.

Policy 6.2

As land use reviews and development occur prior to extension of bus service, ensure that the mix of land uses, density and design help retain transit as an attractive and feasible option in the future.

Policy 6.3

Ensure that local street connectivity and off-street pedestrian routes link together into a highly connected pedestrian system that is safe, direct, convenient, and attractive to walking.

Policy 6.4

The "walkability" of the Concept Plan area will be one of its distinctive qualities. The density of walking routes and connectivity should mirror

the urban form – the higher the density and larger the building form, the "finer" the network of pedestrian connections.

Policy 6.5
Require trails to be provided consistent with the Concept Plan Circulation Framework.

Policy 6.6
Provide bike lanes on Beavercreek Road and all collector streets, except for Main Street. The City may consider off-street multi-use paths and similar measures in meeting this policy. Bike routes will be coordinated with the trails shown on the Circulation Framework.

Goal 7 Safety Along Beavercreek Road
Implement design solutions along Beavercreek Road that promote pedestrian safety, control traffic speeds and access, and accommodate projected vehicular demand.

Policy 7.1
Design Beavercreek Road to be a green street boulevard that maximizes pedestrian safety.

Policy 7.2
Work with the County and State to establish posted speeds that are safe for pedestrians and reinforce the pedestrian-oriented character of the area.

Policy 7.3
Control access along the east side of Beavercreek Road so that full access points are limited to the intersections shown on the Circulation Framework. Right in-Right-out access points may be considered as part of master plans or design review.

Goal 8 Oregon City High School and Clackamas Community College
Promote connections and relationships with Oregon City High School and Clackamas Community College.

Policy 8.1
Coordinate with OCHS and CCC when recruiting businesses and promoting sustainability. Within one year of adoption of the Concept Plan, the City will convene dialogue with OCHS, CCC and other relevant partners to identify target industries and economic development strategies that are compatible with the vision for the Concept Plan. Encourage curricula that are synergistic with employment and sustainability in the Concept Plan area.

Policy 8.2
Prior to application submittal, require applicants to contact OCHS and CCC to inform them and obtain early comment for master plans and design review applications.

Policy 8.3
Improving the level-of-service and investing in the Highway 213 corridor improves the freight mobility along Highway 213, which provides access to Beavercreek Road and the Concept Plan area. Protecting the corridor and intersections for freight furthers the City goal of providing living-wage employment opportunities in the educational, and research opportunities to be created with CCC and OCHS.

Goal 9 Unique Sense of Place

Have a unique sense of place created by the mix of uses, human scale design, and commitment to sustainability.

Policy 9.1

Utilize master plans and design review to ensure detailed and coordinated design. Allow flexibility in development standards and the configuration of land uses when they are consistent with the comprehensive plan, development code, and vision to create a complete and sustainable community.

Policy 9.2

Implement human scale design through building orientation, attractive streetscapes, building form/architecture that is matched to the purpose of the sub-district, location of parking, and other techniques. The design qualities of the community should mirror the urban form – the higher the density and larger the buildings, the higher the expectation for urban amenities and architectural details.

Policy 9.3

Density should generally transition from highest on the west to lowest in the eastern part of the site.

Policy 9.4

Promote compatibility with existing residential areas at the north and south end of the Concept Plan area. Transition to lower densities, setbacks, buffers and other techniques shall be used.

Goal 10 Ecological Health

Manage water resources on site to eliminate pollution to watersheds and lesson impact on municipal infrastructure by integrating ecological and man-made systems to maximize function, efficiency and health.

Policy 10.1

Utilize low impact development practices and stormwater system designs that mimic natural hydrologic processes, minimize impacts to natural resources and eliminate pollution to watersheds.

Policy 10.2

Prepare the Environmentally Sensitive Resource Area overlay to protect, conserve and enhance natural areas identified on the Concept Plan. Apply low-density base zoning that allows property owners to cluster density outside the ESRA and transfer to other sites.

Appendix

1. Project Goals

2. Concept Plan Alternatives

3. GIS Analysis Map

4. Job and Housing Estimates

	To: Beavercreek Road Concept Plan Citizens and Technical Advisory Committees From: Tony Konkol Date: March 13, 2007 Subject: Project Goals with Objectives

The following project goals and supplemental objectives were prepared using the *Ideas we Like, Principles of Sustainable Development,* and the Advisory Committees' long-term vision for the project area. This update reflects input by the Citizens and Technical Advisory Committees at their March 8th, 2007 meeting.

The Beavercreek Road Concept Plan Area will:

Goal

1. Create a **complete community**, in conjunction with the adjacent land uses, that integrates a diverse mix of uses, including housing, services, and public spaces that are necessary to support a thriving employment center;

   Objective 1.1
   Allow a variety of employment uses that may integrate and utilize the surrounding city and rural economies.
   Objective 1.2
   Develop plans that consider the existing rural lands and uses around the Urban Growth Boundary.
   Objective 1.3
   Continue to coordinate with the Oregon City School District and Clackamas Community College to identify partnerships, land needs and programs that would be beneficial to all parties and contribute to the community.
   Objective 1.4
   Encourage neighborhood-oriented and scaled mixed-use centers that provide goods, services, and housing for local workers and residents of all ages and incomes.
   Objective 1.5
   Become a model of sustainability that may be implemented throughout the City.
   Objective 1.6
   Allow the integration of housing and employment uses where practicable.
   Objective 1.7
   Work with Metro to ensure that there is enough land available within the Beavercreek Road Study Area to meet the need for employment/industrial development and reduce the jobs to housing imbalance in the sub-region.

2. Be a **model of sustainable design**, development practices, planning, and innovative thinking;

   Objective 2.1
   Allow a variety of employment uses that may integrate and utilize the surrounding city and rural economies.
   Objective 2.2
   Develop plans that consider the existing rural lands and uses around the Urban Growth Boundary.
   Objective 2.3
   Encourage neighborhood-oriented and scaled mixed-use centers that provide goods, services and housing for local workers and residents of all ages and incomes.
   Objective 2.4
   Encourage environmentally responsible developments that are economically feasible, enhance livability of neighborhoods and enhance the natural environment.
   Objective 2.5
   Investigate development standards that offer incentives for developments that exceed energy efficiency standards and meets green development requirements and goals.

3. Attract **"green" jobs** that pay a living wage;
   Objective 3.1
   Allow a variety of employment uses that may integrate and utilize the surrounding city and rural economies.
   Objective 3.2
   Develop plans that consider the existing rural lands and uses around the Urban Growth Boundary.
   Objective 3.3
   Encourage neighborhood-oriented and scaled mixed-use centers that provide goods, services and housing for local workers and residents of all ages and incomes.
   Objective 3.4
   Allow the integration of housing and employment uses where practicable.
   Objective 3.5
   Work with Metro to ensure that there is enough land available within the Beavercreek Road Study Area to meet the need for employment/industrial development and reduce the jobs to housing imbalance in the sub-region.
   Objective 3.6
   Create a "brand" for the area that reflects the desire for sustainable development that will serve as the theme to attract and recruit businesses and developers as well as guide the design standards and build-out of the area.

4. Maximize opportunities for **sustainable industries that serve markets beyond the Portland region** and are compatible with the site's unique characteristics;

   Objective 4.1

Create a "brand" for the area that reflects the desire for sustainable development that will serve as the theme to attract and recruit businesses and developers as well as guide the design standards and build-out of the area.

Objective 4.2

Work with Metro to ensure that there is enough land available within the Beavercreek Road Study Area to meet the need for employment/industrial development and reduce the jobs to housing imbalance in the sub-region.

Objective 4.3

Support locally based and founded employers that provide living wages jobs.

Objective 4.4

Support the development of sustainable industries that utilize green design standards and development practices.

5. Incorporate the area's **natural beauty** into an ecologically compatible built environment;

Objective 5.1

Design the adjacent land-uses to Beavercreek Road in such a manner to ensure that the pedestrian experience is not diminished through the development of fences, parking lots, backs of buildings, or other impediments to pedestrian access and circulation.

Objective 5.2

Allow a variety of employment uses that may integrate and utilize the surrounding city and rural economies.

Objective 5.3

Develop plans that consider the existing rural lands and uses around the Urban Growth Boundary.

Objective 5.4

Work with Metro to ensure that there is enough land available within the Beavercreek Road Study Area to meet the need for employment/industrial development and reduce the jobs to housing imbalance in the sub-region.

6. Provide **multi-modal transportation links** (such as bus routes, trails, bike-ways, etc.) that are connected within the site as well as to the surrounding areas;

Objective 6.1

Provide public connectivity routes for bicycles and pedestrians that encourage non-vehicular trips to employment, retail and recreational areas within the study area and to the communities beyond.

Objective 6.2

Provide an integrated street system that is designed as practicable to minimize the impacts to the environment through the use of green streets, swales and other natural stormwater systems that provide water quality and quantity control and contribute to the natural beauty of the area.

Objective 6.3

Explore local and regional transit opportunities that will increase non-single occupancy vehicle travel.

7. Implement **design solutions along Beavercreek Road** that promote pedestrian safety, control traffic speeds and access, and accommodate projected vehicular demand;

   Objective 7.1
   Develop and maintain a multi-modal transportation system that is safe for all users and will minimize conflict points between different modes of travel, especially across Beavercreek Road to the existing neighborhoods, Clackamas Community College, Oregon City High School and the Berry Hill Shopping Center.
   Objective 7.2
   Design the adjacent land-uses to Beavercreek Road in such a manner to ensure that the pedestrian experience is not diminished through the development of fences, parking lots, backs of buildings, or other impediments to pedestrian access and circulation.

8. Promote connections and relationships with **Oregon City High School and Clackamas Community College**;

   Objective 8.1
   Allow a variety of employment uses that may integrate and utilize the surrounding city and rural economies.
   Objective 8.2
   Develop plans that consider the existing rural lands and uses around the Urban Growth Boundary.
   Objective 8.3
   Continue to coordinate with the Oregon City School District and Clackamas Community College to identify partnerships, land needs and programs that would be beneficial to all parties and contribute to the community.

9. Have a **unique sense of place** created by the mix of uses, human scale design, and commitment to sustainability.

   Objective 9.1
   Provide public connectivity routes for bicycles and pedestrians that encourage non-vehicular trips to employment, retail and recreational areas within the study area and to the communities beyond.
   Objective 9.2
   Provide an integrated street system that is designed as practicable to minimize the impacts to the environment through the use of green streets, swales and other natural stormwater systems that provide water quality and quantity control and contribute to the natural beauty of the area.
   Objective 9.3
   Allow a variety of employment uses that may integrate and utilize the surrounding city and rural economies.
   Objective 9.4
   Develop plans that consider the existing rural lands and uses around the Urban Growth Boundary.

Objective 9.5

Encourage neighborhood-oriented and scaled mixed-use centers that provide goods, services and housing for local workers and residents of all ages and incomes.

Objective 9.6

Allow the integration of housing and employment uses where practicable.

Objective 9.7

Work with Metro to ensure that there is enough land available within the Beavercreek Road Study Area to meet the need for employment/industrial development and reduce the jobs to housing imbalance in the sub-region.

Objective 9.8

Create a "brand" for the area that reflects the desire for sustainable development that will serve as the theme to attract and recruit businesses and developers as well as guide the design standards and build-out of the area.

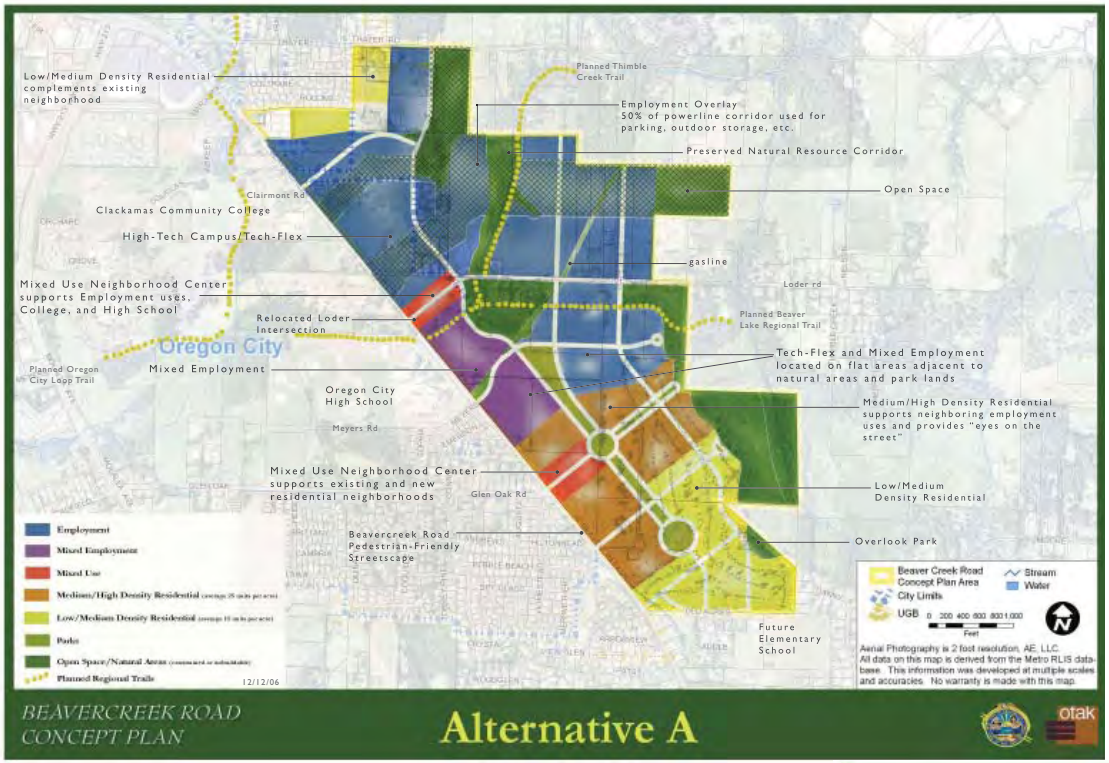
Objective 9.9

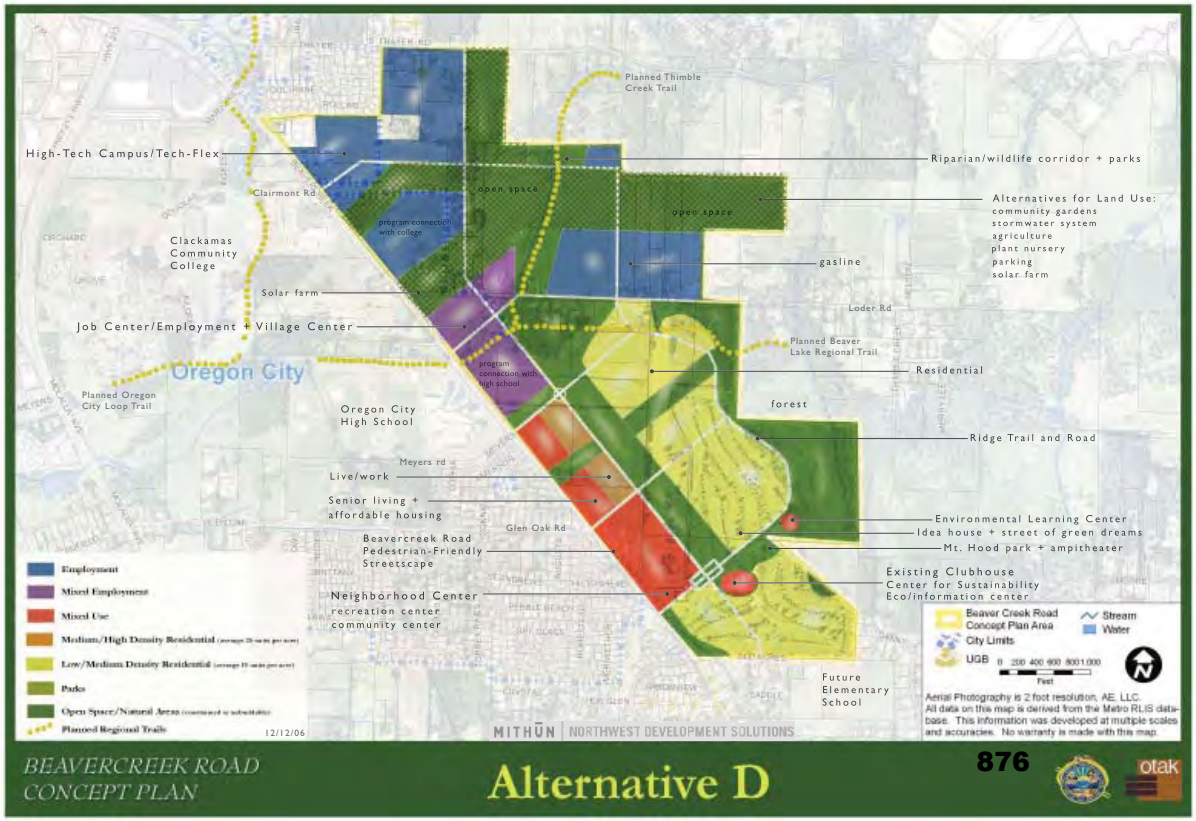
Design the adjacent land-uses to Beavercreek Road in such a manner to ensure that the pedestrian experience is not diminished through the development of fences, parking lots, backs of buildings, or other impediments to pedestrian access and circulation.

10. Ecological Health – Manage water resources on site to **eliminate pollution to watersheds** and lesson impact on municipal infrastructure by integrating ecological and man-made systems to maximize function, efficiency and health.

Objective 10.1

Provide an integrated street system that is designed as practicable to minimize the impacts to the environment through the use of green streets, swales and other natural stormwater systems that provide water quality and quantity control and contribute to the natural beauty of the area.


Low/Medium Density Residential complements existing neighborhood
Planned Thimble Creek Trail
Employment Overlay 50% of powerline corridor used for parking, outdoor storage, etc.
Preserved Natural Resource Corridor
Open Space
Clairmont Rd
Clackamas Community College
High-Tech Campus/Tech-Flex
gasline
Mixed Use Neighborhood Center supports Employment uses, College, and High School
Loder rd
Relocated Loder Intersection
Planned Beaver Lake Regional Trail
Oregon City
Planned Oregon City Loop Trail
Mixed Employment
Tech-Flex and Mixed Employment located on flat areas adjacent to natural areas and park lands
Oregon City High School
Medium/High Density Residential supports neighboring employment uses and provides "eyes on the street"
Meyers Rd
Mixed Use Neighborhood Center supports existing and new residential neighborhoods
Glen Oak Rd
Low/Medium Density Residential
Beavercreek Road Pedestrian-Friendly Streetscape
Overlook Park
Future Elementary School
Employment
Mixed Employment
Mixed Use
Medium/High Density Residential
Low/Medium Density Residential
Parks
Open Space/Natural Areas
Planned Regional Trails
12/12/06
Beaver Creek Road Concept Plan Area
City Limits
UGB
Stream
Water
Feet
Aerial Photography is 2 foot resolution, AE, LLC.
All data on this map is derived from the Metro RLIS database. This information was developed at multiple scales and accuracies. No warranty is made with this map.
BEAVERCREEK ROAD CONCEPT PLAN
Alternative A
otak


Planned Thimble Creek Trail
High-Tech Campus/Tech-Flex
Riparian/wildlife corridor + parks
Clairmont Rd
open space
Alternatives for Land Use:
community gardens
stormwater system
agriculture
plant nursery
parking
solar farm
program connection with college
open space
Clackamas Community College
gasline
Solar farm
Loder Rd
Job Center/Employment + Village Center
Planned Beaver Lake Regional Trail
Residential
Oregon City
program connection with high school
Planned Oregon City Loop Trail
forest
Oregon City High School
Ridge Trail and Road
Meyers rd
Live/work
Senior living + affordable housing
Environmental Learning Center
Idea house + street of green dreams
Glen Oak Rd
Beavercreek Road Pedestrian-Friendly Streetscape
Mt. Hood park + ampitheater
Existing Clubhouse
Center for Sustainability
Eco/information center
Neighborhood Center
recreation center
community center
Future Elementary School
Employment
Mixed Employment
Mixed Use
Medium/High Density Residential
Low/Medium Density Residential
Parks
Open Space/Natural Areas
Planned Regional Trails
12/12/06
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Aerial Photography is 2 foot resolution, AE, LLC.
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BEAVERCREEK ROAD CONCEPT PLAN
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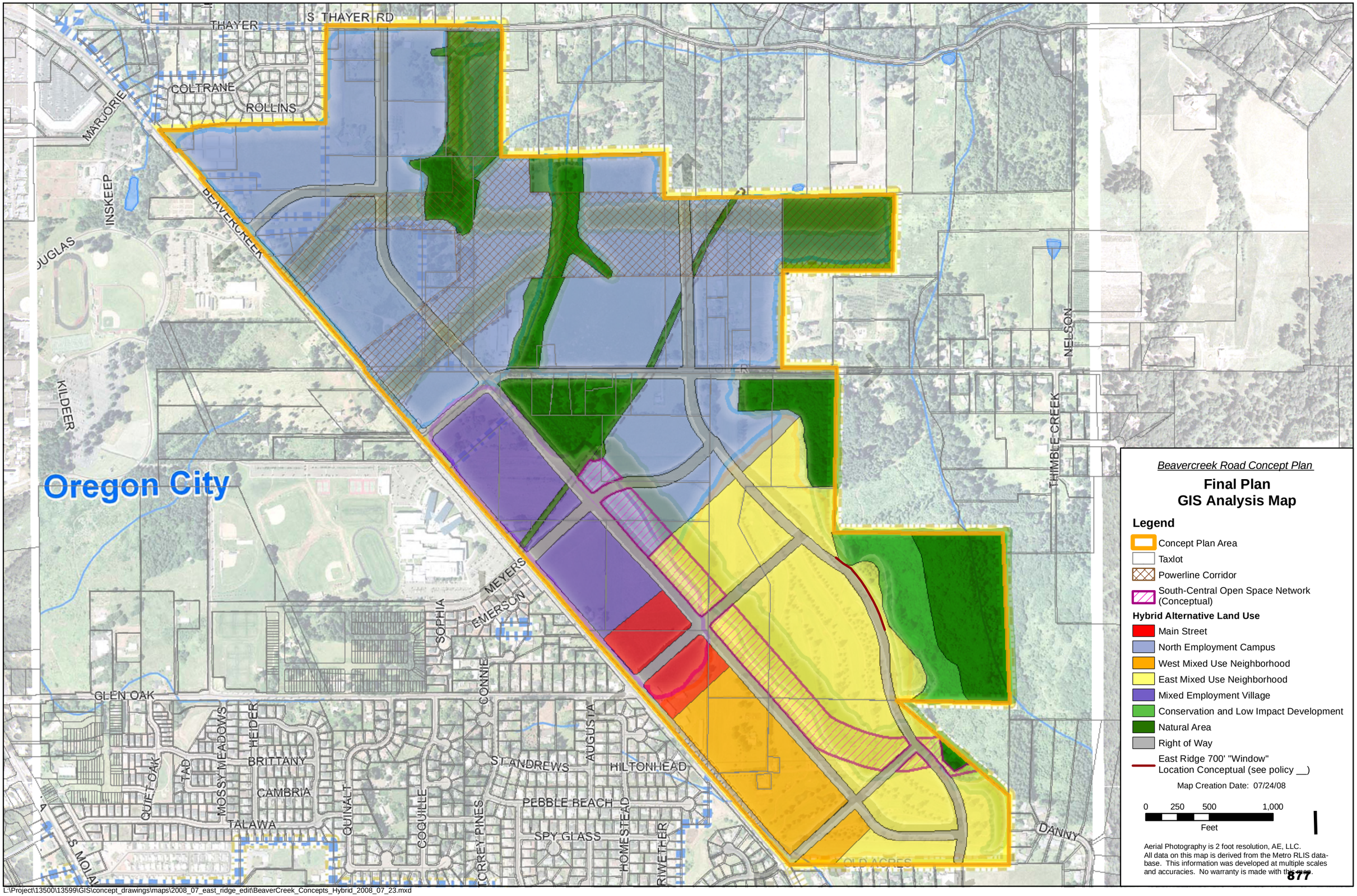

Beavercreek Road Concept Plan

Final Plan GIS Analysis Map

Legend

- Concept Plan Area
- Taxlot
- Powerline Corridor
- South-Central Open Space Network (Conceptual)

Hybrid Alternative Land Use

- Main Street
- North Employment Campus
- West Mixed Use Neighborhood
- East Mixed Use Neighborhood
- Mixed Employment Village
- Conservation and Low Impact Development
- Natural Area
- Right of Way
- East Ridge 700' "Window" Location Conceptual (see policy __)

Map Creation Date: 07/24/08

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Feet

Aerial Photography is 2 foot resolution, AE, LLC.
All data on this map is derived from the Metro RLIS database. This information was developed at multiple scales and accuracies. No warranty is made with this map.

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Table 2
Beavercreek Concept Plan Job & Housing Density Assumptions
Revised - 7/10/07

Land Use Category	Hybrid Gross Acres	Hybrid Net Acres*	FAR/Acre**	SF/Job**	# of Jobs***	Avg. Units/Acre	# of Units+
North Employment Campus (adjusted gross acreage)	149	127	0.3	450	3,678		
Mixed Employment Village	26	21	0.44	350	1,139		
Main Street****	10	8	0.44	350	219	25	100
West Mixed Use Neighborhood	22	18			15	22	387
East Mixed Use Neighborhood	77	62			21	8.7	536
Total # of Jobs					**5,073**		
Total # of Housing Units							**1,023**
Total Acres of Developed Land++	**284**	**235**					

Land Use Category	Plan A Gross Acres	Plan A Net Acres*	FAR/Acre**	SF/Job**	# of Jobs***	Avg. Units/Acre	# of Units+
Employment (adjusted gross acreage)	139	118	0.3	450	3,431		
Mixed Employment	24	20	0.44	350	1,117		
Mixed Use****	10	9	0.44	350	233	25	106
Medium/High Density Residential	50	43			43	25	1,063
Low/Medium Density Residential	53	45			18	10	451
Total # of Jobs					**4,841**		
Total # of Housing Units							**1,619**
Total Acres of Developed Land++	**276**	**235**					

Land Use Category	Plan D Gross Acres	Plan D Net Acres*	FAR/Acre**	SF/Job**	# of Jobs***	Avg. Units/Acre	# of Units+
Employment (adjusted gross acreage)	84	71	0.3	450	2,073		
Mixed Employment	25	21	0.44	350	1,164		
Mixed Use****	29	25	0.44	350	675	25	308
Medium/High Density Residential	9	8			8	25	191
Low/Medium Density Residential	99	84			34	10	842
Total # of Jobs					**3,953**		
Total # of Housing Units							**1,341**
Total Acres of Developed Land+++	**246**	**209**					

***For Hybrid -** Net acres equals gross acres minus 15% for local roads and easements in Employment. Mixed Employment, Mixed Use, and residential areas assume 20% for local roads and easements

* *Based on Metro 2002-2022 Urban Growth Report: An Employment Land Need Analysis. Includes total on site employment (full and part time). Mixed Employment FAR and job density reflects a mix of office, tech/flex, and ground floor retail.

***Number of Jobs in Employment, Mixed Employment, Mixed Use calculated by multiplying total acres by the FAR; Converting to square feet; and dividing by number of jobs/square foot. Jobs in residential areas (Work at Home Jobs) estimated at 4% (potential could be as high as 15%).

**** Mixed Use land use assumes 50% of acreage devoted to commercial uses and the remaining 50% devoted to vertical mixed use.

+Number of units calculated by multiplying total net acres of residential land use by average units per acre

++Includes 50% of useable power line corridor (26 acres total) as part of developed land (included in Employment land area)

+++Does not include powerline corridor acreage as part of developed land

Appendix IV

Table 3
Land Use Metrics/Assumptions - HYBRID
Revised - 7/10/07

Land Use Category (acres)	Hybrid	Alt. A	Alt. D
North Employment Campus (adjusted gross acreage)*	149	139	84
Mixed Employment Village	26	24	25
Main Street	10	10	29
West Mixed Use Neighborhood	22	50	9
East Mixed Use Neighborhood	77	53	99
Total Acres of "built" land use	**284**	**276**	**246**
Other Land Uses (not "built")			
Parks/Open Space/Natural Areas (Total)**	113	132	166
Major ROW+	56	36	30
Existing Uses (unbuildable)	0	7	7
Total Project Area Gross Acres	**453**	**~450**	**~450**

***Adjusted gross acreage** is the sum of 50% of the employment land use shown under the powerline easement plus all other unconstrained employment land use areas. Calculations shown below:

Land Use Category (acres)	Hybrid	Alt. A	Alt. D
Total North Employment Campus	175	166	84
Unconstrained NEC	**123**	**111**	**84**
Employment with powerline overlay	52	55	0
Useable portion of powerline overlay (50%)	**26**	**28**	**na**
North Employment Campus (adjusted gross acreage)*	**149**	**139**	**84**

** Open Space/Natural areas is the sum of all "unbuildable lands" as shown on the *Buildable Lands Map* plus two areas under the powerlines. Calculations shown below.

Open Space/Natural Areas Break-Out	Hybrid	Alt. A	Alt. D
Open Space -Gas Overlay	3	4	4
Open Space - Unbuildable Powerlines***	48	49	0
Environmental Resources/*Buildable Lands Map*	61	61	61
Parks	na	12	na
Other Open Space Areas	18	6	101
Open Space/Natural Areas (Total)	**130**	**132**	**166**

***For Hybrid** - Unbuildable Powerlines area includes 12 acres on east edge of site under powerlines plus 50% of employment area under powerlines (~26 acres) and the PGE parcel (10 acres). **For Alt. A** - Unbuildable Powerlines area includes 12 acres on east edge of site under powerlines and 10 acres of the PGE Parcel and 50% of powerline area (27 acres).

+Major ROW are approximate location & acreage (may be shown as crossing natural resource areas. Actual location and size of ROW will be addressed during development review/master planning). Includes 2 acre adjustment for GIS polygon alignment.

101508cw-1

2000-2022 Urban Growth Report: A Residential Land Need Analysis
Elements of Analysis
October 9, 2008

[**NOTE:** changes made to assumptions for highlighted elements are those for which assumptions selected have the largest effect on need or capacity. See page 2 for analysis.]

Demand Estimate (in Households)

Element:	Required	Flexibility
1(a): 4-County Population Forecast	yes	yes
(1b): 4-County Household Forecast	yes	yes
2: Capture Rate	yes	yes
3: Vacancy Rate	no	yes
4: Household Demand in the Metro UGB	yes	yes

Capacity Estimate (in Households)

Element:	Required	Flexibility
5: Gross Vacant Land	yes	yes
6: Subtraction for Title 3 (Water Quality Protection)	yes	yes
7: Gross Vacant Buildable Acres	--	--
8: Subtract "Exempt" Land (fed, state, city, county)	yes	yes
9: Subtract Acres of Platted Single-Family Lots	no	yes
10: Subtract Acres for Places of Worship, Social Orgs	yes	yes
11: Subtract Major Utility Easements	yes	yes
12: Subtract Acres for New Streets	yes	yes
13: Subtract Acres for New Schools	yes	yes
14: Subtract Acres for New Parks	yes	yes
15: Net Vacant Buildable Acres	--	--
16: Net Vacant Buildable Acres – Employment	--	--
17: Net Vacant Buildable Acres – Residential	--	--
18: Dwelling Unit Capacity Under Current Zoning	yes	yes
19: Residential Development in Mixed-Use Areas	yes	yes
20: Units Lost to Underbuild	no	yes
21: Units from Refill	yes	yes
22: Min Development Capacity on Title 3 Lands	yes	yes
23: Units from Platted Single-Family Lots	no	yes
24: Land Adjustments (last-minute capacity adds)	no	yes
25 and 26: Dwelling Unit Capacity	--	--
27: Policy Actions inside	no	yes
28 and 29: Adjusted Dwelling Unit Capacity; Net Need	--	--

Assumptions with Most Significant Effect on Need or Capacity

1(a): 4-County Population Forecast:
A range forecast will generate a range of needed housing units. Depending upon the magnitude of the range, selecting a point along the range will significantly affect the determination of the number of units needed.

2: Capture Rate:
The "capture rate" determines the number of housing units needed to accommodate the percentage of the four-county population forecast expected to come into the UGB. It was derived in the 2002 UGR from historical rates and MetroScope, using certain assumptions. In the 2002 UGR, Metro selected a 68 percent capture rate. Each percentage represented 3,200 dwelling units.[1] A change in the rate can mean a significant change in the need for housing units.

3: Vacancy Rate:
In the 2002 UGR, Metro assumed a need to provide capacity for the number of surplus dwelling units to accommodate household moves from one house to another house in the region. Metro assumed that, at any point in time, the housing market would need a four percent housing surplus (vacant housing) in order to facilitate these moves. The assumption resulted in an additional need for 8,500 dwelling units.

20. Units Lost to Underbuild:
In the 2002 UGR, Metro assumed that actual build-out of new residential development would occur at 20 percent less than the maximums allowed by local zoning codes. The reason for this "underbuild" factor was that MetroScope used the maximums to determine zoned capacity, and Metro's Title 1 required local governments to establish minimums at 80 percent of the maximums. Since Metro had limited information on actual underbuild, it assumed underbuild would be the difference between maximum and minimum densities. The result of this assumption was an assumed loss of capacity for 23,000 units. If Metro eliminated or reduced this assumption based upon actual experience, zoned capacity will increase significantly.

Units from Refill:
In the 2002 UGR, Metro began its analysis of zoned capacity by assuming that 26.3 percent of new dwelling units would occur as infill or re-development. This meant that 58,000 dwelling units could be accommodated without absorbing any vacant land. Metro then adopted measures (Centers program; Title 6 of the UGMFP) to increase the "refill" rate to 29 percent. The effect of the increase was to increase capacity by 6,000 dwelling units. Each percentage point increase in the assumed refill rate increased capacity by approximately 2,200 units. [Note: an increase in the refill rate means a decrease in the loss of capacity to streets and roads. Hence, the gain in capacity from an increase in the rate is greater than depicted in the 2002 UGR.]

[1] NOTE: the absolute numbers of housing units affected by these assumptions will be different in the 2009 UGR because the beginning numbers of units needed will be larger than the beginning 2002 number.

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www.oregonmetro.gov

RTP "Cause and Effect" Scenarios Preliminary Results

Linking Transportation to Land Use, the Economy and the Environment

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Kim Ellis, RTP Project Manager
Oct. 15, 2008 | Council Briefing

MAKING THE GREATEST PLACE

Purpose of today

- **Report preliminary results from transportation scenarios**
- **Status report on remaining transportation scenarios analysis**
- **Feedback on how we're reporting initial scenario results**
- **Identify questions and indicators to highlight for policy makers**

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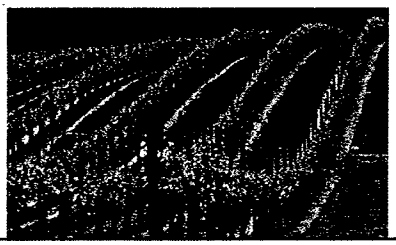
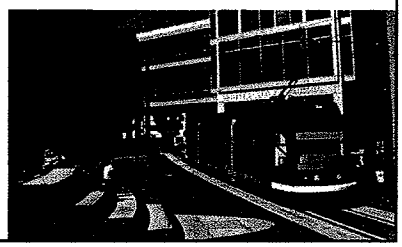
MAKING THE GREATEST PLACE

Our region is unique





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MAKING THE GREATEST PLACE

What does a successful region look like?

- Vibrant, walkable communities
- Sustained economic competitiveness and prosperity
- Safe and reliable transportation choices
- Minimal contributions to global warming
- Clean air, clean water, healthy ecosystems
- Benefits and burdens of growth shared throughout the region

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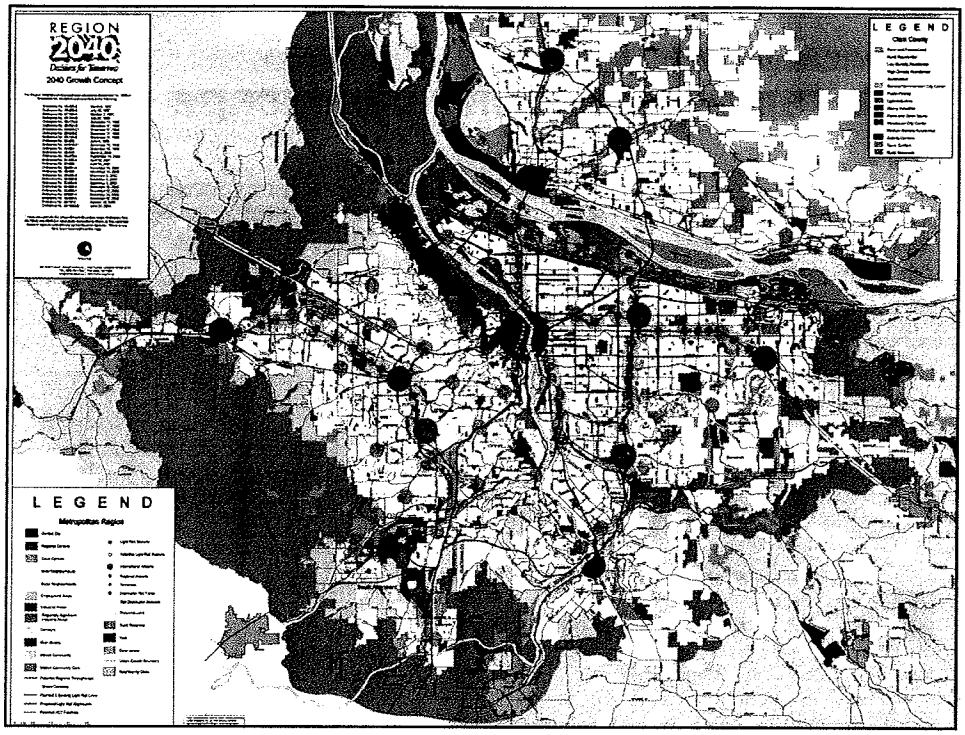

MAKING THE GREATEST PLACE

We've come a long way since 1995

- 250,000 more people
- Much of growth has been absorbed in existing communities
- Many main streets and downtowns seeing increased activity
- Transit ridership outpaced population growth
- Important decisions about the future lie ahead

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MAKING THE GREATEST PLACE

A Rapidly Changing Landscape

Trends and Challenges

- Growing population
- Changing demographics
- Globalizing economy
- Growing congestion
- Changing climate
- Rising energy costs

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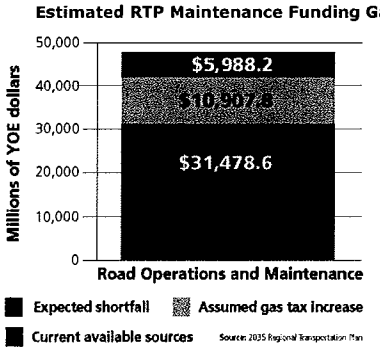
MAKING THE GREATEST PLACE

Rising Costs, Stagnant Revenues

Trends and Challenges



Source: 2035 Regional Transportation Plan (Dec. 13, 2007)

- Falling behind in investing in our aging infrastructure
- Maintenance consumes more than 60% of funding
- Shift of funding burden to local governments
- Transit demand outpacing revenues

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MAKING THE GREATEST PLACE

Choices for the Future

Urban Form – local aspirations, urban & rural reserves

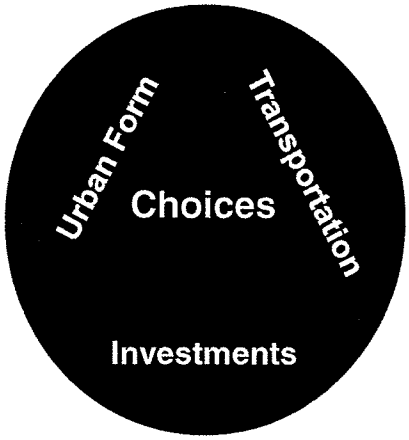
How do we grow?

Transportation - RTP

How do we travel?

Investments - infrastructure

How do we prioritize?



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MAKING THE GREATEST PLACE

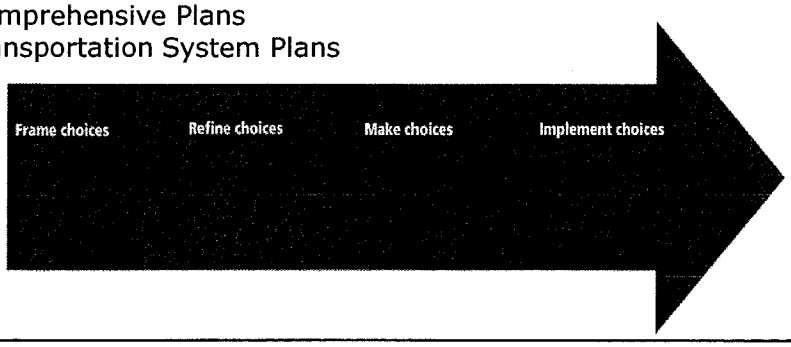
Key decisions ahead

Regional

- Local and Regional Aspirations → Urban Growth Report - 2009
- Regional Transportation Plan and HCT Plan – 2009
- Urban and Rural Reserves - 2009
- Infrastructure and Investment Decisions - 2009

Local

- Comprehensive Plans
- Transportation System Plans



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2035

REGIONAL TRANSPORTATION PLAN

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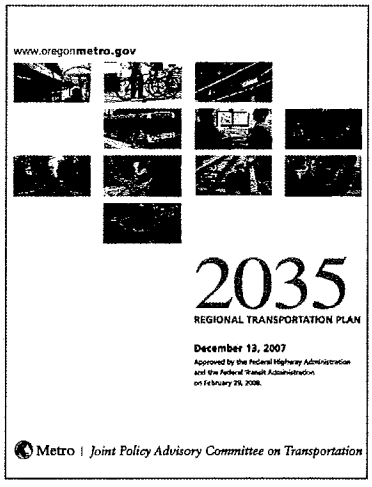
2035 REGIONAL TRANSPORTATION PLAN

New RTP Direction To Respond



- **Dec. '07 - Adopted new policy direction and projects the region can afford**
- **Summer '08 - New policies/measures tested**
- **Today – Reporting back on preliminary results**

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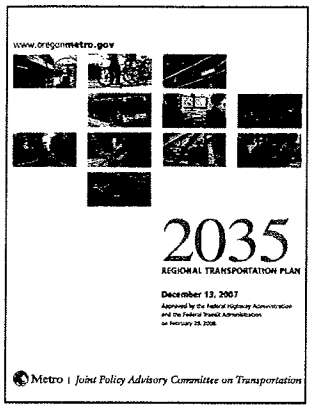
2035 REGIONAL TRANSPORTATION PLAN

RTP Goals and Outcomes



- Vibrant Communities and Efficient Urban Form
- Economic Competitiveness and Prosperity
- Transportation Choices
- Efficient Management of the Transportation System
- Safety and Security
- Environmental Stewardship
- Human Health
- Equity
- Fiscal Stewardship
- Accountability

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2035 REGIONAL TRANSPORTATION PLAN

Old and New

Performance Measures

Current Measures

- Highway capacity
- Transit ridership
- Mode share
- Vehicle miles traveled
- Air quality

New Measures

- Greenhouse gas emissions
- Land consumption
- Household growth
- Employment growth
- Housing/transportation affordability
- Cost of delay





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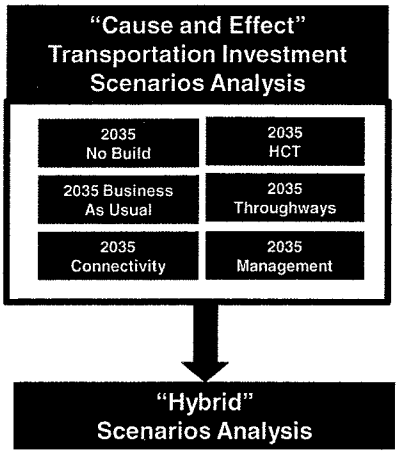
2035 REGIONAL TRANSPORTATION PLAN

Transportation Scenarios Analysis

- **Tests RTP policies**
- **Tests proposed performance measures**
- **Frames financial trade-offs**
- **Sets the stage for System Development in 2009 ("hybrids")**



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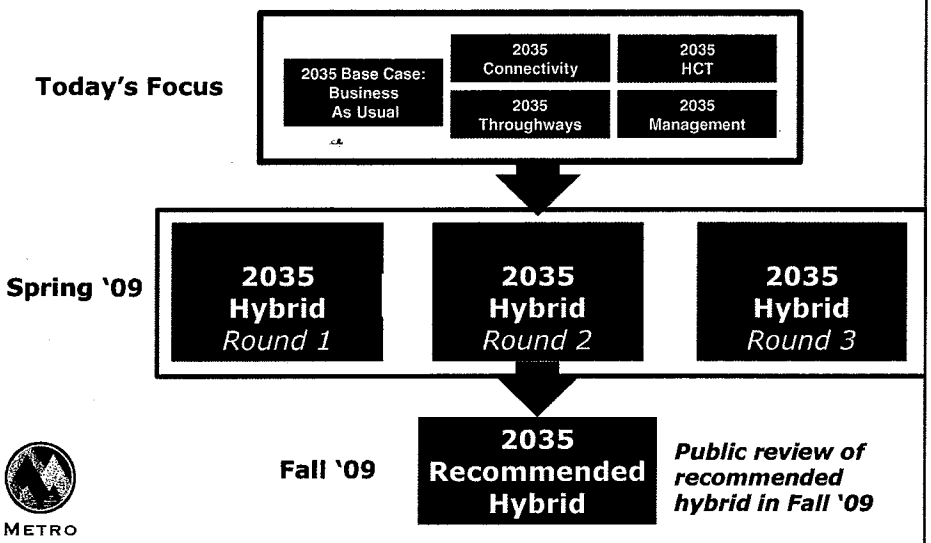
2035 REGIONAL TRANSPORTATION PLAN

Moving Forward to 2009



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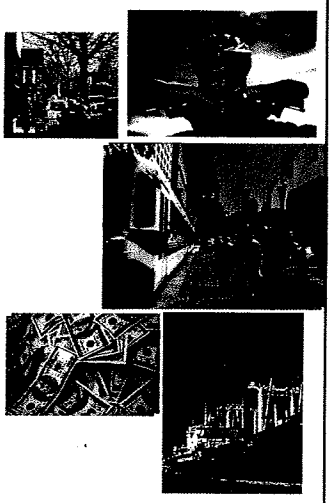
2035 REGIONAL TRANSPORTATION PLAN

Making Choices in 2009

- How do we measure success?
- What is the right mix of investments and strategies?
- How should limited dollars be prioritized?
  - *How do we protect what we have?*
  - *What areas & outcomes are priorities for investments?*
  - *How much revenue is the region willing to raise?*



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ASSUMPTIONS OVERVIEW

TRANSPORTATION SCENARIOS

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RTP "Cause and Effect" Investment Scenarios

Assumptions Overview

WHAT WE EVALUATED

- Policy themes agreed to in April '09
- Households and jobs held constant in travel model
- All scenarios add to the Base Case: Business As Usual scenario
- Travel effects using EMME/2
- Land use effects using Metroscope
- Air quality effects using MOBILE 6

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WHAT WE DID NOT EVALUATE
(but will in next phase of process)

- Corridor-level effects
- Effects of Metroscope allocation on scenarios' transportation networks
- Effects on environmental justice communities
- Effects on Goal 5 resources

BASE CASE: BUSINESS AS USUAL SCENARIO

CURRENT PLANS & RTP

KEY ASSUMPTIONS – BASE CASE: BUSINESS AS USUAL

Base Case: Business As Usual

Theme	Purpose	Key Assumptions
Base Case: Business As Usual *Current path if current local and regional plans are followed through 2035*	**Rely on current adopted plans and policies to serve future needs**	• **Adopted Financially Constrained System** • **Current land use plans** • **New funding sources(1)**

(1) Assumes 1 cent per year gas tax increase for maintenance and $15 vehicle registration fee increase every 8 years

Notable assumptions:

- **Sunrise from I-205 to 122nd**
- **Milwaukie light rail**
- **Lake Oswego Streetcar**
- **All day service for WES commuter rail**

Projects not included in analysis:

- **Columbia River Crossing**
- **I-5/99W connector**
- **I-5/I-84 interchange**

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PRELIMINARY RESULTS – BASE CASE: BUSINESS AS USUAL

Base Case: Business As Usual

Notable Travel Effects (compared to 2005)

- **Reduced VMT/capita by 5% but increases overall VMT by 37%**
- **Increased walking and biking by more than 70% and more than doubles transit ridership**
- **Increased rush hour congestion by 6 times and mid-day congestion by 8.5 times**

Notable Land Use Effects

- **TBD**
- **TBD**
- **TBD**

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Transportation data reflects trips that begin and end in the urban growth boundary. Congestion data is for facilities with volume/capacity ratio >=1.0.

CONNECTIVITY SCENARIO

CONCEPT A

KEY ASSUMPTIONS – CONCEPT A

Connectivity Scenario

Theme	Purpose	Key Assumptions
Concept A - Connectivity *Aggressive implementation of RTP connectivity policies*	**Rely on a dense network of major streets to spread out traffic and serve future needs**	• **Builds on Business As Usual** • **Add all arterials in current plans and widens existing arterials to 4 lanes to meet 1-mile arterial spacing** • **Bike, pedestrian and trail networks completed** • **12 new river crossings** • **Throughway overcrossings every 2 miles** • **539 lane miles of arterials added in UGB**

Notable assumptions:

- **I-5/99W connector as 4-lane arterial**
- **4-lane river crossings - Columbia River (2 bridges), Willamette River (3 bridges), Tualatin River (3 bridges) and Clackamas River (3 bridges)**

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PRELIMINARY RESULTS – CONCEPT A

Connectivity Scenario

Notable Travel Effects (compared to Business As Usual)

- Increased overall VMT and VMT/capita by 2%
- Reduced overall rush hour congestion the most (by 28%)
- Decreased highway congestion by 10% and arterial rush hour congestion by 30%
- Reduced truck delay during mid-day and rush hour by 21% and 23%

Notable Land Use Effects (compared to Business As Usual)

- TBD
- TBD
- TBD

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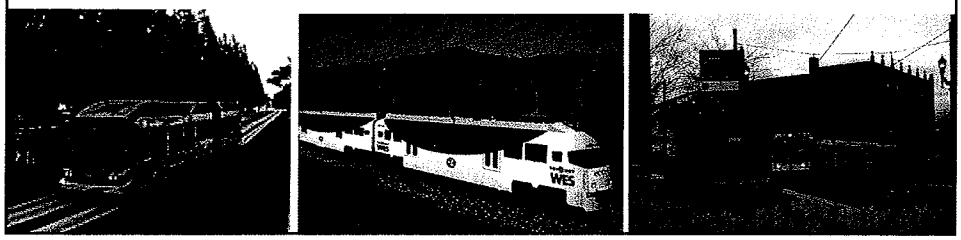
Transportation data reflects trips that begin and end in the urban growth boundary. Congestion data is for facilities with volume/capacity ratio >=1.0.

Going places

REGIONAL HIGH CAPACITY TRANSIT SYSTEM PLAN

HIGH CAPACITY TRANSIT SCENARIO

CONCEPT B



KEY ASSUMPTIONS – CONCEPT B

High Capacity Transit Scenario

Theme	Purpose	Key Assumptions
Concept B – High Capacity Transit *Bold expansion of HCT and frequent bus service, beyond current RTP policy*	**Rely on a high capacity transit oriented system to meet future needs**	• **Builds on Business As Usual** • **Connect all regional centers, some town centers with HCT** • **All HCT modeled as LRT** • **New park-and-ride lots** • **Frequent bus on all major arterials** • **Portland Streetcar Plan**

Notable assumptions:

- **Portland Central City to Washington Square via Barbur Blvd.**
- **Extensions to Oregon City, Forest Grove and Mt. Hood Community College**
- **Clackamas to Washington Square light rail via I-205**
- **Clark County HCT loop, connecting to Expo and Gateway**
- **Commuter rail to Columbia, Marion, Hood River and Yamhill counties**

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PRELIMINARY RESULTS – CONCEPT B

High Capacity Transit Scenario

Notable Travel Effects (compared to Business As Usual)

- **Reduced overall VMT and VMT/capita the most (by 3%)**
- **Increased non-SOV mode share the most (by 2%)**
- **Increased ridership the most (by 20%)**
- **Least efficient with 21% fewer originating riders per revenue hour**

Notable Land Use Effects (compared to Business As Usual)

- **TBD**
- **TBD**
- **TBD**

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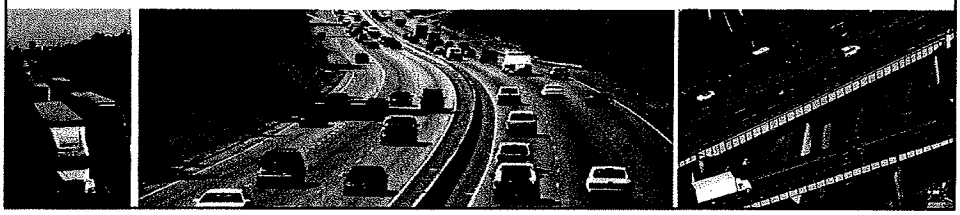
Transportation data reflects trips that begin and end in the urban growth boundary. Congestion data is for facilities with volume/capacity ratio >=1.0.

THROUGHWAYS SCENARIO

CONCEPT C



KEY ASSUMPTIONS – CONCEPT C

Throughways Scenario

Theme	Purpose	Key Assumptions
Concept C - Throughways *Bold expansion of throughway system, beyond current RTP policy*	**Rely on highway-oriented transportation system to serve future needs**	• **289 freeway lane miles added in UGB** • **Number of general purpose through lanes tied to congestion** • **Two new Columbia River crossings in Rivergate and Camas**

Notable assumptions:

- **10-lane freeways - I-5 and I-205 bridges and sections of I-5 south and I-205 north**
- **8-lane highways – I-84, US 26, OR 217, I-5 north and I-205 south**
- **New 4-lane highways - I-5/99W, Sunrise Corridor, I-84/US 26 connector and new river crossings in Rivergate and Camas**
- **C2 version includes high occupancy toll (HOT) lanes on I-5, I-405, I-205, I-84, OR 217 and US 26**

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PRELIMINARY RESULTS – CONCEPT C1 (NO HOT LANES)

Throughways Scenario – No HOT Lanes

Notable Travel Effects (compared to Business As Usual)

- Increased overall VMT and VMT/capita the most (by 6%)
- Increased trip length for all trips and commute trips the most (by 7% and 6%)
- Reduced rush hour congestion by 18%
- Decreased highway rush hour congestion by 56%, arterial rush hour congestion by 12%
- Reduced mid-day and rush hour truck delay the most (by 60% and 47%)

Notable Land Use Effects (compared to Business As Usual)

- TBD
- TBD
- TBD

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Transportation data reflects trips that begin and end in the urban growth boundary. Congestion data is for facilities with volume/capacity ratio >=1.0.

PRELIMINARY RESULTS– CONCEPT C2 (WITH HOT LANES)

Throughways Scenario - With HOT Lanes

Notable Travel Effects (compared to C2)

- TBD
- TBD

Notable Land Use Effects (compared to C2)

- TBD
- TBD
- TBD

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Transportation data reflects trips that begin and end in the urban growth boundary. Congestion data is for facilities with volume/capacity ratio >=1.0.

SYSTEM MANAGEMENT SCENARIO

CONCEPT D

KEY ASSUMPTIONS – CONCEPT D

System Management Scenario

Theme	Purpose	Key Assumptions
Concept D – Management *Aggressive implementation of RTP management policies*	**Rely on aggressive system management to optimize capital investments in the transportation system**	• **Same transit and road system as Business as Usual** • **Parking management and reduced transit fares in all centers** • **Access control and interchange removals** • **Arterial corridor traffic management**

Notable assumptions:

- **Short and long-term parking costs increased and transit fare costs decreased for 2040 centers, mainstreets and employment areas**
- **Interchange ramps closed at 46 locations to meet ODOT interchange spacing standards**
- **D2 version adds pricing of all lanes of existing capacity on I-5, I-405, I-205, I-84, OR 217 and US 26**

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PRELIMINARY RESULTS – CONCEPT D1 (NO TOLLING)

System Management – No Tolling

Notable Travel Effects (compared to Business As Usual)

- Reduced overall VMT and VMT/capita by 1%
- Increased transit ridership by 9%
- Most efficient with 10% more originating transit riders per revenue hour
- Reduced highway rush hour congestion by 10%
- Increased arterial rush hour congestion by 13%
- Reduced mid-day truck delay by 10%

Notable Land Use Effects (compared to Business As Usual)

- TBD
- TBD
- TBD

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Transportation data reflects trips that begin and end in the urban growth boundary. Congestion data is for facilities with volume/capacity ratio >=1.0.

PRELIMINARY RESULTS – CONCEPT D2 (WITH TOLLING)

Manage Existing System Scenario - With Tolling

Notable Travel Effects (compared to D1)

- TBD
- TBD
- TBD

Notable Land Use Effects (compared to D1)

- TBD
- TBD
- TBD

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COMPARISON OF RESULTS

TRANSPORTATION SCENARIOS

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TRANSPORTATION SCENARIOS: HOW THEY COMPARE

System Cost

DATA NOT AVAILABLE

■ Capital ■ OMP

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TRANSPORTATION SCENARIOS: HOW THEY COMPARE

Air Quality

DATA NOT AVAILABLE

■ Carbon monoxide ■ Ozone ■ Volatile organic compounds

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TRANSPORTATION SCENARIOS: HOW THEY COMPARE

Greenhouse Gas Emissions

DATA NOT AVAILABLE

■ GHG emissions
—◆— VMT/capita

•Vehicle speed not taken into account - up to a 60% error in calculating GHG.
•Doesn't consider
-New Federal CAFÉ standards.
-Oregon Low Emission Vehicle standards.

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TRANSPORTATION SCENARIOS: HOW THEY COMPARE

Land Consumed

DATA NOT AVAILABLE

Centers and Targeted Areas

Neighboring Cities (including Clark Co.)

Neighborhoods and Employment Areas

Prospective UGB areas

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TRANSPORTATION SCENARIOS: HOW THEY COMPARE

Job Distribution

DATA NOT AVAILABLE

Centers and Targeted Areas

Neighboring Cities (including Clark Co.)

Neighborhoods and Employment Areas

Prospective UGB areas

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TRANSPORTATION SCENARIOS: HOW THEY COMPARE

Housing Distribution

DATA NOT AVAILABLE

Centers and Targeted Areas

Neighboring Cities (including Clark Co.)

Neighborhoods and Employment Areas

Prospective UGB areas

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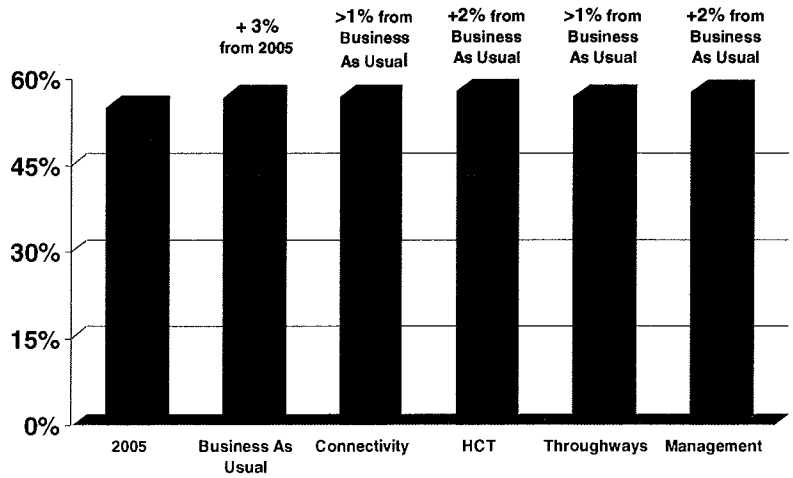
TRANSPORTATION SCENARIOS: HOW THEY COMPARE

Non-SOV Mode Share



Data reflects inside the urban growth boundary during the PM 2-hour peak period.

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TRANSPORTATION SCENARIOS: HOW THEY COMPARE

Mode Share

DATA NOT AVAILABLE

Central Centers and Regional Centers

Town centers, main streets and station communities

Neighborhoods and Employment Areas

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TRANSPORTATION SCENARIOS: HOW THEY COMPARE

Annual Cost of Housing & Transportation Per Household

DATA NOT AVAILABLE

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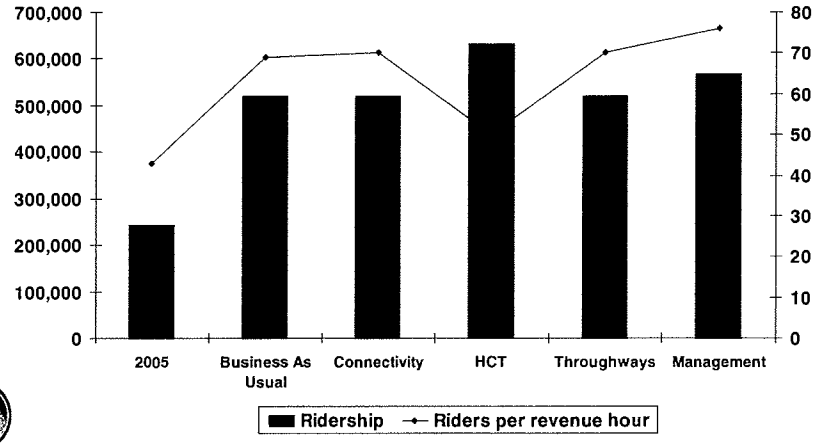
TRANSPORTATION SCENARIOS: HOW THEY COMPARE

Transit Ridership



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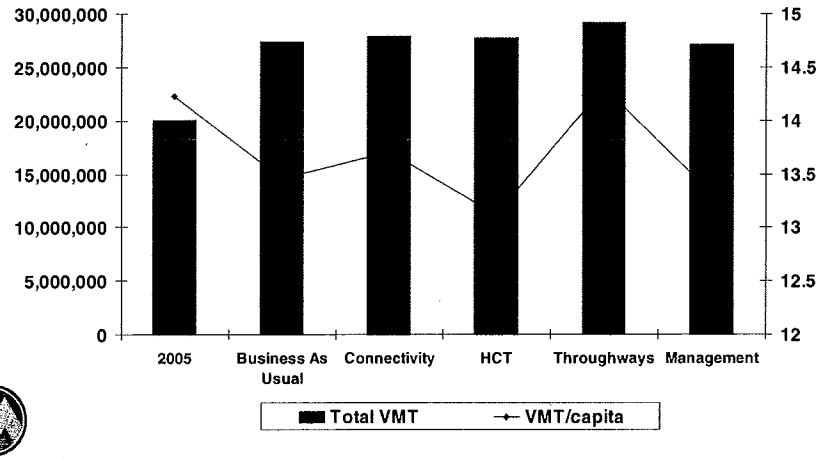
Data reflects trips that begin and end in the urban growth boundary.

TRANSPORTATION SCENARIOS: HOW THEY COMPARE

Daily Vehicle Miles Traveled



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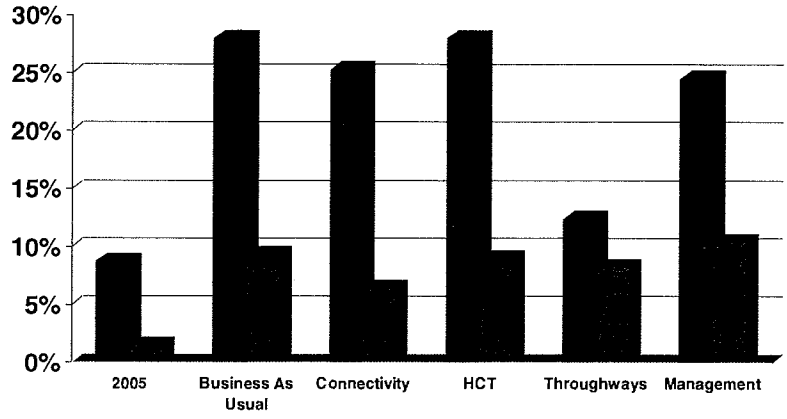
Data reflects trips that begin and end in the urban growth boundary.

TRANSPORTATION SCENARIOS: HOW THEY COMPARE

Rush Hour Congestion



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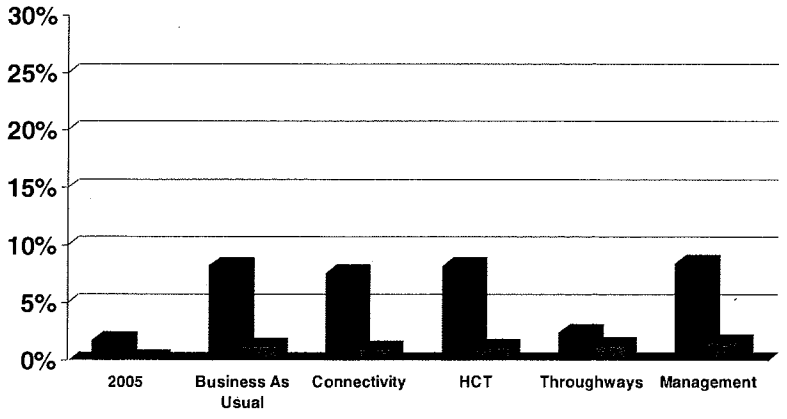
Data reflects inside the urban growth boundary during the PM 2-hour peak period.

TRANSPORTATION SCENARIOS: HOW THEY COMPARE

Mid-Day Congestion



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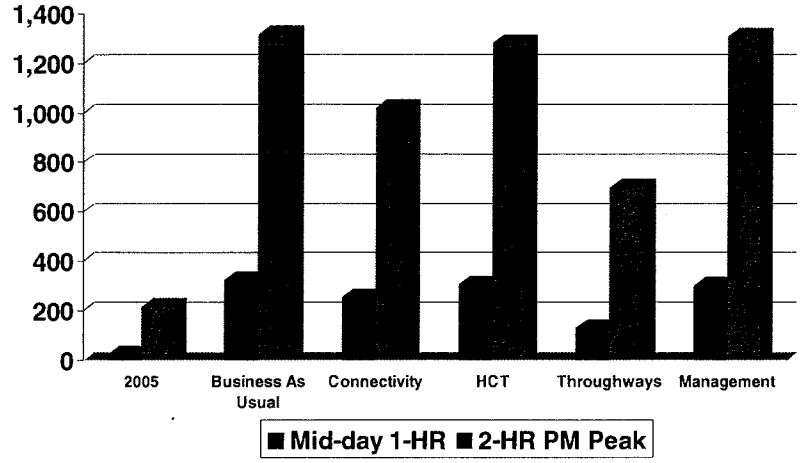
Data reflects inside the urban growth boundary during the midday 1-hour period.

TRANSPORTATION SCENARIOS: HOW THEY COMPARE

Truck Delay



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Data reflects time accrued above v/c 0.9 for truck trips that begin and inside the urban growth boundary.

DRAFT Report Card

● *Better* ● *Same* ○ *Worse*

Compared to the Business As Usual Scenario

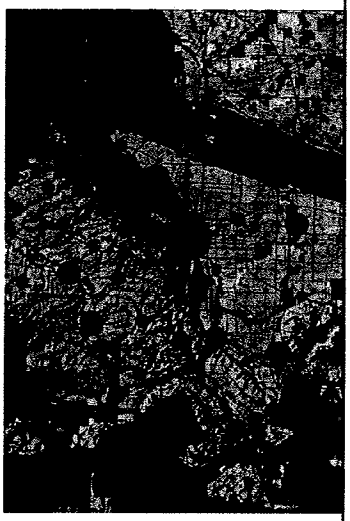
Key Indicator					Indicator Value
System Cost					
Air Quality					
Greenhouse Gases					
Land Consumption					
Job Growth					
Household Growth					
Mode Share	●	●	●	●	
Affordability					
Vehicle Miles Traveled	○	●	○	●	
Transit Ridership	●	●	●	●	
Congestion	●	●	●	●	
Truck Delay	●	●	●	●	

SAMPLE

INITIAL IMPRESSIONS: MOVING FORWARD TO 2009

Urban Form: How Do We Grow?

- Infrastructure alone not sufficient
- Land use strategies also influence travel behavior
- Increased parking costs reduce drive alone trips and VMT/capita
- Land use aspirations and transportation investments should support each other



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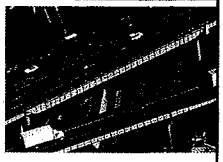
INITIAL IMPRESSIONS: MOVING FORWARD TO 2009

Transportation: How Do We Travel?

- Mobility and community building investments important
- Connectivity reduces congestion and improves transit travel times
- New service and higher parking costs increases transit use
- Management and expanded transit increase transit, walking and biking trips
- Extensive highway investment encourages longer and more trips; but reduces truck delay



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INITIAL IMPRESSIONS: MOVING FORWARD TO 2009

Investments: How Do We Prioritize?

- Link investment priorities to desired outcomes and elements of a successful region
- Protect and optimize existing system
- Expand transportation choices
- Strategic investments to address freight bottlenecks and support centers of activity

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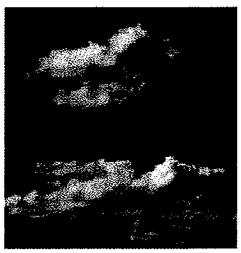
CHOICES FOR THE FUTURE: MOVING FORWARD TO 2009

Environmental Implications

- Reductions in VMT expected to help reduce greenhouse gas emissions
- Minimizing increases in congestion expected to help air quality
- Combination of management/pricing solutions and expanded travel choices expected to help the most



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CHOICES FOR THE FUTURE: MOVING FORWARD TO 2009

Economic Implications

- Need better measures to evaluate
- More efficient transportation system expected to benefit economy
- Increased industry access and reduced truck delay expected to support goods movement and economy
- Increased downtown and main street access and activity expected to support commerce
- Less of household budgets spent on transportation expected to allow people to spend money on other things

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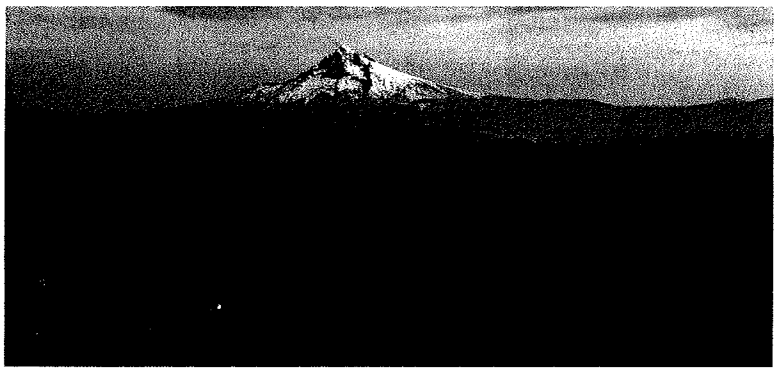
Discussion Questions



- What results or indicators are most valuable?
- What questions should be highlighted for policy makers?

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Metro | Draft Discussion Guide

Choices

Transportation Investment Scenarios

The Portland metropolitan region is an extraordinary place to live. Our region has vibrant communities with inviting neighborhoods. We have a diverse economy and a world-class transit system. The region features an exciting nightlife and cultural activities as well as beautiful scenery, parks, trails and wild places close to home.

Over the years, the communities of the Portland metropolitan area have taken a collaborative approach to planning that has helped make our region one of the most livable in the country. We have set our region on a wise course – but times are changing. Climate change, rising energy costs, aging infrastructure, population growth and other economic challenges demand thoughtful deliberation and action.




Choices for the future: understanding the possibilities and trade-offs

Urban Form
How and where do we grow?

Transportation
How do we travel?

Investments
How do we prioritize needed investments?

The following pages summarize the results of research conducted during the summer of 2008 to frame land use, transportation and public investment choices that lay before us.

Framing choices

Metro examined a set of "cause and effect" scenarios to explore the relative effectiveness of different policy tools and public investments toward implementing the region's long-range vision, the 2040 Growth Concept. The results are intended to help policy makers think and talk about what actions to take – locally and regionally – to achieve community and regional goals. Together, we must answer pivotal questions:

- How do we measure success?
- Which actions are local and regional leaders willing to take?
- What is the right mix of land use and transportation investments and strategies?
- What should be the region's investment priorities?

Our region has come a long way since 1995 when regional leaders adopted the 2040 Growth Concept as our long-range blueprint for managing growth. We have seen success around the region in accommodating job and housing growth within existing communities, rather than sprawling outward – the cornerstone of the 2040 Growth Concept. But we can do more to foster a healthy economy that generates jobs and business opportunities, protects farm and forest lands and builds vibrant downtowns and main streets that attract residents and businesses.

Making choices

We have several important and interdependent decisions to make before the end of 2009 that will set us on the path for how we grow, how we travel and what our communities will look like in the next 20 to 50 years. The region's elected officials will need to prioritize investments in the Regional Transportation Plan (RTP), establish areas for possible future urban expansion, identify areas reserved for rural and natural resource protection, and identify local and regional strategies to guide growth. In 2010 and 2011, local governments and the Metro Council will begin implementing those decisions.

Discussion guide purpose

This discussion guide summarizes the results of the transportation scenarios research, highlighting the effects of different transportation choices on finance, air quality, greenhouse gas emissions, household and job location, travel behavior, congestion and mobility. A second guide explores land use and investment choices and their effect on land supply, infrastructure needs and the location of housing and jobs.

The region will need to exercise leadership and good judgment in planning for our future in the face of:

- Rising energy and materials costs
- Infrastructure funding shortage
- Population growth and changing demographics
- Economic instability
- Global warming

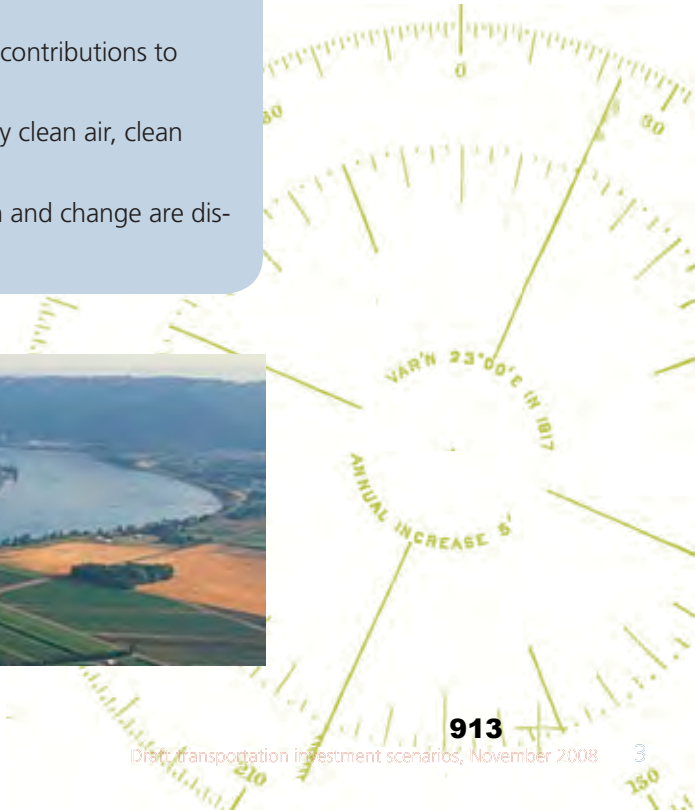
The guides are intended to inform the discussion and decision-making process to develop and refine strategies to achieve the region's goals and local aspirations.

What makes a successful region?

To ensure that we are making the right choices, we need to have a clear sense of what success looks like. In the spring of 2008, the Metro Council, advised by its local partners, adopted "A Definition of a Successful Region" to guide policy and investment choices. This articulation of desired outcomes was intended to focus the region's attention on how to better implement the region's long-range plan.

Desired outcomes

1. People live and work in vibrant communities where they can choose to walk for pleasure and to meet their everyday needs.
2. Current and future residents benefit from the region's sustained economic competitiveness and prosperity.
3. People have safe and reliable transportation choices that enhance their quality of life.
4. The region is a leader in minimizing contributions to global warming.
5. Current and future generations enjoy clean air, clean water and healthy ecosystems.
6. The benefits and burdens of growth and change are distributed equitably.



How can scenarios help the region make the best choices?

What is a scenario?

A scenario is a hypothetical sequence of possible events or set of circumstances.

Research tools

A reference case and four transportation scenarios were evaluated using two computer simulation models – the regional travel model, and the regional MetroScope model – to illustrate the possible effects of RTP policies on identified trends and anticipated challenges.

Regional travel model

Given a set of assumptions about zoning, population and job forecasts, transportation investments and user costs, the regional travel model predicts:

- Where and how much people travel
- How trips are made
- How far people travel and how long it takes to get there
- Delay and congestion on the overall system and effect on goods movement
- Vehicle-source air pollutants and greenhouse gas emissions

Data reported from the regional travel model is for trips inside the urban growth boundary, unless otherwise noted.

Due to the macroscopic nature of the model, the model does not effectively analyze walking, biking or local street volumes in detail.

Fuel costs within the model are considered as part of auto operating cost, which consists of gasoline, oil, tire and general maintenance costs on a per mile basis. This cost is $0.13 per mile in 2008 dollars, as derived from AAA reporting.

Regional MetroScope model

Given a set of assumptions about the transportation system, zoning, population and job forecasts and market forces, the MetroScope model predicts:

- Where households and jobs might locate
- Development in urban growth boundary expansion areas
- Cost of housing and transportation per household
- Public costs of infrastructure
- Average commute distances
- Residential-source greenhouse gas emissions

What questions were explored with scenarios?

The analysis asked what would happen if we boldly changed some of the assumptions underlying our current path. Do any of the scenarios get us closer to achieving the long-range vision for growth in this region? What are the possibilities and consequences of different choices?

Broadly, the analysis looked at how travel patterns and conditions may change over time. Where does future growth go with increases in road and transit access? What effect do different types of investments have on reducing how much people drive and improving the region's air quality? Will certain types of investments help the region reduce greenhouse gas emissions? Will certain investments help reduce the amount individuals spend on housing or transportation as part of their household budget? How much do the scenarios cost?

Specific questions were explored through each scenario, as described below.

► **Reference scenario:** What if the region implements the mix of transportation, infrastructure and land use strategies that currently adopted plans and policies call for? What are the implications of continuing to invest in transportation as we have in the past?

► **Connectivity scenario:** Is it possible to meet RTP policies and help slow growth in congestion and delay by increasing street connectivity? Will people drive less or shorter distances with more connectivity?

► **High capacity transit (HCT) scenario:** Will people use transit more if we build new rail, bus rapid transit and streetcar lines that are supported by more frequent bus service throughout the region? Will households locate closer to transit?

► **Throughways scenario:** How much more will people drive with increased highway mobility? How much can we slow growth in congestion and delay with highway investments? Where might jobs and households choose to locate? What is the effect of pricing some of this new capacity?

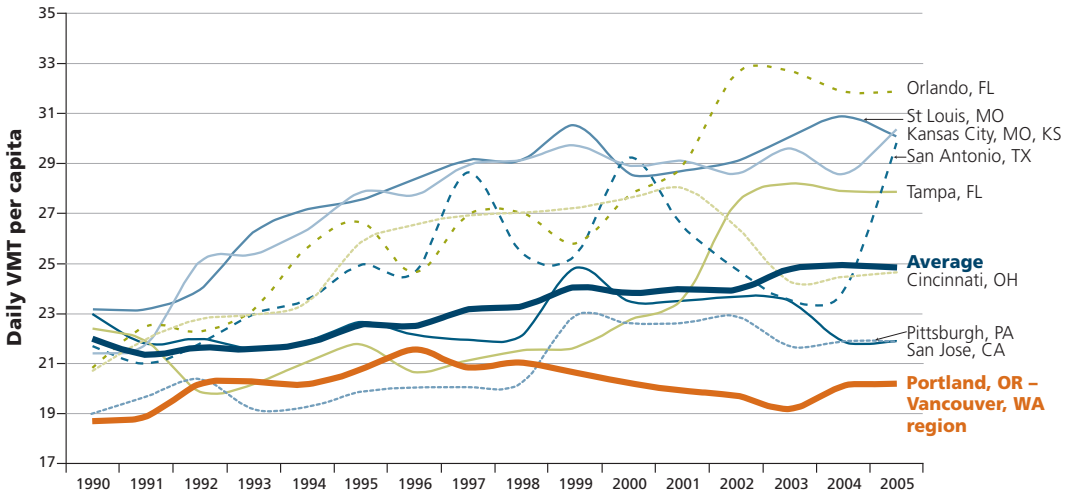
► **Management scenario:** How does increasing the direct costs of using the transportation system affect travel patterns, choices and overall system performance?


Where we are and where we are going: our region is growing and changing

Over the past 15 years growth has brought significant opportunity and prosperity to the Portland-Vancouver region, but it has also brought growing pains. Like many other metropolitan areas across the U.S., this region faces powerful trends that require new ways of thinking about the future.

Our region is growing and changing. We are expecting 550,000 new households and 825,000 new jobs in the seven-county area by the year 2035. Where people live and work, and how they travel will be shaped by the choices we make in 2009.

Portland region per capita daily vehicle miles traveled (VMT), compared to metropolitan areas with similar populations



All cities shown are within +/– 600,000 of Portland's 2005 population.
The average shown is for the 25 U.S. urban areas with the exception of Portland, that have 2005 populations of over one million and less than three million.
Source: U.S. Federal Highway Administration, Highway Statistics, Table IM-72, "Urban Areas – Selected Characteristics," 1990 – 2005.

The region has successfully implemented policies to expand transportation choices and reduce dependence on the automobile. Through a combination of land use planning and strong regional transit and bicycle networks, the Portland region is fighting long commutes and traffic congestion more successfully than comparable urban areas. In the Portland metro region, savings from shorter commutes may contribute as much as $2.6 billion of consumer purchasing power to the regional economy each year.

Regional transit ridership is growing. Ridership grew at twice the rate of population growth between 1990 and 2000. Between July 2007 and July 2008, the number of daily riders increased by more than 13 percent, likely in response to rising gasoline prices.

Some measures of air quality have improved dramatically, others indicate more work is needed. In the 1960s, the region averaged 180 days of air quality violations every year for ozone and carbon monoxide, but today we average zero. More work is needed, though. The I-5 corridor and the Pacific Northwest have unacceptable levels of benzene and other air toxics. Growth in travel is anticipated to elevate greenhouse gas emissions.

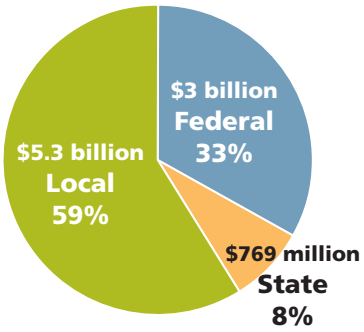
Congestion is growing. Freeway congestion increased 20 percent between 2000 and 2005, despite increased transit use and reductions in driving. Delays caused by freeway congestion pose significant economic challenges for freight transportation and commuters, affecting our region's economic competitiveness, environment and quality of life.

Where we are and where we are going: funding mechanisms are inadequate

Federal and state funding sources are at their lowest levels since the 1960s. Oregon relies heavily on weight-mile fees for heavy trucks and a gas tax (24 cents per gallon) that has not increased since 1993. That funding has lost more than 40 percent of its purchasing power because the state gas tax is not indexed to inf ation. Purchasing power is further eroded by rising material costs.

Very little of the land added to the metropolitan area through expansions of the urban growth boundary in the last decade has been developed, largely because of the lack of funding for transportation and other infrastructure necessary to serve these areas.

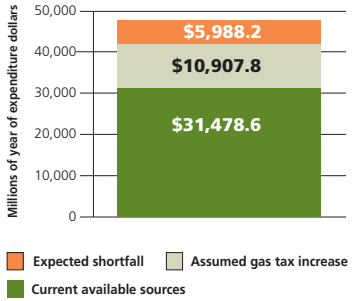
Cities and counties are funding an increasing share of the transportation infrastructure
(Capital revenue by source)



Source: 2035 Regional Transportation Plan

Over the next two decades, the gap is expected to grow between the revenues we have and the investments we need just to keep our bridges, roads and transit systems in their current condition, to say nothing of addressing new needs. Current sources of transit funding are not enough to support the system expansions needed to serve its rapidly growing ridership.

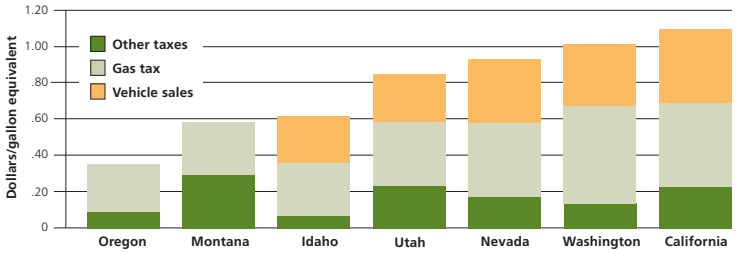
Growing road operations and maintenance funding gap



Source: 2035 Regional Transportation Plan

The region's aging infrastructure is deteriorating and requires more maintenance than ever before. Although maintenance consumes most funds, a backlog of projects is growing rapidly. The Oregon Department of Transportation (ODOT), cities, and counties devote nearly all existing state and federal gas tax revenues to operation and maintenance of the existing road system.

Oregon ranks last in total auto taxes and fees collected compared with other western states

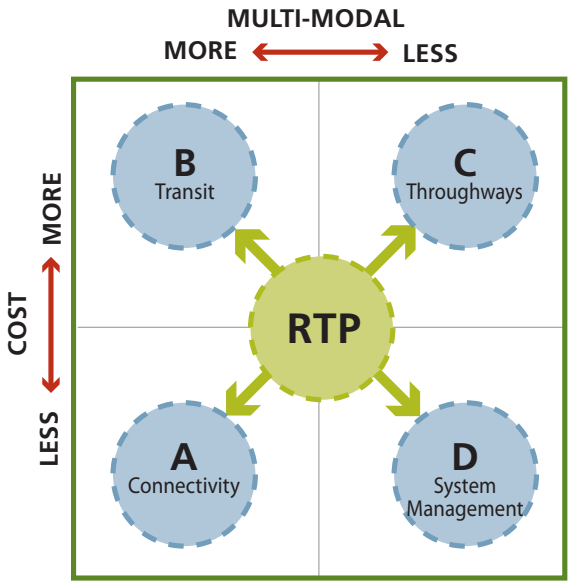


Source: Oregon Department of Transportation, 2006

Defining scenario terms

2040 Growth Concept
Adopted by the region in 1995, this long-range growth management strategy directs growth toward centers and major transportation corridors to encourage compact development that can be efficiently served by transit and other public infrastructure.

RTP cause and effect scenarios
The diagram illustrates the range of scenarios evaluated and the fiscal and modal choices and trade-offs underlying each scenario. The RTP must balance these and other considerations as the region defines the mix of strategies and investments that will best achieve the 2040 Growth Concept vision.



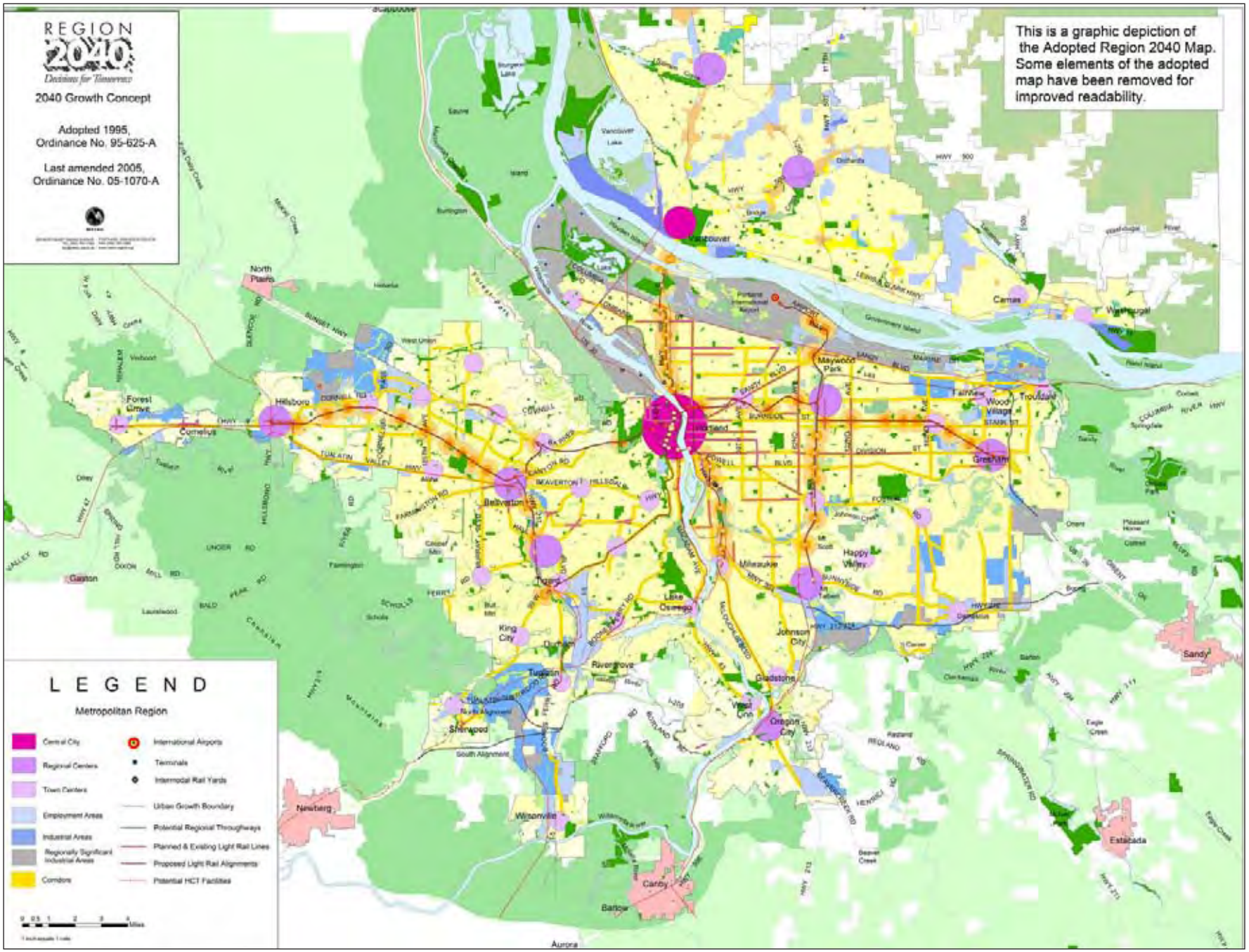
Seven-county area refers to the larger geography that the MetroScope models used. This geography extends beyond Metro's jurisdictional boundary and includes all of Washington, Multnomah, Clackamas, Columbia and Clark counties; most of Yamhill County; and a small portion of Marion County.

Centers and corridors are envisioned as higher density areas that combine housing, employment, retail, and cultural and recreational opportunities in a walkable environment that is well-served by transit.

Existing neighborhoods are primarily single-family neighborhoods within the Metro urban growth boundary. Most existing neighborhoods are planned to remain largely the same. As the region's population has increased, redevelopment and infill development have occurred in some existing neighborhoods, raising concerns about change to neighborhood character.

Neighbor cities are communities outside the Metro urban growth boundary such as Vancouver, Sandy, Canby, Newberg and North Plains, which have a significant number of residents who work or shop in the metropolitan area. Cooperation between the Metro region and these communities is crucial to address common transportation and land-use issues.

UGB expansion areas are the locations that are outside the current urban growth boundary, but that are added to the UGB in the scenarios for research purposes. These UGB additions follow the existing state hierarchy of lands for expansion and are not intended to represent future policy direction.


REGION 2040
Decisions for Tomorrow
2040 Growth Concept
Adopted 1995,
Ordinance No. 95-625-A
Last amended 2005,
Ordinance No. 05-1070-A
This is a graphic depiction of the Adopted Region 2040 Map. Some elements of the adopted map have been removed for improved readability.
LEGEND
Metropolitan Region
Central City
Regional Centers
Town Centers
Employment Areas
Industrial Areas
Regionally Significant Industrial Areas
Corridors
International Airports
Terminals
Intermodal Rail Yards
Urban Growth Boundary
Potential Regional Throughways
Planned & Existing Light Rail Lines
Proposed Light Rail Alignments
Potential HCT Facilities
Vancouver
Portland
Gresham
Hillsboro
Beaverton
Tigard
Tualatin
Lake Oswego
Milwaukie
Oregon City
West Linn
Wilsonville
Newberg
Sherwood
Tualatin
Forest Grove
Cornelius
Gaston
North Plains
Camas
Washougal
Troutdale
Fairview
Wood Village
Happy Valley
Johnson City
Gladstone
Sandy
Estacada
Canby
Barlow
Aurora

▶Reference scenario

Given the uncertainties facing our region today, it is difficult to predict future trends and conditions. With that limitation in mind, the starting point for the scenarios analysis is the reference scenario. This scenario is a projection of how the region would grow if current local government transportation and land-use plans are followed through to 2035.

Model assumptions

Jobs and Households

- 550,000 new households in the seven-county area by the year 2035.
- 825,000 new jobs in the seven-county area by the year 2035.

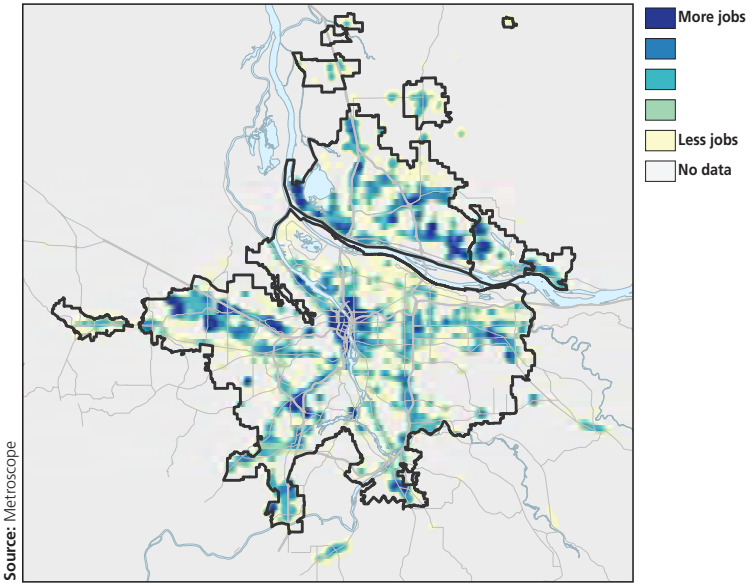
Land supply

- Current zoning is maintained. The region's central city, centers and corridors have capacity for about 355,000 new households (including vacant land, infill capacity, and redevelopment capacity).
- Future Metro UGB expansions through the year 2035 add about 35,000 acres, in keeping with the past rate of expansion.
- Nineteen square miles of urban expansion areas are available for development in Clark County, Washington, as designated by Clark County. (This decision was overturned in the courts, but is currently under appeal.)
- Neighboring cities grow at rates that are similar to historic rates.

Note: These maps are for research purposes only and do not necessarily ref ect current or future policy decisions of the Metro Council.

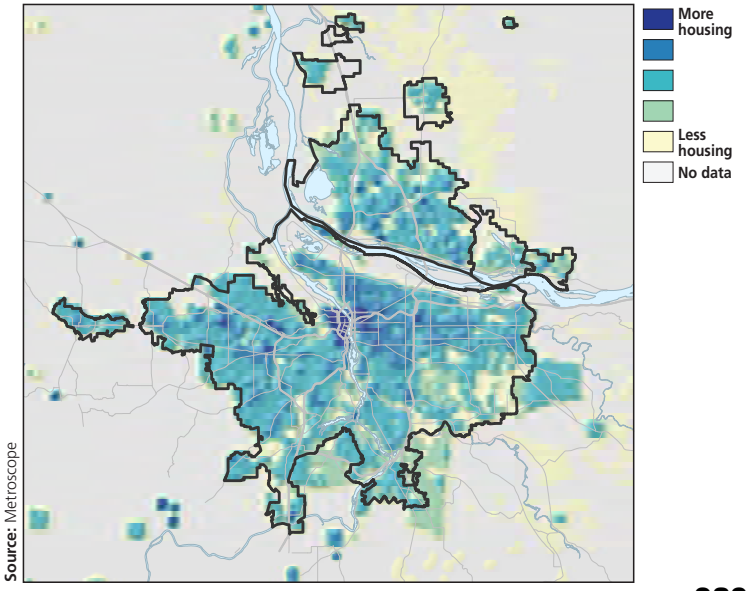
The maps show the location and amount of jobs and households per gross acre assumed for the reference scenario.

Reference scenario job assumptions



Source: Metroscope

Reference scenario housing assumptions



Source: Metroscope

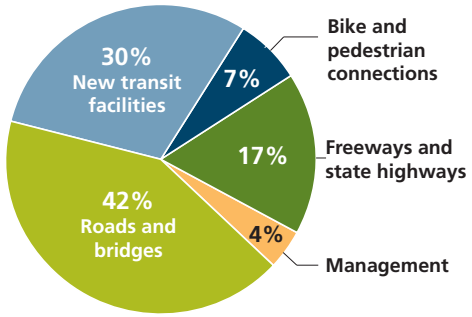
Investments and costs

- Flat system development charges (SDCs) are assessed at $25,000 per new residence.
- Public investments of $50,000 per dwelling unit in urban renewal areas, similar to those that exist today.
- Funding for public infrastructure (capital costs as well as costs of maintenance and upgrade) is available in all areas to accommodate new jobs and housing.
- Funding for infrastructure in recent (since 2002) UGB expansion areas, such as Damascus and North Bethany, becomes available in 2015.

Transportation system

- The transportation system and funding levels as defined in the 2035 RTP financially constrained system for the period 2008 to 2035. This includes:
  - an increase of one cent per gallon per year in the statewide gas tax for system operations and maintenance.
  - a $15 increase of the state vehicle registration fee every eight years to pay for system expansion.
  - continuation of past local and federal funding levels for system expansion.
  - $9.07 billion of investments that can be funded with resources the region expects.
- Interchanges in the OR 217 and US 26 corridors and at the junction of I-205/I-84 are improved.
- I-5 North and US 26 West are widened to six through lanes.
- The Sunrise project connection from I-205 to Southeast 122nd Avenue is built.
- New street connections and arterial street expansion are provided throughout system. Major streets are retrofitted for walking, biking and transit (wider sidewalks, safer street crossings, landscaped buffers, improved bus stops and bikeways).
- Milwaukie light-rail transit and McLoughlin Boulevard Bus Rapid Transit south of Milwaukie connecting to Oregon City are constructed.
- Lake Oswego streetcar, Portland Streetcar Loop, Portland streetcar extension to Lowell Street, and Burnside/Couch streetcar extension to Hollywood town center are constructed.
- Parking costs are increased in the Portland central city, regional centers and town centers.
- Westside commuter rail operations are expanded to all-day service.
- Projects for which there is no identified source of construction funding (for instance, a new bridge at the I-5 Columbia River Crossing) are not included.

Capital cost assumptions in 2035 RTP



Source: 2035 Regional Transportation Plan

What we tested

Connectivity scenario

This scenario tested the effectiveness of aggressively implementing RTP policies to increase the number of street connections throughout the region.

Model assumptions

- All arterial connections identified in local and regional plans are built and all existing arterials are widened to four lanes to meet one-mile arterial spacing where possible.
- New arterial river crossings are built at 12 locations, including Columbia River crossings connecting Camas to Troutdale, and the Port of Vancouver to Rivergate.
- The I-5/99W connector is included as an arterial connection.
- Grade separation of railroad and arterial street network is completed.
- Arterial overcrossings of the throughway system are added every two miles.
- Intersection density is increased in some town centers and neighborhoods to assume higher levels of street connectivity in developing areas.
- All other assumptions are the same as the reference scenario.

High capacity transit scenario

This scenario tested the effectiveness of bold expansion and improvement of the HCT system beyond current RTP policies.

Model assumptions

- New HCT extensions are built to connect all regional centers to the Portland central city, and new lines connect Clark County to the Expo Center and Gateway, Oregon City to Washington Square, Hillsboro to Forest Grove, and downtown Gresham to Mount Hood Community College, for example.
- All HCT connections are assumed to operate as light-rail transit. New connections to downtown require a transfer to another HCT line. A subway through downtown Portland and other improvements are made to the existing system to increase efficiency and speed.
- Commuter rail is developed to serve Columbia, Marion, Hood River and Yamhill counties.
- There is 15-minute or better bus service on all major arterials.
- Portland Streetcar system is expanded on key major arterials, as defined by the streetcar system plan.
- All other assumptions are the same as the reference scenario.

Throughways scenario

This scenario tests the effectiveness of bold expansion of the region's highway and freeway system to address growing congestion and delay. A second transportation model run was conducted to test high-occupancy toll (HOT) lanes on capacity added to I-5, I-205, I-405, I-84, OR 217 and US 26. Pricing is varied by time of day.

Model assumptions

- The existing highway system is widened up to 10 lanes to address congestion and freight bottlenecks identified in the reference scenario.
- New throughways are built – the Sunrise Corridor, I-5/99W connector, and the I-84 to US 26 connection.
- Two new Columbia River bridges are added, connecting Camas to Troutdale, and the Port of Vancouver to Rivergate.
- A new North Willamette River crossing that connects Rivergate to US 30 is built.
- All other assumptions are the same as the reference scenario.

Management scenario

This scenario tests the effectiveness of aggressive system management to optimize capital investments in the reference scenario and address growing congestion and delay.

Model assumptions

- Signal timing and access management on major arterials are enhanced.
- Increased parking costs and reduced transit fares in downtowns, station communities, main streets and major employment areas are implemented.
- Interchange accesses at 26 locations are closed to general purpose travel to meet Oregon Highway Plan spacing standards and reduce entry/exit merge conf icts.
- Tolling on all lanes of I-5, I-205, I-405, I-84, OR 217 and US 26 is implemented to address congestion and freight bottlenecks identified in the reference scenario. Pricing is varied by time of day.
- All other assumptions are the same as the reference scenario.

What we learned about **costs**

The analysis looked at what different investment choices might cost, both at the regional and household level, to illustrate the private and public cost of different investment choices and begin to frame the financial tradeoffs of different choices. The summary and graphs on this page highlight overall findings. More detailed summaries are provided at the end of the guide.

Outcomes

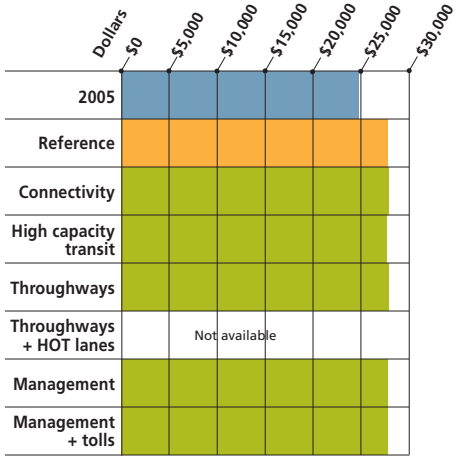
- The total costs for each scenario range from $1,100 per household per year for the reference scenario to $2,800 per household per year for the HCT scenario.
- Current funding levels for maintenance and expansion of the transportation system are inadequate. The gap is largest for expanding the throughway and high capacity transit systems.
- The gap in road maintenance funding identified for the reference scenario, grows even larger with all the scenarios. The connectivity and throughway scenarios would cost an additional $29 million and $27 million per year, respectively, to operate and maintain the expanded road and bridge systems, compared with the reference scenario.
- Transit operating and maintenance costs of the HCT scenario would require $100 million more than transit operating and maintenance costs of the reference scenario.
- The combined annual cost of housing and transportation per household increases from today's levels in all scenarios, costing on average $2,500 more per household per year. This household cost is in addition to the estimated cost per household to build and maintain the level of investment assumed in each scenario.

System costs

Scenario	Total system cost (billions)	Annual cost per household
Reference	**$26.9**	**$1,100**
Connectivity	**$35.8**	**$1,500**
High Capacity Transit	**$66.7**	**$2,800**
Throughways	**$50.3**	**$2,100**
Throughways + Tolls	**$50.3**	**NA**
Management	**$28.2**	**$1,200**
Management + Tolls	**$28.2**	**NA**

Costs are in 2007 dollars and are not adjusted for inf ation. Costs include capital construction and operations, maintenance and preservation. HCT cost estimates were more rigorously developed than throughway estimates, and assume light-rail transit for all connections.

Annual cost of housing and transportation per household



Source: MetroScope

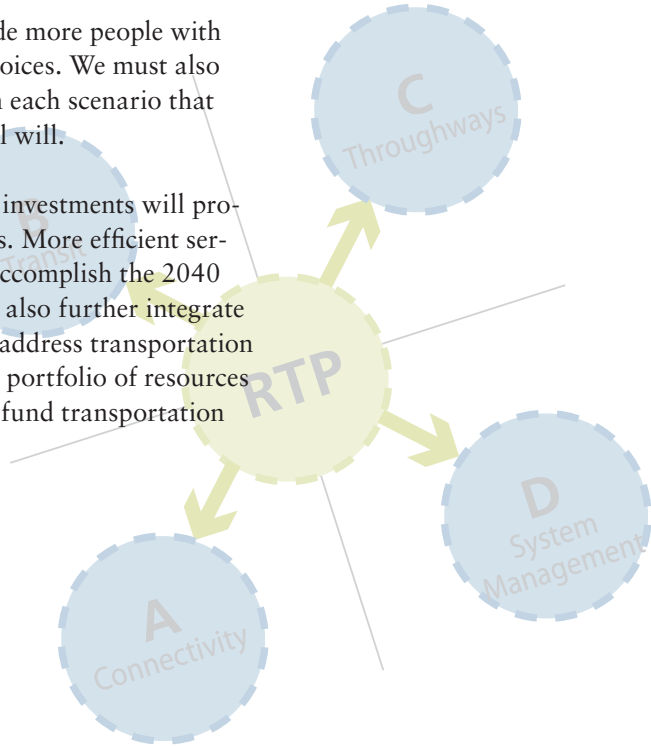
Policy implications

These findings have important implications for future land use and transportation decisions – particularly when considered in the context of the benefits each scenario provides. All scenarios require significant commitment and action from local, regional, state and federal agencies – politcally and financially.

In addition, each scenario has different public agency implementation "leads." For example, expanding the arterial street system and increasing parking costs in centers would be primarily a local government responsibility and could largely be funded through current revenue streams, such as system development charges, traffic impact fees or local ordinances. Highway expansion and tolling strategies would be primarily a state responsibility. Expansion of the transit system would be primarily a TriMet and SMART responsibility.

The region should consider how to provide more people with affordable housing and transportation choices. We must also consider the feasibility of elements within each scenario that depend on public acceptance and political will.

The region must also decide what mix of investments will provide the best return on public investments. More efficient service delivery by itself is not sufficient to accomplish the 2040 Growth Concept vision. The region must also further integrate land use and transportation strategies to address transportation issues and needs. We need a more diverse portfolio of resources and strategies to reliably and sustainably fund transportation needs in the long-term.



What we learned about **housing distribution**

This analysis looked at where households might choose to locate over time to illustrate the effect of different investment choices on meeting regional goals to protect existing neighborhoods and direct household growth to centers and corridors. The analysis begins to frame the land-use trade-offs of different investment strategies. The summary and maps on the next two pages highlight overall findings. More detailed summaries are provided at the end of the guide.

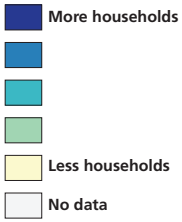
Outcomes

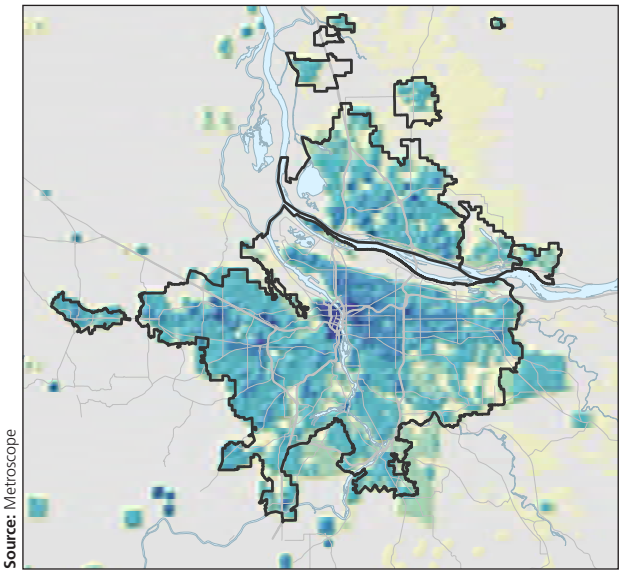
- Household assumptions in the reference scenario influence outcomes of other scenarios.
- The connectivity scenario supports development in UGB expansion areas and some neighbor cities.
- The Portland central city, regional centers and some town centers show more housing growth in the HCT scenario than the other scenarios.
- The throughway scenario supports more housing growth in Clark County and UGB expansion areas than the other scenarios. This scenario draws housing away from centers in the UGB.
- Scenarios with less congestion and delay inside the UGB show more growth in households outside the UGB.
- The HCT scenario concentrates the most housing growth in centers and corridors, and shows the least amount of housing growth outside the UGB compared to the other scenarios.
- The management scenario shows less housing demand in Clark County and focuses more growth in UGB expansion areas and neighbor cities compared with the other scenarios.

Reference scenario – households

This map shows the location and concentration of households assumed in the reference scenario.

Note: These maps are for research purposes only and do not necessarily ref ect current or future policy decisions of the Metro Council.





Source: Metroscope

Policy implications

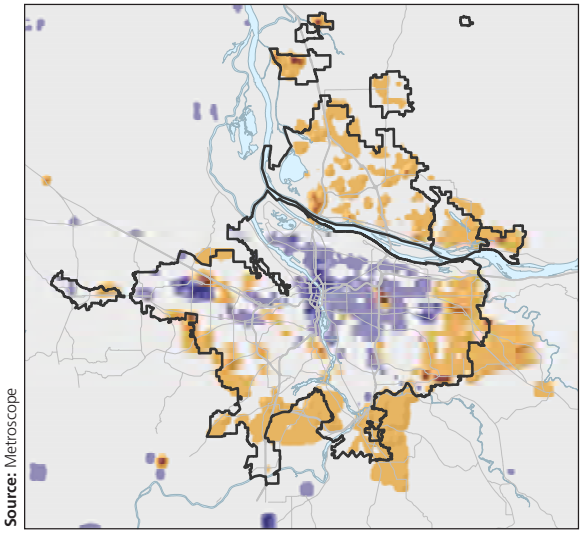
These findings have important implications for future land use and transportation decisions. Changes in transportation access (as measured by travel time) and travel behavior (as measured by mode share) affect the relative attractiveness of different locations for housing.

For example, while significant expansion of the road or highway systems shows significant reductions in congestion and delay, the land use effect is to increase the demand for housing outside of the UGB and in existing neighborhoods and centers. Households in neighboring communities will often have longer car commutes back to the Metro region. It will be important to more fully integrate land use and transportation decisions to limit the unintended consequences of different investment choices.

Placemaking is an important consideration that analytical tools are not able to account for at this time.

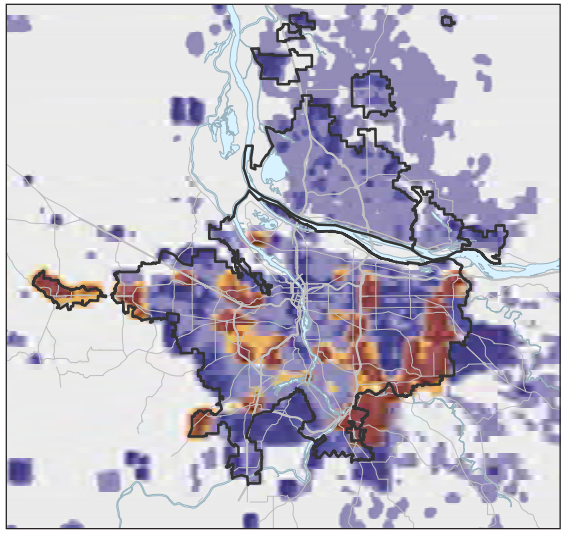
926

Connectivity scenario



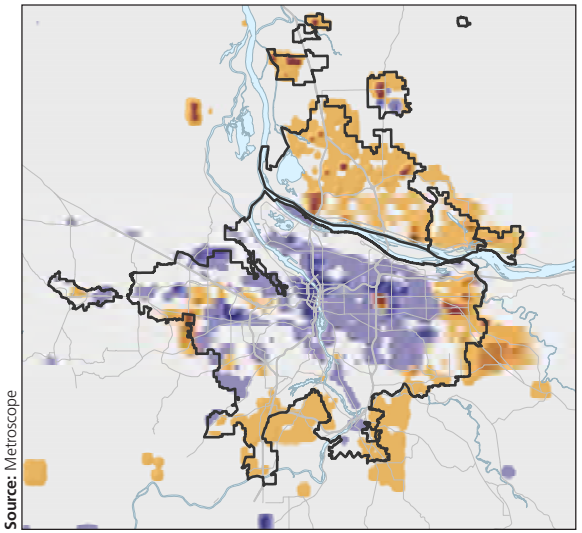
Source: Metroscope

High capacity transit scenario



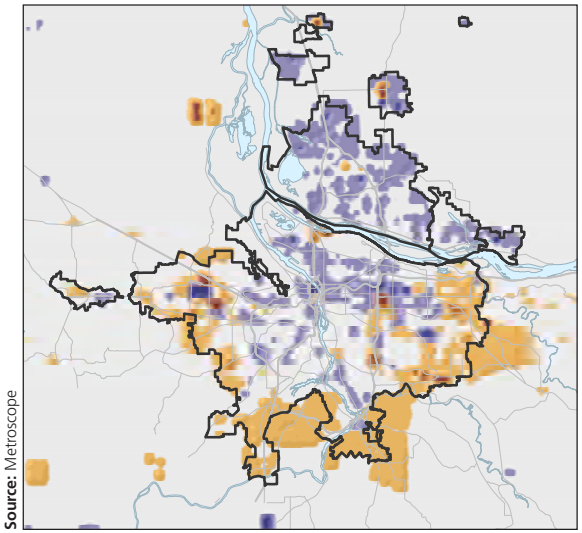
Source: Metroscope

Throughways scenario



Source: Metroscope

Management + tolls scenario



Source: Metroscope

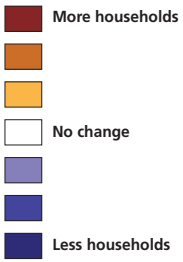
What the maps show – Change in household density and location (compared with the reference scenario)

The maps show the change in the location and amount of households per gross acre for each scenario when compared with the reference scenario.

MetroScope considers both demand and supply when allocating household growth. Vacant land, urban growth boundary expansion areas, and redevelopment and infill in centers, corridors and neighborhoods contribute housing capacity. The interplay of these factors and changes in transportation access (as measured by travel time) contribute to the household growth patterns shown in the maps.

When more households are shown in a map, it means more housing is being added through redevelopment, infill and the development of centers and corridors, compared with the reference scenario. In general, when more housing is shown in previously undeveloped areas, it means that vacant land is being converted to urban uses. In areas that show fewer households, it means that fewer households may choose to locate in that area when compared with the reference scenario.

Legend



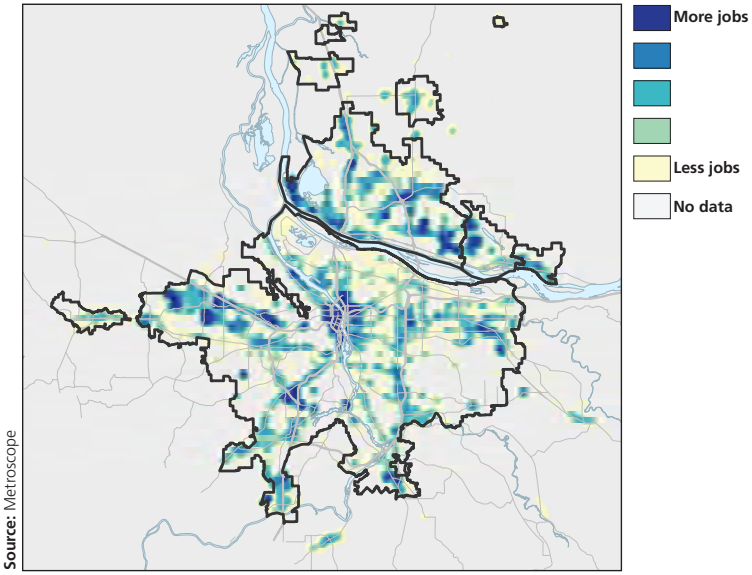
What we learned about **job distribution**

The analysis looked at where jobs might choose to locate over time to illustrate the effect of different investment choices on meeting regional goals for protecting existing employment and industrial locations and directing future job growth to designated employment and industrial areas, centers and corridors. The analysis begins to frame the land-use trade-offs of different investment strategies. The summary and maps on this page highlight forecasted changes. More detailed summaries are provided at the end of the guide.

Outcomes

- Job assumptions in reference scenario inf uence outcomes of other scenarios.
- All scenarios show fewer jobs in Clark County compared to the reference scenario as more jobs choose to locate in centers, corridors and employment areas in the UGB.
- The connectivity scenario shows the most new jobs in the Rivergate industrial area and Washington Square compared to the other scenarios.
- The Clackamas industrial area and Oregon City show fewer jobs than the reference scenario in all scenarios except for the connectivity scenario, which shows more jobs in that area.
- The Tualatin-Sherwood industrial area shows more jobs than the reference scenario in all scenarios except for the HCT scenario, which shows fewer jobs in that area.
- The HCT scenario shows the largest increase in jobs in the Sunset industrial area in western Washington County.
- The throughway scenario shows fewer jobs in the Sunset industrial area in western Washington County, and greatest increase in jobs in Tualatin, Sherwood, and Sandy industrial areas.

Reference scenario – jobs



Source: Metroscope

This map shows the location and concentration of jobs assumed in the reference scenario.

Note: These maps are for research purposes only and do not necessarily ref ect current or future policy decisions of the Metro Council.

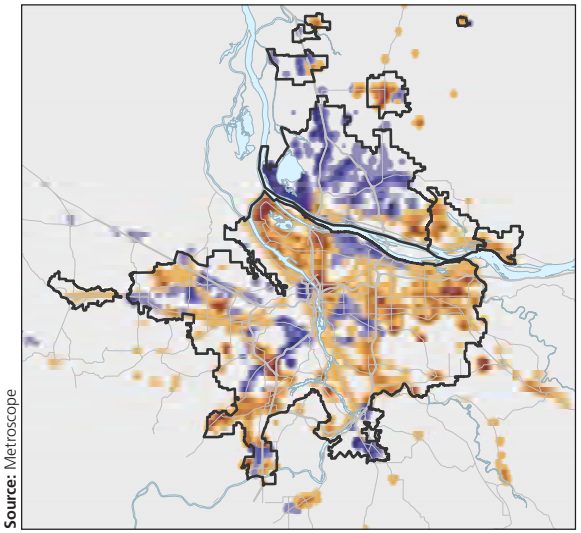
Policy implications

These findings have important implications for future land use and transportation decisions given that the scenarios show jobs and housing react differently to congestion and access. Changes in transportation access (as measured by travel time) and travel behavior (as measured by mode share) affect the relative attractiveness of different locations for jobs. For example, significant expansion of the road or highway systems shows significant reductions in congestion and delay region-wide. This change in access has the effect of increasing the attractiveness of locating jobs in centers, corridors and employment areas inside the Metro UGB.

Previous analysis explained that scenarios with less congestion and delay show more households in neighboring communities, including Clark County. These outcomes may increase the amount people drive further increasing commute trip lengths and vehicle miles traveled.

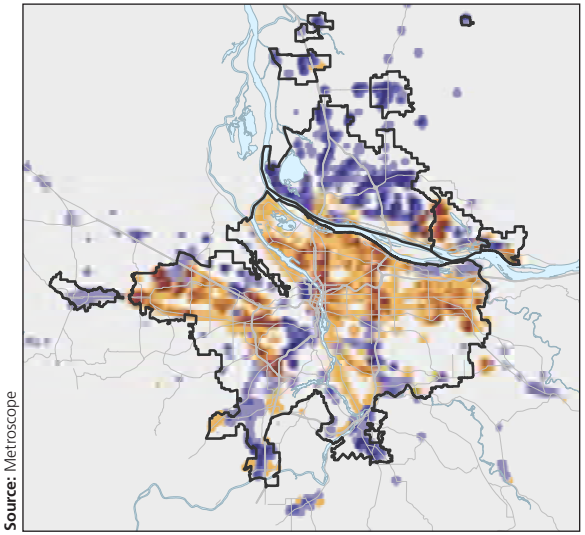
928

Connectivity scenario



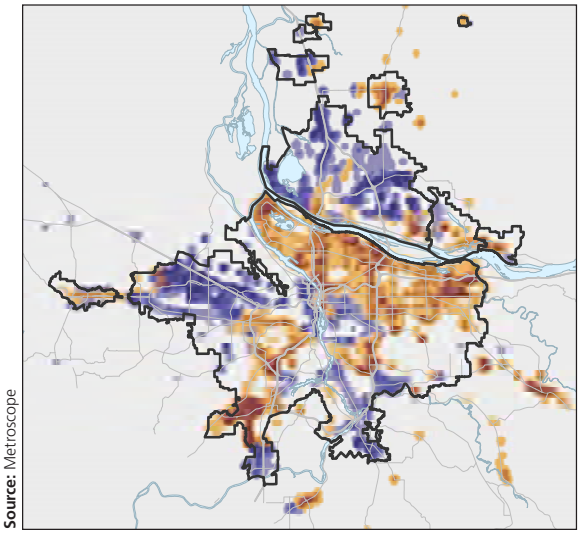
Source: Metroscope

High capacity transit scenario



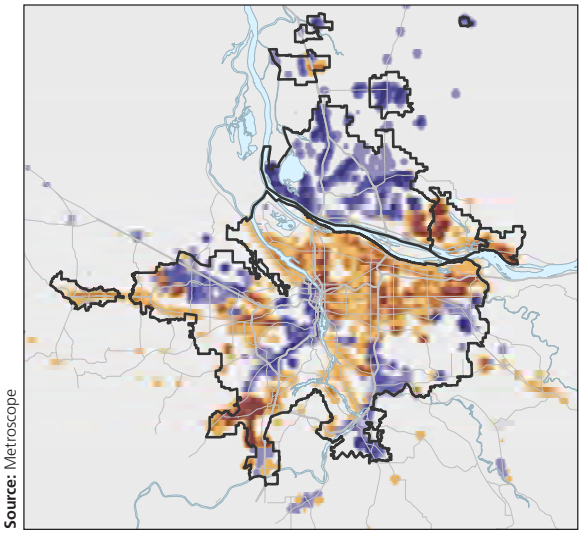
Source: Metroscope

Throughways scenario



Source: Metroscope

Management + tolls scenario



Source: Metroscope

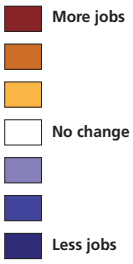
What the maps show – Change in job density and location (compared with the reference scenario)

The maps show the change in the location and amount of jobs per gross acre for each scenario when compared with the reference scenario.

MetroScope considers both demand and supply when allocating job growth. Vacant land, urban growth boundary expansion areas, and redevelopment and infill in centers, corridors and employment areas contribute job capacity. The interplay of these factors and changes in transportation access (as measured by travel time) contribute to the job growth patterns shown in the maps.

When more jobs are shown in a map, it means more jobs are being added through redevelopment, infill and the development of areas with job capacity, compared to the reference scenario. In general, when more jobs are shown in previously undeveloped areas, it means that vacant land is being converted to urban uses. In areas that show less jobs, it means that fewer jobs may choose to locate in that area when compared with the reference scenario.

Legend



What we learned about
air quality and greenhouse gas emissions

The analysis looked at how vehicle emissions might change over time with different investment choices to illustrate the region's ability to continue to meet current state and federal air quality requirements and state targets to reduce greenhouse gas emissions. The summaries and graphs on this page highlight overall findings. More detailed summaries are provided at the end of this guide.

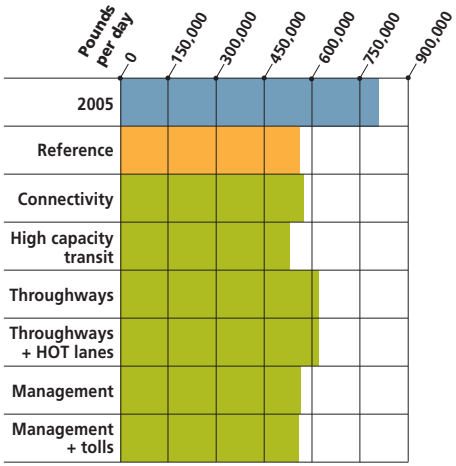
Outcomes

- All scenarios show that air quality continues to improve and meet state and federal air quality requirements as measured by carbon monoxide emissions compared with today.
- All scenarios show an increase in transportation- and residential-source greenhouse gas emissions.
- Scenarios with additional road and highway capacity show greater increases in all emissions than scenarios focused on transit and management strategies.
- The throughways scenario showed the greatest increase in all emissions levels compared with today and the reference scenario.
- Compared with the reference scenario, the HCT scenario showed the only reduction in transportation-source greenhouse gases and the greatest reduction in carbon monoxide and nitrogen oxide.

Policy implications

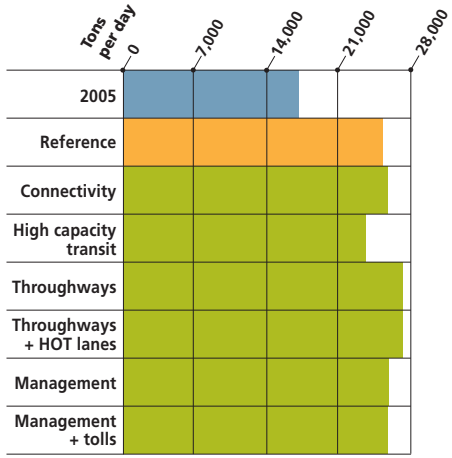
These findings have important implications for the region's ability to meet state greenhouse gas reduction targets, which commit the state to reducing greenhouse gas emissions to 10 percent below 1990 levels by 2020 and to 75 percent below 1990 levels by 2050. None of the scenarios, including the reference scenario, achieve these targets by 2035. The region must identify the land use and transportation strategies needed to meet them. The region's growing population will make it difficult to achieve the targets without other strategies. As a result, the region will also need to support new technology and conservation measures.

Carbon monoxide emissions



Source: Metro travel model.

Greenhouse gas emissions



Source: Metro travel model.

930

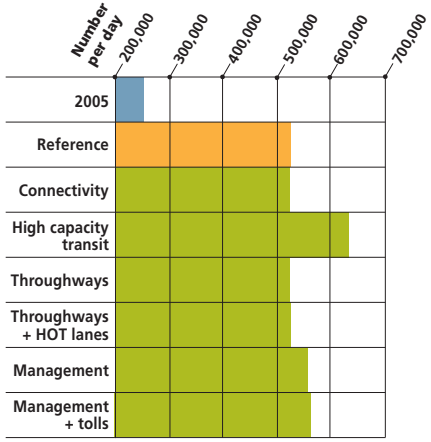
What we learned about **travel behavior**

The analysis looked at how travel behavior might change over time to illustrate the effects of different investment choices on meeting regional goals for people to drive less and walk, bike and use transit more. The analysis begins to frame the trade-offs of different investment choices. The summary and graphs on this page highlight forecasted changes. More detailed summaries are provided at the end of the guide.

Outcomes

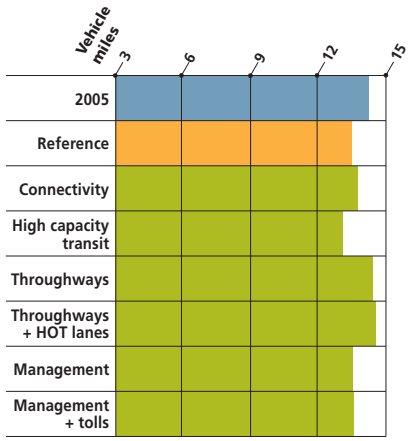
- All the scenarios show the Portland central city and all regional centers meeting RTP targets for increased walking, biking and use of transit.
- Vehicle miles traveled per person continues to decline from today in all scenarios except the throughways scenario. The connectivity and throughways scenario show an increase in VMT per person compared with the reference scenario.
- While vehicle miles traveled per person declines from today, the total number of miles driven continues to increase in all scenarios.
- Extensive investment in transit in the HCT scenario and higher parking costs in the management scenario increase transit use, walking and biking the most compared to the other scenarios.
- All scenarios show transit trips more than doubling compared with today, with the HCT scenario showing the greatest increase compared with today and the reference scenario.
- The number of daily bike and walk trips increase the most in the management scenario - nearly double the number of people who walk and bike today.
- Extensive highway investment in the throughways scenario results in more driving, longer trips, and less walking, biking and use of transit than the other scenarios.

Transit trips within UGB



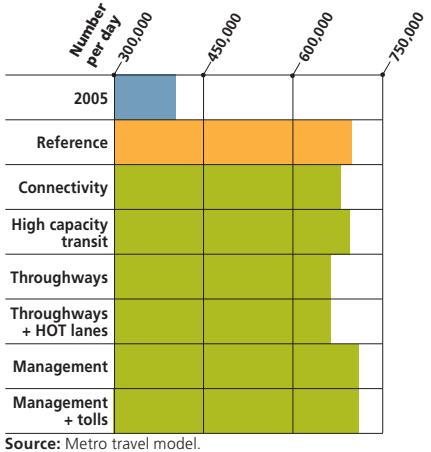
Source: Metro travel model.

Vehicle miles traveled per person



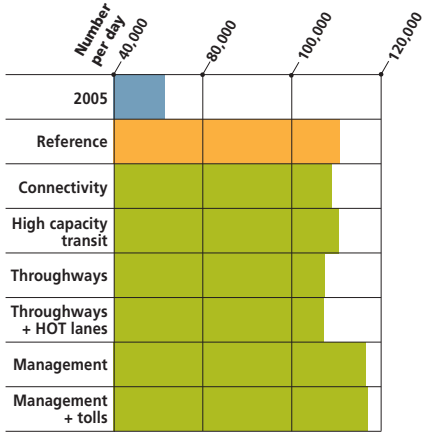
Source: Metro travel model.

Walk trips within UGB



Source: Metro travel model.

Bike trips within UGB



Source: Metro travel model.

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What we learned about **mobility**

This analysis looked at how much traffic volumes, travel times and the amount of delay users experience might change over time to illustrate the effect of different investment choices on the region's ability to provide a reliable system for commuters and the movement of goods. The analysis begins to frame the trade-offs of different investment choices on mobility. The summary and graphs on the next two pages highlight overall findings. More detailed summaries are provided at the end of the guide.

Outcomes

- All scenarios show significantly more congestion and traffic delay than today during both the mid-day and rush-hour travel periods.
- The majority of vehicle hours of delay occurs on arterials rather than freeways in all scenarios except for the connectivity scenario.

Selected auto travel times in the 2-hour PM peak period

		Portland City Center to Vancouver		Sunset Industrial Area to Portland Airport		Washington Square to Oregon City	
		Travel time (minutes)	Change from 2005	Travel time (minutes)	Change from 2005	Travel time (minutes)	Change from 2005
2005		25	——	47	——	33	——
Reference		33	+ 31%	57	+ 21%	50	+ 49%
Connectivity		27	+ 9%	55	+ 15%	45	+ 36%
High capacity transit		33	+ 35%	58	+ 22%	50	+ 48%
Throughways No HOT lanes		22	– 11%	54	+ 15%	46	+ 38%
Throughways + HOT lanes	Main lanes	20	– 18%	54	+ 15%	44	+ 31%
	Hot lanes	18	– 26%	49	+ 3%	40	+ 19%
Management No tolls		31	+ 25%	57s	+ 21%	50	+ 50%
Management + tolls		27	+ 8%	53	+ 12%	45	+ 35%

Source: Metro travel model.

- Scenarios with extensive arterial connectivity or new highway capacity reduce congestion and traffic delay the most, particularly truck delay on the regional freight system.
- Generally, the throughway scenario best improved auto travel times and significantly reduced system delay compared with the reference scenario.
- The connectivity and HCT scenarios best improved transit travel times compared with the reference scenario.
- The connectivity scenario shows the greatest reduction in arterial system delay during the rush-hour travel period compared with the reference scenario helping reduce transit travel times on these facilities.
- The management scenario with tolls shows increased arterial system delay compared with the management scenario without tolls.
- The cost of increased congestion on the regional freight system decreased in the scenarios compared with the reference scenario. The analysis estimated potential economic losses in the region between $6.3 and $13.7 million annually from increased freight costs due to increases in travel time.
- Scenarios with more highway capacity and management show larger increases in daily traffic volumes on state highways at the edge of the Metro UGB.

Policy implications

These findings have important implications for future land-use and transportation decisions. The transportation system plays a crucial role in sustaining economic health of the region and the

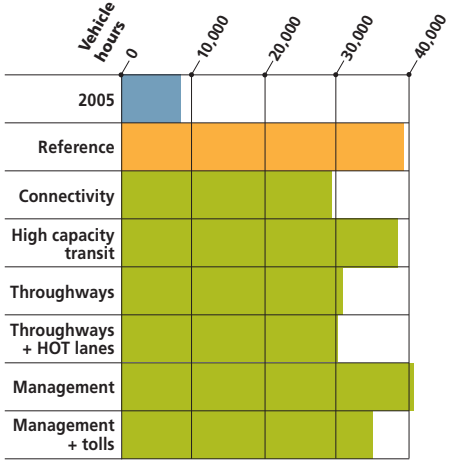
state of Oregon. Unmitigated congestion and delay will compromise the economy in the future. As a global trade gateway and domestic hub for commerce and tourism, the region must expand current efforts to address growing congestion, particularly on the region's mobility corridors.

Business and consumer needs are expected to double the amount of goods moved on the region's waterways, runways, railways, and roadways over the next 30 years. The continued economic health of our region and state depends on effectively serving growing transportation needs of business by providing reliable highway and arterial access to gateway and hub facilities as well as on preserving the beauty and livability of the region that attracts industry and a high-quality labor pool.

The results of the analysis support a growing body of research that suggest adding road capacity alone is not a sustainable solution to congestion. Rather, a coordinated strategy that links land use and transportation decisions, provides targeted road and highway improvements along with high quality transit service, better transportation options, and system management shows greater promise in mitigating congestion and delay into the future.

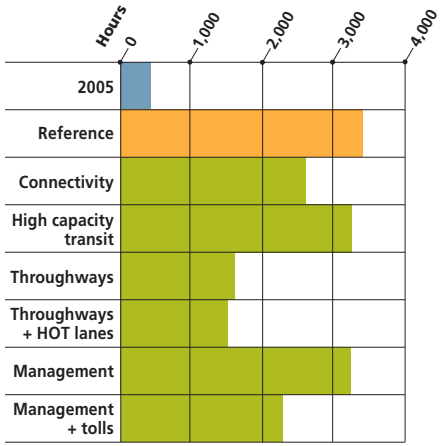
The region must pinpoint the most critical locations to mitigate roadway congestion and delay to enhance freight mobility and access to industrial areas and intermodal facilities. These strategic investments must allow us to move goods and people in ways that support our livability, economy, and environment. The region must also expand current system and demand management efforts to help preserve highway capacity for longer distance goods movement and person trips. Potential new strategies include congestion pricing, high-occupancy vehicle lanes, managed travel lanes and freight-only lanes. More evaluation of these strategies is needed to better understand their effect on the region's parallel arterials, low-income households and land use patterns to ensure any unintended consequences are identified and addressed in design and implementation.

Rush hour system delay



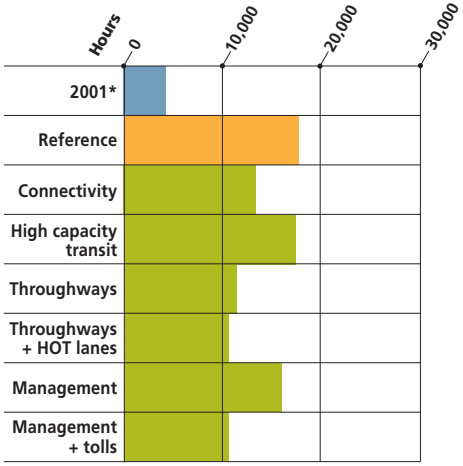
Source: Metro travel model.

Mid-day delay on freight system



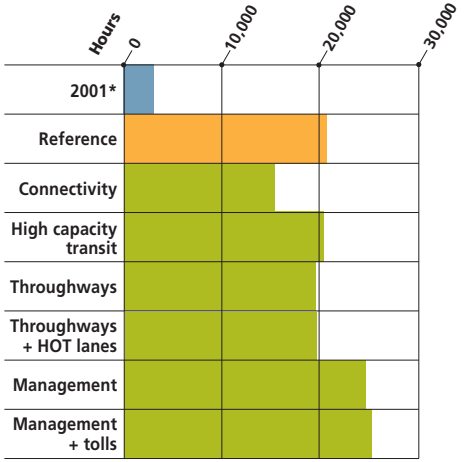
Source: Metro travel model.

Rush hour delay on freeways



Source: Metro travel model.

Rush hour delay on arterials



Source: Metro travel model.

Finally, land-use planning and environmental considerations must be integrated into transportation decisions to ensure that needed highway projects solve existing problems rather than inducing demand from outside the region and generating a new set of problems.

How do the transportation investment scenarios compare?
By the numbers

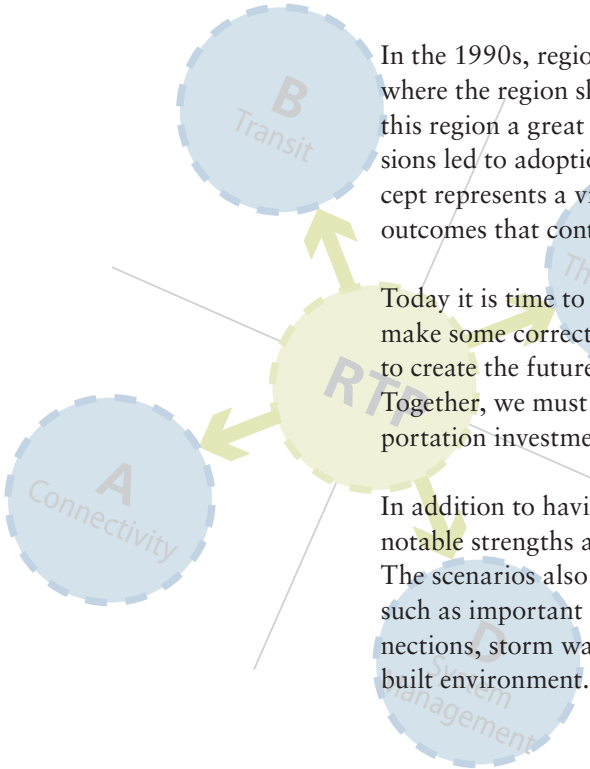
Scenario	1 New households in centers and corridors	2 Land developed in future UGB expansion areas (acres)	3 Future UGB expansion undeveloped by 2035	4 Average one-way commute distance (miles)	5 New households total daily commute length (miles)	6 Total infrastructure cost for new households + jobs in UGB	7 Total infrastructure cost for new households + jobs in 7-county area	8 Average cost of infrastructure cost per new household in UGB	9 Average annual new household cost of housing and transportation	10 Average portion of household income spent on housing and transportation	11 Residential source greenhouse gas emissions (lbs per year)
2005	15% (estimated)	NA	NA	11.4	NA	NA	NA	$71,100	$24,900	43.9%	21.25 billion
Reference scenario	24.4%	11,000	68.5%	12.3	13,495,901	$36.8 billion	$56.1 billion	$69,968	$27,400	47.5%	32.73 billion
Connectivity	24.2%	11,200	68.2%	12.3	13,513,067	$36.9 billion	$56.2 billion	$69,993	$27,400	47.5%	32.74 billion
High capacity transit	26.2%	10,400	70.3%	12.1	13,303,549	$37.3 billion	$55.4 billion	$69,087	$27,400	47.3%	32.52 billion
Throughways	24.1%	11,100	68.3%	12.4	13,681,621	$37.0 billion	$56.5 billion	$70,333	$27,500	47.5%	32.74 billion
Throughways + HOT lanes	Not available										
Management	24.3%	11,100	68.2%	12.3	13,543,453	$36.9 billion	$56.2 billion	$70,082	$27,400	47.5%	32.74 billion
Management + tolls	24.4%	11,200	68.2%	12.4	13,596,950	$37.0 billion	$56.4 billion	$70,183	$27,400	47.5%	32.74 billion

Note: Costs show in 2005 dollars and not adjusted for inf ation. Data is derived from MetroScope.

Scenario	12 Transportation ystem capital cost	13 System cost for capital and operations + maintenance ($/year/ household)	14 Carbon monoxide (pounds)	15 Transportation greenhouse gas emissions (tons)	16 Daily transit ridership	17 Daily walk and bike trips	18 Daily vehicle miles traveled (VMT)	19 VMT per person	20 System delay during evening 2-hour peak period (hours)	21 Delay on regional freight system during mid-day period (hours)	22 Annual cost of mid-day delay on regional freight system
2005	NA	NA	807,055	16,696	243,216	458,533	20,044,778	14.23	7,865	434	$1,724,000
Reference scenario	$9.06 billion	$1,100	566,661	24,710	519,756	799,347	27,446,722	13.46	38,868	3,380	$14,387,000
Connectivity	$17.11 billion	$1,500	577,275	25,268	520,996	786,474	27,975,073	13.71	29,217	2,617	$11,169,000
High capacity transit	$45.91 billion	$2,800	538,924	23,504	631,332	798,824	26,759,312	13.12	37,616	3,201	$13,670,000
Throughways	$31.65 billion	$2,100	619,965	26,856	519,594	771,997	29,180,173	14.31	31,335	1,608	$6,475,000
Throughways + HOT lanes	$31.65 billion	NA	616,737	26,748	521,445	772,133	29,358,504	14.39	30,260	1,569	$6,316,000
Management	$10.26 billion	$1,200	566,947	24,645	560,812	818,852	27,208,681	13.34	41,390	3,211	$13,575,000
Management + tolls	$10.26 billion	NA	560,426	24,345	564,295	821,544	27,165,135	13.32	35,890	2,281	$9,606,000

Note: Costs show in 2007 dollars and not adjusted for inf ation. Data is derived from the Metro travel demand model.

Moving forward: what are our choices?



In the 1990s, regional policy discussions centered on how and where the region should grow to protect to the things that make this region a great place to live, work and play. Those discussions led to adoption of the 2040 Growth Concept. This concept represents a vision of shared community values and desired outcomes that continue to resonate today.

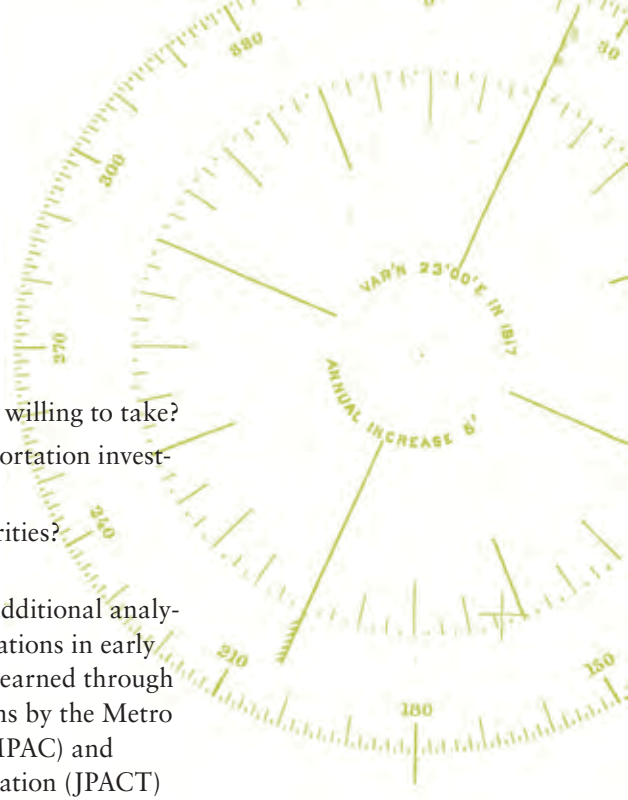
Today it is time to revisit how we are implementing the vision, make some corrections and find new strategies and resources to create the future we want for ourselves and our children. Together, we must answer important questions about our transportation investment strategy in 2009.

In addition to having significant price tags, each scenario has notable strengths and in some cases unintended consequences. The scenarios also do not represent all the choices to consider, such as important freight rail, trails, bike and pedestrian connections, storm water run-off and impacts to the natural and built environment.

Here are the questions, choices and trade-offs to consider as we move forward:

- What transportation investment strategy is best to achieve our long-term goals for the economy, environment and implementation of the 2040 Growth Concept?
- What investment strategy is best in the short-term given current funding constraints?
- What is the appropriate balance of investment strategies across all modes?
- What land use strategies are needed to help address transportation issues and needs? What transportation strategies are needed to help address land use issues and needs?
- Should a higher priority be placed on maintaining existing transit, roads, bridges, bikeways and sidewalks than on expanding these facilities and services?
- How should the region provide adequate mobility to support current and future travel and also respond to the critical need to reduce greenhouse gas emissions?
- Should we expand our use of management strategies, such as parking pricing, tolls and reduced transit fares, to optimize the transportation system?
- Who should be responsible for which parts of the transportation system?
- What funding sources should the region pursue to fund needed investments? Should users of the transportation system be asked to pay more than they do today?

Next steps:
an outcomes-based approach



These scenarios are a first step in a regional conversation about how best to achieve the region's desired outcomes and long-range vision for managing growth.

By the end of 2009, the region's leaders will need to weigh the trade-offs and define the combination of local and regional actions they can support to achieve the region's desired outcomes.

Regional and local decisions made in 2009 and 2010 will shape the region's ability to implement the region's blueprint for growth during the next 20 to 50 years. As we refine choices and make decisions in 2009, we will need to consider the effect of combinations of transportation, land use and investment choices as well as the possible effects of different choices at the local and regional level.

- How do we measure success?
- Which actions are local and regional leaders willing to take?
- What is the right mix of land use and transportation investments and strategies?
- What should be the region's investment priorities?

The next step is to refine our choices through additional analysis and working together to identify local aspirations in early 2009. We will continue to build from what is learned through these analyses and subsequent policy discussions by the Metro Council, Metro Policy Advisory Committee (MPAC) and Joint Policy Advisory Committee on Transportation (JPACT) through 2010 – and beyond.

PHASE 1
Frame choices
July to December 2008

Analyze population, land use and transportation trends

PHASE 2
Refine choices
January to June 2009

Develop and refine strategies to achieve the region's goals and local aspirations

PHASE 3
Make choices
July to December 2009

Coordinate and prioritize state, regional and local land use, transportation and investment strategies

PHASE 4
Implement choices
2010 to 2011

Implement state, regional and local land use, transportation and investment strategies

Metro | *People places. Open spaces.*

Clean air and clean water do not stop at city limits or county lines. Neither does the need for jobs, a thriving economy and good transportation choices for people and businesses in our region. Voters have asked Metro to help with the challenges that cross those lines and affect the 25 cities and three counties in the Portland metropolitan area.

A regional approach simply makes sense when it comes to protecting open space, caring for parks, planning for the best use of land, managing garbage disposal and increasing recycling. Metro oversees world-class facilities such as the Oregon Zoo, which contributes to conservation and education, and the Oregon Convention Center, which benefits the region's economy.

Metro representatives

Metro Council President – David Bragdon

Metro Councilors
Rod Park, District 1
Carlotta Collette, District 2
Carl Hosticka, District 3
Kathryn Harrington, District 4
Rex Burkholder, District 5
Robert Liberty, District 6

Auditor – Suzanne Flynn

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Metro
600 NE Grand Ave.
Portland, OR 97232-2736
503-797-1700

Historical compass on pages 3 and 27 is courtesy of Oregon Historical Society. Printed on recycled-content paper. 08475jg




M A K I N G T H E G R E A T E S T P L A C E

Choices

Land Use and Investment Scenarios

The Portland metropolitan region is an extraordinary place to live. Our region has diverse communities with inviting neighborhoods. We have a robust economy and a world-class transit system. The region features an exciting nightlife and cultural activities as well as a variety of beautiful scenery, parks, trails and wild places close to home.

Over the years, the diverse communities of the Portland metropolitan area have taken a collaborative approach to planning that has helped make our region one of the most livable in the country. We have set our region on a wise course – but times are changing. Climate change, rising energy costs, economic globalization, aging infrastructure, population growth and other urgent challenges demand thoughtful deliberation and action.



Choices for the future: understanding the possibilities and trade-offs

Our choices include:

1. **Urban Form**
   How and where do we grow?
2. **Transportation**
   How do we travel?
3. **Investments**
   How do we prioritize needed investments?

The following pages summarize the results of research conducted during the summer of 2008 to frame the land use and public investment choices that lay before us. The research was conducted to help policy makers think and talk about what actions to take – locally and regionally – to achieve community and regional goals. Together, we must answer some pivotal questions:

- What is the right mix of land use and transportation investments and strategies?
- What funding sources should the region focus on to pay for needed investments?
- How should limited dollars be prioritized?
- How do we protect what we have?
- What areas and outcomes are priorities for investments?
- How much revenue is the region willing to raise?

Our region has come a long way since 1995 when regional leaders adopted the 2040 Growth Concept as our long-range blueprint for managing growth. We've seen success around the region in accommodating growth within our existing communities, but we can do more to build vibrant downtowns and main streets that attract residents and businesses and enhance the character and vitality of our communities. By the end of 2009, we have several important and interdependent decisions to make that will set us on the path for how we grow, how we travel and what our communities will look like in the next 20 to 50 years.

By the end of 2009, the region's elected officials will prioritize investments in the Regional Transportation Plan, establish areas for possible future urban expansion, identify areas reserved for rural and natural resource protection, and identify local and regional strategies to guide the next 50 years of growth. In 2010 and 2011, local governments and the Metro Council will begin taking actions necessary to implement these decisions.

Metro has examined a set of "cause and effect" scenarios. These scenarios are intended to demonstrate the relative effectiveness of different policy tools and public investments to better implement the region's long-range vision. This discussion guide frames land use and investment choices including

land supply, infrastructure needs and targeted investments in centers and corridors. A second discussion guide will explore transportation investment choices in terms of their effects on land use patterns, air quality, greenhouse gas emissions, traffic congestion, travel behavior and public finance.

Megatrends: planning for uncertain times

Making these decisions can be difficult in these uncertain times. The region will need to exercise good judgment in how we plan for both known and unknown futures with:

- Rising energy and materials costs
- Infrastructure funding shortage
- Population growth and changing demographics
- Economic turmoil
- Global warming

What makes a successful region?

To ensure that we are making the right choices, we need to have a clear sense of what success looks like. In the spring of 2008, the Metro Council, advised by its local partners, adopted "A Definition of a Successful Region" to guide policy and investment choices. This articulation of desired outcomes is intended to focus the region's attention on how to better implement the region's long-range plan.

Desired outcomes

1. People live and work in vibrant communities where they can choose to walk for pleasure and to meet their everyday needs.
2. Current and future residents benefit from the region's sustained economic competitiveness and prosperity.
3. People have safe and reliable transportation choices that enhance their quality of life.
4. The region is a leader in minimizing contributions to global warming.
5. Current and future generations enjoy clean air, clean water and healthy ecosystems.
6. The benefits and burdens of growth and change are distributed equitably.

How can scenarios help the region make the best choices?

What is a scenario?

A scenario is a hypothetical sequence of possible events or set of circumstances.

How can scenarios help the region to make choices?

An integrated transportation and land use computer simulation model called MetroScope can help illustrate possible effects of different land use, transportation, and investment choices.

Given a set of assumptions regarding the transportation system, zoning, population and employment forecasts, and market factors, the model predicts a number of outputs for the year 2035, including:

- Locations of new households (including distribution in centers, corridors, existing neighborhoods, and neighboring communities)
- Locations of new jobs (at a broad scale)
- Future real estate prices
- Number of single-family and multi-family housing units
- Average commute distances
- The combined annual cost of transportation and housing per household
- Public costs of infrastructure
- Developed acres in recent and potential future urban growth boundary (UGB) expansion areas
- Residential-source greenhouse gas emissions

What questions were explored with scenarios?

▶ **Reference scenario:** What are the implications of continuing to grow as the region has in the past? What if the region invests in a mix of transportation, infrastructure and land use plans that currently adopted polices would require?

▶ **Tight UGB scenario:** To date, the UGB has been used as an effective tool for managing growth on the region's edge. Could the UGB also be used as a tool for directing more growth to centers and corridors? What might happen if the UGB were not expanded between now and the year 2035? Since UGB expansion areas cannot be developed without public infrastructure funding, this scenario can also be interpreted as a scenario that tests what might happen if there were no funding for infrastructure in future UGB expansion areas.

▶ **Infrastructure funding delay scenario:** Recently, there has been a shortage of public funding for infrastructure. This shortage has been particularly evident in recent (since 2002) UGB expansion areas. What are the implications of further delays in funding infrastructure in areas like Damascus and North Bethany?

▶ **Corridor amenity investment scenario:** Our region's corridors hold great potential. Would public investments in amenities such as sidewalks, street trees, or street cars bring corridors to life? What share of the region's growth might be attracted to corridors with those investments?

▶ **Center amenity investment scenario:** Public places are essential to creating great communities. Might investments in amenities like plazas or libraries attract more residents to the region's centers?

Defining scenario terms

Seven-county area refers to the larger geography that MetroScope scenarios use. This geography extends beyond Metro's jurisdictional boundary and includes: all of Washington, Multnomah, Clackamas, Columbia and Clark counties; most of Yamhill County; and a small portion of Marion County. As the region considers the results of these scenarios, it is important to consider possible implications for a larger geography than just the Metro urban growth boundary.

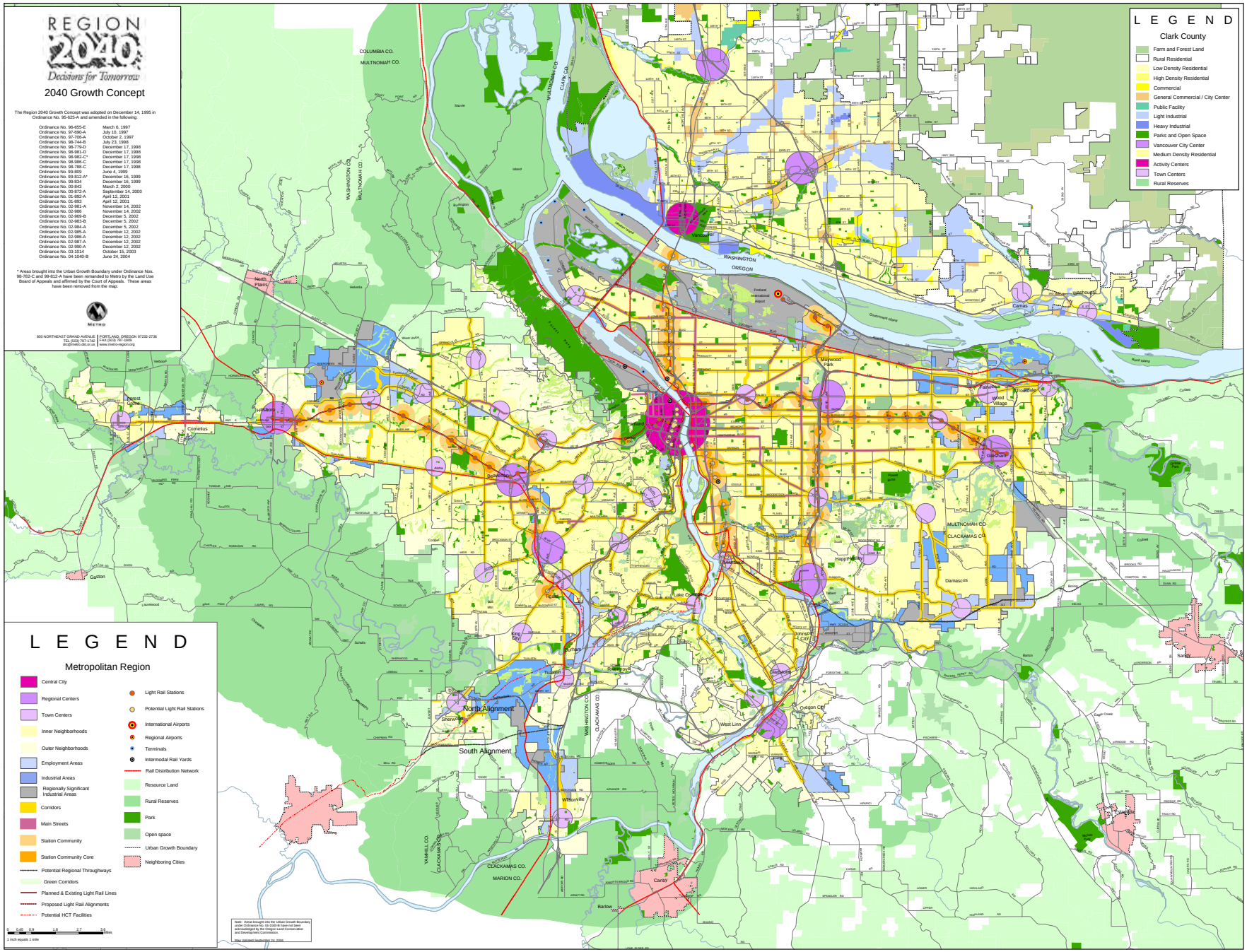
Centers and corridors are envisioned as higher density areas that combine housing, employment, retail, and cultural and recreational opportunities in a walkable environment that is well-served by transit. The region decided with the 2040 Growth Concept that centers and corridors are the areas where we want to focus growth.

Existing neighborhoods are largely single-family neighborhoods within the Metro urban growth boundary. Most existing neighborhoods are planned to remain largely the same. As the region's population has increased, redevelopment and infill development have occurred in existing neighborhoods, raising concerns about change to neighborhood character.

Neighbor cities are communities outside the Metro UGB such as Vancouver, Sandy, Canby, Newberg and North Plains that have a significant number of residents who work or shop in the metropolitan area. Cooperation between the Metro region and these communities is critical to address common transportation and land-use issues.

Future UGB expansion areas are the locations that are currently outside of the Metro urban growth boundary, but that are added to the UGB in the scenarios for research purposes. These UGB additions follow the existing state hierarchy of lands for expansion and are not intended to represent future policy direction. Locations for future UGB expansions will from urban reserve areas once these areas are designated.




REGION 2040
Decisions for Tomorrow
2040 Growth Concept
The Region 2040 Growth Concept was adopted on December 14, 1995 in Ordinance No. 95-625-A and amended in the following:
Ordinance No. 96-655-E March 6, 1997
Ordinance No. 97-690-A July 10, 1997
Ordinance No. 97-706-A October 2, 1997
Ordinance No. 98-744-B July 23, 1998
Ordinance No. 98-779-D December 17, 1998
Ordinance No. 98-781-D December 17, 1998
Ordinance No. 98-782-C* December 17, 1998
Ordinance No. 98-789-C December 17, 1998
Ordinance No. 98-788-C December 17, 1998
Ordinance No. 99-809 June 4, 1999
Ordinance No. 99-812-A* December 16, 1999
Ordinance No. 99-834 December 16, 1999
Ordinance No. 00-843 March 2, 2000
Ordinance No. 00-872-A September 14, 2000
Ordinance No. 01-892-A April 12, 2001
Ordinance No. 01-893 April 12, 2001
Ordinance No. 02-981-A November 14, 2002
Ordinance No. 02-989 November 14, 2002
Ordinance No. 02-969-B December 5, 2002
Ordinance No. 02-983-B December 5, 2002
Ordinance No. 02-984-A December 5, 2002
Ordinance No. 02-985-A December 12, 2002
Ordinance No. 02-986-A December 12, 2002
Ordinance No. 02-987-A December 12, 2002
Ordinance No. 02-990-A December 12, 2002
Ordinance No. 03-1014 October 15, 2003
Ordinance No. 04-1040-B June 24, 2004
* Areas brought into the Urban Growth Boundary under Ordinance Nos. 98-782-C and 99-812-A have been remanded to Metro by the Land Use Board of Appeals and affirmed by the Court of Appeals. These areas have been removed from the map.
METRO
600 NORTHEAST GRAND AVENUE | PORTLAND, OREGON 97232-2736
TEL (503) 797-1742 | FAX (503) 797-1909
drc@metro.dst.or.us | www.metro-region.org
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Parks and Open Space
Vancouver City Center
Medium Density Residential
Activity Centers
Town Centers
Rural Reserves
LEGEND
Metropolitan Region
Central City
Regional Centers
Town Centers
Inner Neighborhoods
Outer Neighborhoods
Employment Areas
Industrial Areas
Regionally Significant Industrial Areas
Corridors
Main Streets
Station Community
Station Community Core
Potential Regional Throughways
Green Corridors
Planned & Existing Light Rail Lines
Proposed Light Rail Alignments
Potential HCT Facilities
Light Rail Stations
Potential Light Rail Stations
International Airports
Regional Airports
Terminals
Intermodal Rail Yards
Rail Distribution Network
Resource Land
Rural Reserves
Park
Open space
Urban Growth Boundary
Neighboring Cities
North Alignment
South Alignment
COLUMBIA CO.
MULTNOMAH CO.
CLARK CO.
WASHINGTON CO.
CLACKAMAS CO.
YAMHILL CO.
MARION CO.
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Fairview
Wood Village
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Johnson City
Milwaukie
Wilsonville
Canby
Barlow
Gaston
Banks
Scappoose
Sandy
Estacada
Molalla
Mt Hood
Mt Angel
Silverton
Stayton
Sublimity
Scio
Lyons
Mill City
Gates
Detroit
Idanha
Turner
Aumsville
Jefferson
Albany
Lebanon
Sweet Home
Brownsville
Halsey
Harrisburg
Monroe
Philomath
Corvallis
Adair Village
Monmouth
Independence
Dallas
Falls City
Willamina
Sheridan
Newberg
Dundee
Yamhill
Carlton
McMinnville
Amity
Dayton
Lafayette
Newberg
Note: Areas brought into the Urban Growth Boundary under Ordinance No. 04-1040-B have not been acknowledged by the Oregon Land Conservation and Development Commission.
Map Updated September 24, 2008

Reference scenario

Given the uncertainties facing us today, it is difficult to predict future trends and conditions. With that limitation in mind, a reference scenario was conducted with the following assumptions that reflect current policies:

Assumptions

Forecast

- 550,000 new households in the seven-county area by the year 2035.
- 825,000 new jobs in the seven-county area by the year 2035.

Transportation system

Transportation system and funding as defined in the 2035 Financially-Constrained Regional Transportation Plan, including:

- An increase of one cent per gallon per year in the statewide gas tax.
- Projects for which there is an identified source of construction funding (for instance, a new bridge at the I-5 Columbia River Crossing is not included).

Land supply

- Zoning as it exists today. The region's central city, centers and corridors have capacity for about 355,000 new households (includes vacant land, infill capacity, and redevelopment capacity).
- Future Metro UGB expansions through the year 2035 add about 35,000 acres (in keeping with the past rate of expansion).
- 19 square miles of urban expansion area is available in Clark County, Washington (as designated by Clark County – this decision was overturned in the courts, but is currently under appeal).
- Neighboring cities grow at rates that are similar to historic rates.

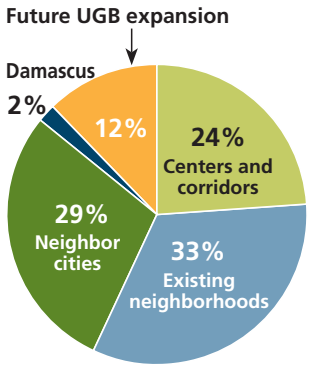
Investments and costs

- Flat system development charges (SDCs) are assessed at $25,000 per new residence.
- Public investments of $50,000 per dwelling unit in urban renewal areas, similar to those that exist today.
- Funding for public infrastructure (capital costs as well as the costs of maintenance and upgrade) is available in all areas to accommodate new jobs and housing.
- Funding for infrastructure in recent (since 2002) UGB expansion areas such as Damascus and North Bethany becomes available in 2015.

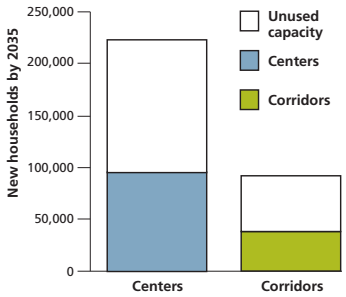
Findings

- Centers and corridors attract a greater share of residential growth than they have historically.
- Rough estimates are that, in recent years, about 15 percent of residential growth has occurred in centers and corridors.
- But, by the year 2035, about 62 percent of the capacity in centers and corridors could remain unused.
- Strategic land use policies and investments could attract a greater share of new households to centers and corridors.
- About one-third of new households could locate in existing neighborhoods inside the Metro UGB.
- About one-third of new households could locate in neighbor cities outside the Metro UGB.
- These households will often have long car commutes back to the Portland Metro region.

New household locations



Unused center* and corridor capacity by 2035 under the reference scenario



* including central city

What we tested and what we learned

Tight Urban Growth Boundary (UGB) scenario or no infrastructure funding for future UGB expansions scenario

This scenario tested whether a tight boundary scenario could support centers and corridors and what other effects might result.

Because boundary expansion areas can only be developed at urban densities with sizable public investments in infrastructure, this scenario could also be interpreted as a scenario that tests a lack of taxpayer funding for infrastructure in those areas.

Assumptions

- No prospective boundary expansions are made through the year 2035 (UGB as it is today).
- All other assumptions are the same as the reference scenario.

Infrastructure funding delay scenario

Recently, it has proved difficult to fund infrastructure throughout the region, particularly in urban growth boundary expansion areas, which lack established revenue streams. This scenario tested the implications of a delay in funding infrastructure in recent UGB expansion areas such as Damascus.

Assumptions

- Infrastructure funding in recent (since 2002) UGB expansion areas such as Damascus is delayed until the year 2020 (from 2015 in the reference scenario).
- Prospective boundary expansions are delayed by five years
- All other assumptions are the same as the reference scenario.

Corridor amenity investment scenario

When choosing where to live, people often look for good schools, parks, tree-lined streets with sidewalks, access to transit, and restaurants. Yet many of our corridors have been designed with the primary goal of moving cars through as quickly as possible. This scenario tests the effectiveness of investments in urban amenities in corridors.

Assumptions

- Fifteen corridors throughout the region were identified for testing.
- The corridors that were tested have mixed-use, commercial, or multi-family zoning and are located outside of centers. No change to this zoning is assumed.
- Existing building height limits were raised.
- As a proxy for the typical effects of public investments in amenities, land values along these corridors were artificially increased. Amenities could include street trees, plazas, sidewalks, traffic-calming elements, or streetcars.
- Additional research is being conducted into which types of amenity investments could be most effective.
- All other assumptions are the same as the reference scenario.

Center amenity investment scenario

As with many corridors, some of the region's centers have been slow to come to life. In some cases, investments in urban amenities such as parks, plazas, and traffic-calming design elements could be used to great effect. This scenario tested the effectiveness of investments in urban amenities in regional centers.

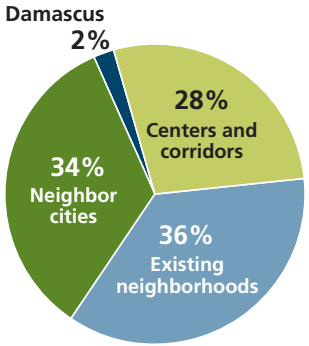
Assumptions

- Amenity investments were tested in regional centers.
- Building height limits in these test centers were raised, but existing zoning was not changed.
- As a proxy for the typical effects of public investments in amenities, land values in these centers were artificially increased. Amenities could include, for example, street trees, plazas, sidewalks, traffic-calming elements, or streetcars.
- Additional research is being conducted into which types of amenity investments could be most effective.
- All other assumptions are the same as the reference scenario.

What we tested and what we learned

Tight UGB scenario

New household locations

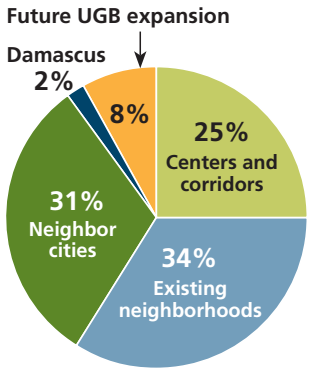


Findings

This scenario indicates that a tight urban growth boundary could be a powerful policy lever for shifting a larger share of new households to centers and corridors. However, used on its own, a tight boundary policy could have unintended consequences. Barring changes in housing preferences due to higher fuel costs or other factors, a tight boundary could lead to an increase in the number of new households that choose to locate in existing neighborhoods inside the boundary or in neighboring communities. Households in neighboring communities will often have long car commutes back to the Metro region, potentially canceling out reductions in greenhouse gas emissions achieved through the shorter commutes of residents inside the boundary.

Infrastructure funding delay scenario

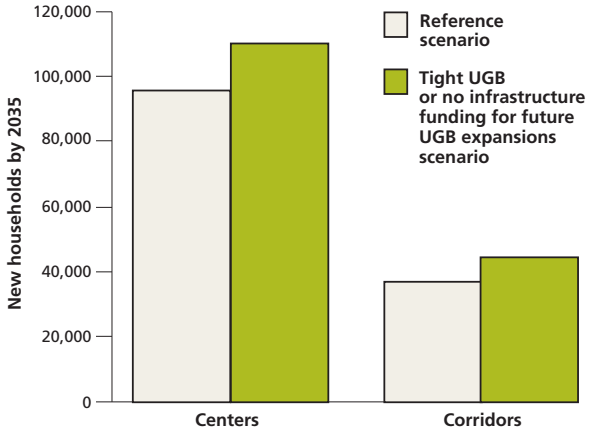
New household locations

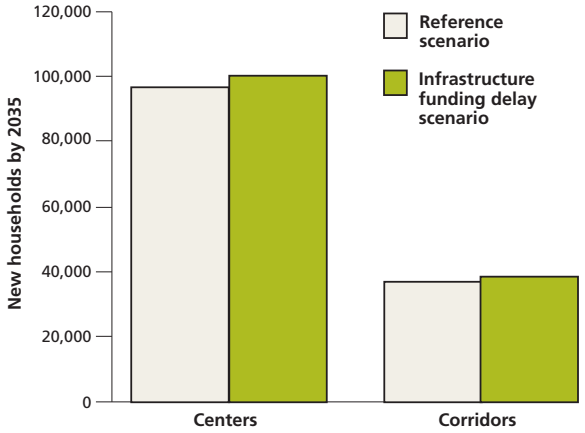


Findings

When infrastructure is unavailable in recent UGB expansion areas, those areas are effectively not available for development, creating a dynamic that is similar, though on a smaller scale, to a tight urban growth boundary scenario. An infrastructure funding delay could lead to a larger share of new households in centers and corridors, but it could also have the unintended consequence of shifting a share of new households to existing neighborhoods and neighboring communities outside the boundary. These changes are perhaps not as substantial as they are in the tight urban growth boundary scenario because the assumed funding delay is only five years, which is relatively short in the context of the time that it takes to build new communities

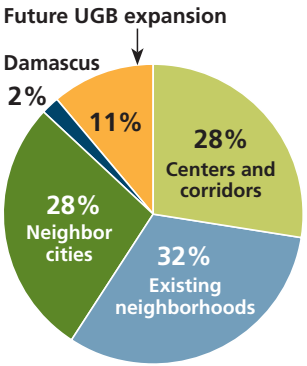
New households in centers and corridors compared to the reference scenario





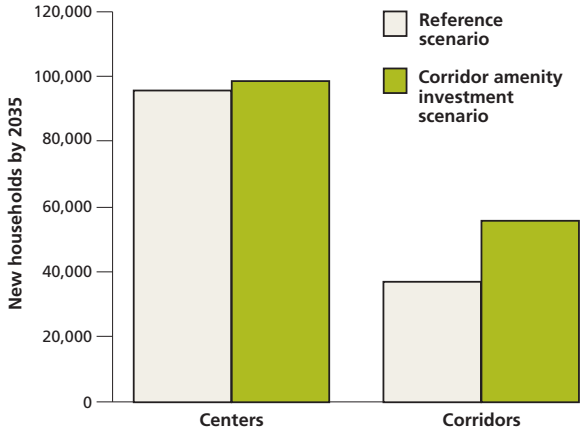
Corridor amenity investment scenario

New household locations



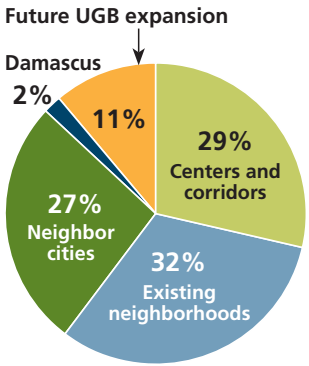
Findings

Investments in urban amenities could be effective for attracting a greater share of households to the region's corridors. Existing residents and employees would also benefit from increased amenities. These investments could also reduce housing demand outside of the urban growth boundary and in existing neighborhoods. These investments appear to be particularly effective in close-in corridors that currently lack such amenities. Amenity investments in corridors could also attract slightly more households to centers. These investments require funding in a time of limited resources.



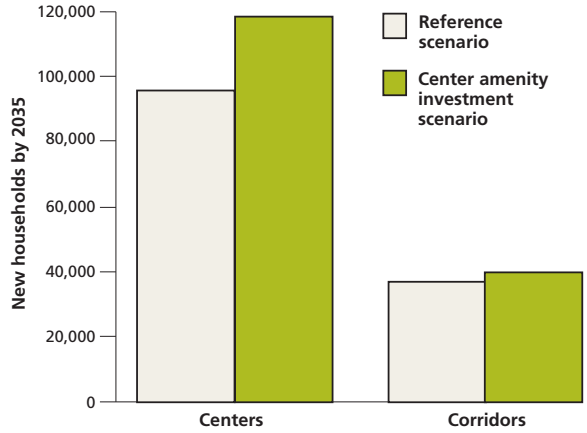
Center amenity investment scenario

New household locations



Findings

This scenario indicates that investments in urban amenities could be effective for attracting a greater share of households to the region's centers. Existing residents and employees would also benefit from increased amenities. The attractiveness of centers reduces housing demand outside of the urban growth boundary and in existing neighborhoods. This scenario indicates that amenity investments in centers could also have the effect of attracting slightly more households to corridors. These investments require funding in a time of limited resources.



By the year 2035 how would the scenarios compare?

Scenario performance comparison for new households using 11 measures

Scenario	1 Percent of new households in centers and corridors	2 Acres developed in future UGB expansion areas	3 Percent of future UGB expansion undeveloped by 2035	4 Average one-way commute distance (miles)	5 New households total daily commute miles	6 Total infrastructure cost for new households/ jobs (in UGB)	7 Total infrastructure cost for new households/ jobs (in 7 county area)	8 Average infrastructure cost for one new Metro UGB household	9 Average new household cost of housing and transportation (per year)	10 Average percent of income spent on housing and transportation	11 Residential source greenhouse gas emissions (lbs per year)
Historic (*or 2005 estimate from Metroscope model)	**15% (estimated)**	**NA**	**NA**	**11.4***	**NA**	**NA**	**NA**	**$71,000***	**$24,900**	**43.9%**	**21.25 billion***
Reference scenario	**24%**	**11,000**	**69%**	**12.3**	**13,495,901**	**$36.8 billion**	**$56.1 billion**	**$70,000**	**$27,400**	**47.5%**	**32.73 billion**
Tight UGB	**28%**	**0**	**0%**	**12.1**	**13,275,202**	**$34.3 billion**	**$55.9 billion**	**$68,000**	**$26,100**	**47.0%**	**32.35 billion**
Infrastructure funding delay	**25%**	**7,600**	**68%**	**12.2**	**13,405,897**	**$35.9 billion**	**$56 billion**	**$69,200**	**$27,600**	**47.4%**	**32.59 billion**
Corridor amenity investment	**28%**	**10,200**	**71%**	**12.0**	**13,241,894**	**$37.1 billion**	**$55.2 billion**	**$68,500**	**$26,700**	**47.0%**	**32.45 billion**
Center amenity investment	**29%**	**10,200**	**71%**	**11.9**	**13,131,554**	**$37.2 billion**	**$54.9 billion**	**$68,000**	**$26,600**	**46.8%**	**32.35 billion**

Gauging how the scenarios perform requires more than just predicting how many households may choose to locate in centers and corridors. A number of other measures can give us a sense of the possible implications for quality of life and cost of living. Because these policies and investments were tested independently and we are working from more than one hundred years of existing urban development, we don't see stark differences in these results. These subtle differences are a useful reminder of the challenges before the region. Additional research will be needed to refine these measures for use in selecting land use, transportation and investment strategies that support the region's desired outcomes.

Measure 1. Percent of new households in centers and corridors (share of seven-county household growth from 2000 to 2035)

Why does this measure matter? Centers and corridors are areas that are most likely to provide people with walkable access to everyday needs, access to jobs, and access to transportation choices. These characteristics reduce transportation costs to the individual and will be crucial to reducing greenhouse gas emissions.

Scenario results: Historically, about 15 percent of new household growth has been in centers and corridors. All of the scenarios tested, including the reference scenario, increased the number of new households in centers and corridors when compared with historic data. Housing preferences can change over time. New housing types, such as courtyard housing, could attract additional new households to centers and corridors.

Measure 2. Acres developed in future UGB expansion areas (by the year 2035)

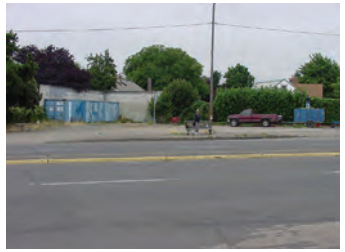
Why does this measure matter? Growth in UGB expansion areas necessarily entails the conversion of agricultural or habitat lands. Ecologists posit that when only 10 percent of a watershed is covered with impervious surfaces there are detrimental effects on water quality. Typically, urbanization involves far greater impervious surface coverage than 10 percent.

Scenario results: Scenarios that direct more growth to centers and corridors help to minimize impacts on habitat and water quality. Though the tight UGB scenario does not result in development in possible future UGB expansion areas, it may lead to additional demand for expansion of neighboring cities.

Measure 3. Percent of future UGB expansion areas undeveloped by 2035

Why does this measure matter? The long-term intent of a UGB expansion is that the area be developed for new housing and jobs. This measure indicates the degree to which that has happened by the year 2035. Because, in the scenarios, there are a number of expansion areas that do not become available until the year 2030, it is not reasonable to expect that all UGB expansion areas will be developed by 2035.

Scenario results: This measure is somewhat ambiguous; a higher percentage can either indicate that UGB expansion locations and sizes are mismatched with market demand or it can mean that efforts to attract households and jobs to existing urban areas inside the UGB have been successful, thereby reducing demand in UGB expansion areas.



Public investments in corridor amenities like light rail can spur private development as shown in these before (top) and after photographs.

By the year 2035 how would the scenarios compare?

Measure 4. Average one-way commute distance (for the seven-county area in the year 2035)

Why does this measure matter? Commute miles are a useful indicator of overall travel behavior. Longer commutes tend to be an outcome of living in suburban or exurban locations. These same location choices also tend to produce long trips for meeting other needs, such as going to the grocery store. Longer travel distances could mean a higher public cost to build and maintain the roads and transit necessary to accommodate those trips.

Scenario results: All of the scenarios indicate that, in 2035, the average commuter will have a slightly shorter commute than they have today. A tight UGB could result in a greater share of new households in centers and corridors. Households in centers and corridors (particularly those that are in more central locations) are likely to have shorter commutes than their suburban or exurban counterparts. But a tight UGB could shift a portion of new households to neighboring cities. Residents of neighboring cities will often have long car commutes back to the Metro region. Taken together, a tight UGB could produce a slight reduction in the average commute distance. Investments in centers and corridors hold greater promise for attracting households to central locations and reducing average commute distance.

Measure 5. Total daily commute miles (new households in the seven-county area in the year 2035)

Why does this measure matter? The State of Oregon has adopted greenhouse gas reduction targets that call for a halt in increases in emissions by 2010, a 10 percent reduction in emissions below 1990 levels by 2020 and a 75 percent reduction in emissions below 1990 levels by 2050. A critical aspect of reducing emissions will be to reduce commute and other trip distances not just in our region, but in the larger seven-county area.

Scenario results: Even though the scenarios indicate that in 2035 the average household will have a shorter commute than today, there will simply be more people commuting, resulting in an increase in the total daily commute miles for the seven-county region. It appears that the region will need to take much more ambitious and coordinated steps to meet state greenhouse gas reduction targets.




Measure 6. Total infrastructure cost for new households and jobs (in UGB from the year 2000 to 2035)

Why does this measure matter? The region faces challenges to pay for infrastructure, not just to accommodate growth, but for ongoing maintenance and replacement. One way to address this challenge is to reduce demand for infrastructure. Shorter commutes require fewer miles of road or transit service per household. Likewise, higher densities lead to more efficient use of infrastructure. MetroScope estimates infrastructure costs using national construction cost data and a formula that is based on development densities and commute distances. These estimated costs are just the capital costs of building new infrastructure to serve new households and jobs and do not include maintenance of these new facilities or the maintenance and upgrade of existing facilities. Costs are in 2005 dollars and are not adjusted for inflation.

Scenario results: Scenarios that attract more new households inside the Metro UGB could mean that the total costs of infrastructure inside the UGB are higher. If the public is not able to pay these costs, it could result in lower levels of service.

Measure 7. Total infrastructure cost for new households and jobs (in seven-county area from the year 2000 to 2035)

Why does this measure matter? Infrastructure costs inside the Metro UGB are only part of the picture. We should also consider the costs of providing infrastructure for the larger seven-county region that includes our neighboring cities. These costs are calculated in the same manner as measure number 6, but for a larger geographic area.

Scenario results: Policies, such as a tight UGB used on its own, that shift a share of growth to neighboring cities could increase costs for those cities. Whether neighboring cities are able to pay these costs is unknown and could lead to lower levels of service.

Measure 8. Average infrastructure cost for one new Metro UGB household (averaged for all new households from 2000 to 2035)

Why does this measure matter? Different growth patterns produce different costs and different benefits. The equitable distribution of costs and benefits should be kept in mind as policies and investments are considered. The benefits of spending public money wisely can include, for instance, the creation of walkable communities and transportation choices. This measure includes estimated costs for all facilities, including local, community and regional facilities, needed to serve a household. Household demand for infrastructure varies according to commute distance and residential density. Costs are in 2005 dollars and are not adjusted for inflation.

Scenario results: Strategies such as a tight UGB or amenity investments that attract a greater share of households to centers, corridors, and other central locations produce shorter commute distances and higher densities. Though these same strategies, by attracting more households to the UGB, could increase the total cost of infrastructure, they reduce the average cost of serving a household.

By the year 2035 how would the scenarios compare?

Measure 9. Average household cost of housing and transportation (per year, per new household in Metro UGB)

Why does this measure matter? When people sign a lease or buy a house, the cost of the residence itself is clear. However, the longer term costs of transportation are not always so obvious and, in fact, are often underestimated (particularly when gasoline prices are volatile). These two costs should be thought of as a budgetary bundle as the region considers how to provide more people with transportation choices and how to address housing affordability. For this measure, a comprehensive set of costs are tallied that are derived from the U.S. Bureau of Labor Statistics' Consumer Expenditure Survey. These costs include, for instance, rent or mortgage payments, utilities, the costs of buying, maintaining and operating a car, and transit fares. Costs are expressed in 2005 dollars and are not adjusted for inflation.

Scenario results: These scenarios indicate that a tight UGB and amenity investments can attract a greater share of households to centers and corridors. Accompanying that shift to centers and corridors are shorter commutes and a shift in preference towards smaller residences, both of which amount to a lower average combined cost of housing and transportation.

Measure 10. Average percent of income spent on housing and transportation (per year, for a new household in Metro UGB)

Why does this measure matter? A household's total cost of housing and transportation is best understood as a percentage of a household's income. Costs (and income) are estimated in the same manner as in measure number 9.

Scenario results: A tight UGB helps to create a more compact urban form while amenity investments attract a greater share of new households to centers and corridors. Both result in a smaller percentage of household income going to transportation and housing costs.

Measure 11. Residential-source greenhouse gas emissions (billion pounds per year)

Why does this measure matter? Residential sources are responsible for a large portion of greenhouse gas emissions. The region faces a challenge to reduce its carbon footprint while also creating great communities.

Scenario results: In the scenarios, no technological improvements in energy efficiency are assumed. Greenhouse gas emissions are calculated based on historic residential energy consumption patterns for various housing types and sizes. Reductions in residential-source greenhouse gas emissions are a result of smaller residential square footages. Smaller square footages tend to accompany shifts to multi-family housing. With more households in the region by the year 2035, all scenarios tested show an increase in greenhouse gas emissions. And there are only marginal differences in residential-source greenhouse gas emissions from scenario to scenario. These small changes alone will be insufficient to meet state targets. Along with shifts to smaller residences, technological improvements in energy efficiency will be essential.

What might happen if we combine strategies?

These scenarios tested single, isolated strategies that attempt to change the course of over 100 years of existing urban development patterns. Consequently, changes in performance are often on the margins. Forthcoming transportation scenarios may produce greater changes in center and corridor performance, particularly when accompanied by well-considered land use and investment strategies.

In order to give a sense of how combined policies and investments might reinforce one another and build synergy, two scenarios in which amenity investments were combined with a tight UGB were tested. All other assumptions were the same as the reference scenario.

These two scenarios illustrate an increase in the share of households that could choose to locate in centers and corridors. That increase in households in centers and corridors is accompanied by reductions in total commute distance, decreases in public infrastructure costs, and savings for households on the costs of housing and transportation.

Hybrid scenario performance for new households comparison

Scenario	1 Percent of new households in centers and corridors	2 Acres developed in future UGB expansion areas	3 Percent of future UGB expansion undeveloped by 2035	4 Average one-way commute distance (miles)	5 Total daily commute miles	6 Total infrastructure cost for new households/ jobs (in UGB)	7 Total infrastructure cost for new households/ jobs (in 7 county area)	8 Average infrastructure cost for one new Metro UGB household	9 Average household cost of housing and transportation (per year)	10 Average percent of income spent on housing and transportation	11 Residential source greenhouse gas emissions (lbs per year)
Reference scenario	**24%**	**11,000**	**69%**	**12.3**	**13,495,901**	**$36.8 billion**	**$56.1 billion**	**$70,000**	**$27,400**	**47.5%**	**32.73 billion**
Corridor amenity investment *plus* tight UGB	**31%**	**0**	**0%**	**11.9**	**13,131,645**	**$34.7 billion**	**$55 billion**	**$66,900**	**$25,600**	**46.6%**	**32.09 billion**
Center amenity investment *plus* tight UGB	**32%**	**0**	**0%**	**11.9**	**13,068,359**	**$34.7 billion**	**$54.8 billion**	**$66,500**	**$25,500**	**46.5%**	**32.01 billion**

Next steps:
an outcomes-based approach

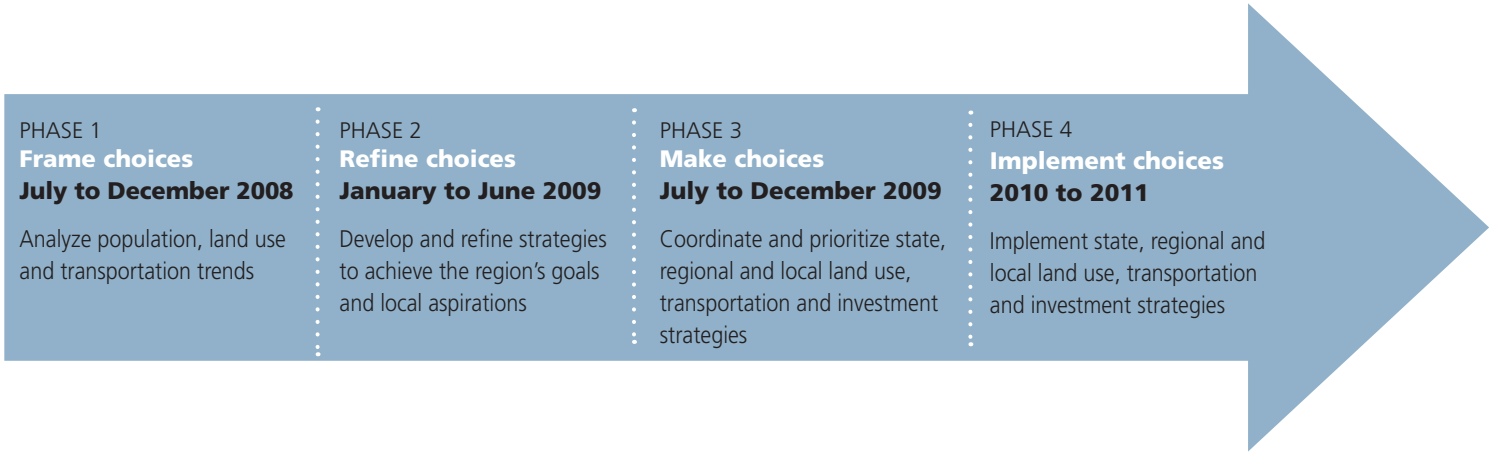
By the end of 2009, the region's leaders will need to weigh the trade-offs and define the combination of local and regional actions they can support to achieve the region's desired outcomes. Regional and local decisions made in 2009 and 2010 will shape the region's ability to implement this blueprint for growth during the next 40 to 50 years.

As we refine choices and make decisions, we will want to consider the effect of combinations of transportation, land use and investment choices as well as the possible effects of different choices at the local or regional level. A forthcoming discussion guide will describe four different transportation investment scenarios in order to further inform those considerations.

These scenarios are a first step in a regional conversation about how best to achieve the region's desired outcomes:

- Which land use actions are we willing to take?
- What are the region's investment priorities?
- How do we measure success?

In the coming months, we will need to refine and make choices that affect the success of the region and continue implementation of the 2040 Growth Concept.



Metro | *People places. Open spaces.*

Clean air and clean water do not stop at city limits or county lines. Neither does the need for jobs, a thriving economy and good transportation choices for people and businesses in our region. Voters have asked Metro to help with the challenges that cross those lines and affect the 25 cities and three counties in the Portland metropolitan area.

A regional approach simply makes sense when it comes to protecting open space, caring for parks, planning for the best use of land, managing garbage disposal and increasing recycling. Metro oversees world-class facilities such as the Oregon Zoo, which contributes to conservation and education, and the Oregon Convention Center, which benefits the region's economy.

Metro representatives

Metro Council President – David Bragdon

Metro Councilors
Rod Park, District 1
Carlotta Collette, District 2
Carl Hosticka, District 3
Kathryn Harrington, District 4
Rex Burkholder, District 5
Robert Liberty, District 6

Auditor – Suzanne Flynn

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Metro
600 NE Grand Ave.
Portland, OR 97232-2736
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Historical compass on pages 3 and 15 is courtesy of Oregon Historical Society. Printed on recycled-content paper. 08434jg




M A K I N G T H E G R E A T E S T P L A C E

Metro

TRANSIT- ORIENTED DEVELOPMENT PROGRAM

TOD Project Seven-Day Notice

Per theTOD Program Work Plan adopted by Council Resolution 98-2619, "as soon as practical upon approval by the Steering Committee, the Executive Officer will provide written notification to the Metro Council of potential TOD projects and the Council will have seven (7) days to notify the Executive of a request to review a potential project in executive session..."

Project Name: One 19 Towers

Action Item: On July 29, 2008, the TOD Steering Committee authorized $270,000 for the purchase of a TOD easement for One 19 Towers, c*onditional upon execution of the Metro-TriMet IGA for exchange of FFY 2009-11 MTIP allocations to provide TOD Program funding,* and the following conditions:

1. Five-story height;
2. Forty condominium units;
3. Twenty-nine structured parking spaces at the ground level; and
4. Design refinements to more clearly articulate the building entrance and to provide attractive landscaping, exterior lighting and signage at the pedestrian level.

Project Background: If approved for TOD funding, developers Gordon Jones and Andy Kelly would be new partners for the TOD Program. Jones has successfully developed 138 condominium units in four different projects in the Gateway Regional Center. The condominiums are distinguished by their affordability, low parking ratios and compact design. Andy Kelly, another residential developer in the Gateway area, and Gordon Jones have worked together before - most recently as co-developers the Gateway Towers condominiums. Jones and Kelly have established a particular market nitch in the Gateway area, where about 22% of the residents of the diverse population are minority.

The developers have secured construction financing and have a well-developed strategy to manage the risk of One 19 Towers:

- Design an economical, urban-style condominium product with features that promote easy transit, bike and walk trips;
- Implement an FHA approved affirmative fair housing marketing plan;
- Pre-sell 15 or more units to qualified buyers before construction starts;
- Collaborate with area housing programs to provide 3% mortgage down payment assistance;
- Obtain competitive, fixed-price bids for the construction contracts; and
- Secure a City of Portland TOD property tax abatement; secure the proposed TOD project funding from Metro; and work with Metro's Regional Transportation Options program.

Project Description: The developers are proposing a five-story building with 40 condominiums, elevator service, and 29 structured parking spaces. One 19 Towers would offer one and two bedroom units averaging 822 square feet, at the exceptionally affordable price range of $137,900 to $247,320, with a median price of $156,000. Cost premiums are estimated to total $795, 448 and include structured parking ($502,564), fire safety sprinklers ($155,782), crane ($60,000) and elevator ($77,102.) By providing structured parking, the design of One 19 Towers significantly increases the residential density on the 0.44-acre site to 92 units per acre. By providing annual

transit passes to each homebuyer and building secure bicycle and scooter storage at ground level, transportation options will be encouraged. An additional 25 transit trips per day are expected, producing additional farebox revenues with a net present value of $270,980 over the next 30 years.

Project Location: The site is located in the Gateway Regional Center, fronting East Burnside Street and very near the 122nd Avenue MAX station.

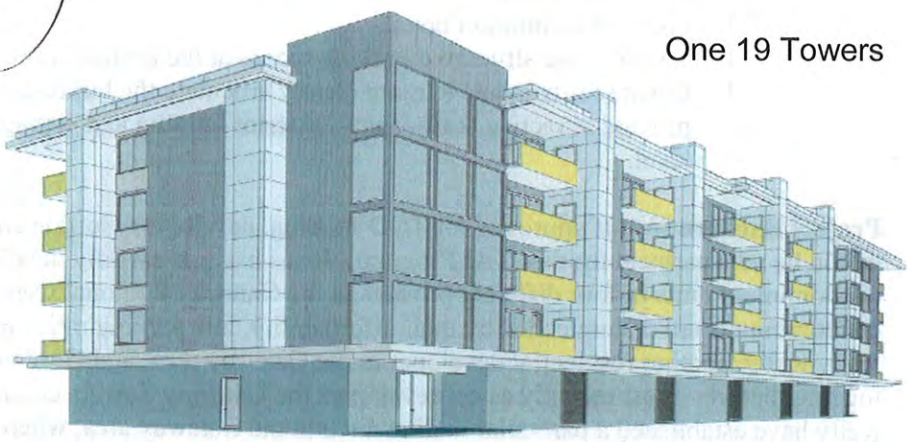
Project Budget: Localize MTIP funding for the TOD Program will support this $270,000 project expense. Funds are available in the Planning Department, TOD Program budget allocations.

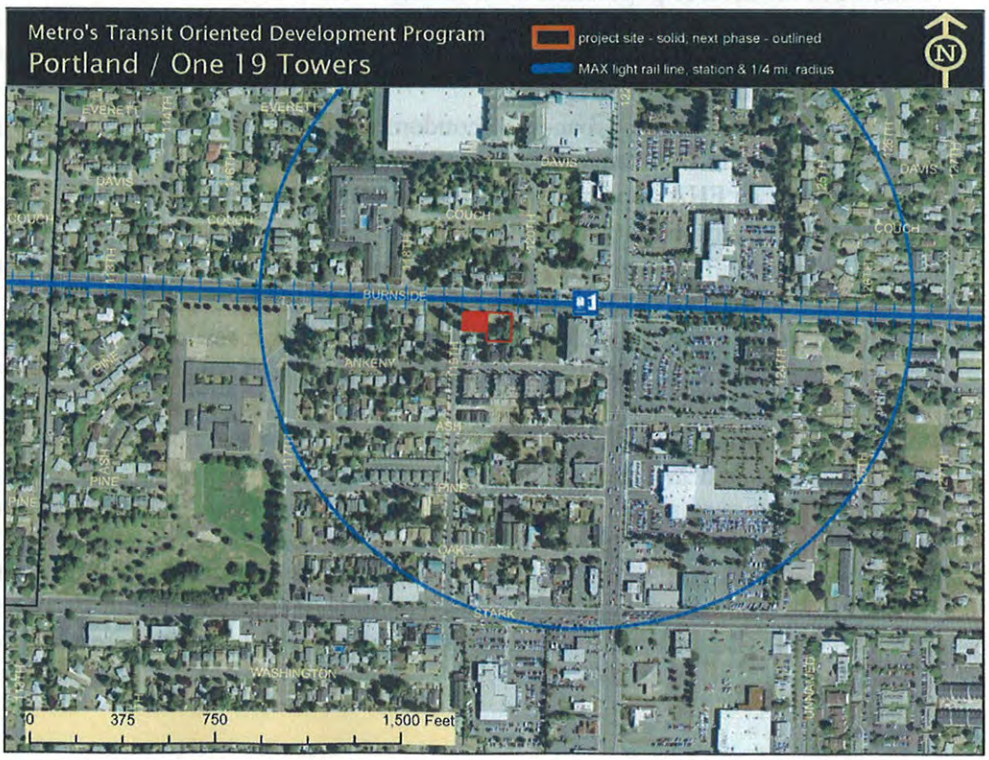
Potential Issues: This project funding is conditional upon renewal of the Metro-TriMet IGA for exchange of MTIP allocations to provide FFY 2009-11 funding, which is expected to be approved in the near future.

Michael Jordan
Chief Operating Officer

11/12/08
Date

One 19 Towers





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Coordination and Advisory Committee Charge
Employment and Economic Trends Analysis
October 2008

Context

The Metro region's leaders face important decisions about how to plan for employment growth in the short term and for the 20 and 50 year time horizons in a way that supports a strong regional economy and contributes to vibrant communities. Decisions include:

- Meeting State requirements to assess the 20-year capacity for commercial, institutional and industrial employment land needs in the Metro Urban Growth Boundary (UGB) and implementing actions to meet the projected needs.
- Updating local jurisdiction comprehensive plans, including preparation of an Economic Opportunity Analysis that identifies a local government's ability to accommodate industrial and other employment growth over the planning period.
- Designating urban and rural reserves to meet 40-50 year population and employment needs.
- Prioritizing regional investments with the next Regional Transportation Plan.

To frame these policy choices, Metro is updating its methodology to estimate employment demand and capacity and developing a process for stakeholder engagement and policy considerations.

Coordination and Advisory Committee

The Coordination and Advisory Committee will help coordinate analysis at the regional and local level and provide advice on the most efficient and effective means to solicit stakeholder and elected official consideration of critical assumptions and policy choices. This will include:

- Reviewing consultant approach to updating the regional employment analysis methodology,
- Identifying key milestones for stakeholder and elected official review,
- Advising on a method for defining attributes of employment demand in a way that can be useful at both the regional and local levels,
- Sharing approaches used locally to identify employment capacity, including methods for estimating redevelopment,
- Helping frame the critical assumptions for review by stakeholders and elected officials,
- Helping frame the policy choices for consideration on how best to plan for future employment needs.

Schedule

The committee will meet 1-2 times per month, dependent on Metro staff's need for advice, between October 2008 and fall 2009, when the Urban Growth Report will be published for public review and considered for approval by the Metro Council.

Participants

Steve Kountz, Portland	Jonathan Harker/Janet Young, City of Gresham
Pat Ribellia, Hillsboro	Lynne Boussi, PDC
Doug Rux, Tualatin	Beverly Bookin, G9
Chris Neamtzu, Wilsonville	Scott Drum, Port of Portland
Renate Mengelberg, Clackamas County	Tom Hogue, DLCD