Beaverton’s Civic Plan

growing together

Land Use & Transportation Strategy

Adopted by Beaverton City City Council
Resolution No. 4067
April 12, 2011
ACKNOWLEDGEMENTS

The City of Beaverton gratefully acknowledges the many people who assisted with these strategies:

Contributors

Alan Rappleyea, City Attorney
Alma Flores, Economic Development Manager
Andrea Lindberg, CDBG\HOME Project Coordinator
Anjanette Simon, Associate Planner
Barbara Fryer, Senior Planner
Barbara Huson, Human Resources Business Partner
Bill Kirby, Assistant City Attorney
Brad Roast, Building Official
Cassera Phipps, Planning Technician
Cindy Tatham, Sustainability Program Coordinator
Deborah Martisak, Public Works Project Manager
Don Gustafson, Senior Transportation Planner
Emily Tantare, Branding Manager
Erin Hickey, Community Involvement
Gary Brentano, Economic & Capital Development Director
George Fetzer, Code Compliance Program Manager
Holly Thompson, Visioning Program Manager
Jabra Khasho, Transportation Engineer
Jana Fox, Assistant Planner
Jason Wachs, Neighborhood Program Coordinator
Jayne Scott, Executive Director, Beaverton Arts Commission
Jeff Salvon, Associate Planner
Jennifer Johnson, Library Volunteer Services Manager
Jerry Allen, Assistant Director General Services
Jim Duggan, Senior Site Development Engineer
Jim Rauh, Community Business Relations Liaison
John Osterberg, Senior Planner
Kathy Gaona, Accounting Specialist
Leigh Crabtree, Associate Planner
Liz Jones, Associate Planner
Margaret Middleton, Principal Transportation Planner
Mark Boguslawski, Project Engineer
Michele Caldwell, Circulation & Technical Services Manager
Patrick O’Clare, Finance Director
Steve Brennan, Public Works Landscape Manager
Steve Thompson, Business Development Manager
Steven Sparks, Principal Planner
Terry Merritt, Deputy Police Chief
Terry Priest, Storm, Sewer, Street Project Manager
Tyler Ryerson, Senior Planner

Coordinators

Don Mazziotti, Community Development Director
Laura Kelly, Civic Plan Project Manager

Civic Plan Steering Committee

Scott Winter, Chair
Ray Bowman  William Johnson
Mark Fagin  Dan Maks
Mark Fryburg  Marc San Soucie
David Harrison  John Somoza
Michael Heart  Diana Sullivan

Consultant Team

Fregonese Associates  ZGF  ECONorthwest
Kittelson & Associates  Nelson\Nygaard
Metropolitan Group  DHM  FW Focus
Winzler & Kelly  Bosch Slabbers  William Fulton
LAND USE AND TRANSPORTATION STRATEGY

TABLE OF CONTENTS

OVERVIEW 2
SECTION ONE: LAND USE ISSUES AND STRATEGIES 4
SECTION TWO: ACTIVE TRANSPORTATION NETWORKS 38
APPENDIX
Appendix 1: Small Area Planning Process 52
Appendix 2: Bicycle and Pedestrian Design Toolbox 65
Appendix 3: Proposed Bicycle Improvement Projects 74
Appendix 4: Circulator Concepts for Beaverton 89
OVERVIEW

The Civic Plan comes on the heels of a broad-reaching, multi-year Community Visioning process, which established a set of five important goals for the City of Beaverton:

- Build community
- Create a vibrant Central City
- Improve mobility
- Provide high quality public services
- Enhance livability

This document includes land use and transportation strategies that the City of Beaverton should undertake to move toward achieving these goals. It is accompanied by two other documents. The Central City Strategy addresses growth, open space, civic, and transportation initiatives for the areas including Beaverton’s MAX transit stations, the Cedar Hills Crossing area and Old Town. The second document, the Housing and Neighborhoods Strategy addresses housing supply and demand issues, and informs the land use strategies contained in this and the Central City document.

The Land Use and Transportation Strategy is not a comprehensive planning document. The City of Beaverton has a full complement of plans to guide day-to-day decision making. Those include plans that guide investment such as the recently adopted Transportation System Plan (TSP), and an annual Capital Improvements Plan (CIP). Plans such as these include scheduled investments and actions required to ensure realization of their goals and can be key instruments in accomplishing the improvements suggested in the Civic Plan. This strategy does however, provide a framework from which subsequent revisions and updates to these documents can and should be based.
STRATEGIES FOR SUCCESS
This strategy document is aimed at a selection of key topics, some of which are drawn from existing Beaverton plans; others are new, the outcome of the extensive public outreach from the Beaverton’s Community Vision and Civic Plan processes.

The broad themes for Beaverton’s Land Use and Transportation Strategy:

- Protect and increase the capacity of the city’s existing supply of employment land.
- Update the city’s Economic Development Strategy, with particular focus on defining Beaverton’s role in the region and its competitive advantages.
- Develop the planning and financing tools needed to support reinvestment in the city’s employment lands.
- Adopt a small area planning process to enable landowners, stakeholders and neighborhoods to address issues of housing, neighborhood investments, and employment lands reinvestment.
- Build upon Beaverton’s rich network of neighborhood streets and traffic calming efforts by developing a network of bike routes using existing, low-speed streets.
- Leverage future roadway construction and street extensions to develop bicycle facilities north of Canyon Road and improve connections to Beaverton Central and Beaverton Transit Center.
- Improve the quantity and quality of bicycle parking throughout the city, but especially in the Central City.
- Be an active participant throughout the three-year planning process in Aloha-Reedville to ensure that Beaverton’s Central City vision remains viable.
- Invest in the city’s pedestrian realm so that walking, both in the Central City and citywide, is not just safe and convenient but pleasant and enjoyable.
SECTION ONE: LAND USE ISSUES AND STRATEGIES

Beaverton is a first tier* suburban city in a region that is becoming more urban every year. With connections today by highway, light rail, commuter trains and frequent bus service, Beaverton is one of the Portland region’s important urban places.

One of the methods used for evaluating strategic choices for Beaverton was the development of land use and transportation scenarios using Fregonese Associates’ Envision Tomorrow GIS-based planning tool. A scenario is a virtual representation of a plausible future; in this case, scenarios represent growth and development patterns in Beaverton between now and 2035.

Envision Tomorrow scenarios begin with building types: spreadsheet-based models that take into account zoning and development constraints (setbacks, building height, parking requirements) and financial factors (construction costs, rents, interest rates). For Beaverton, building types that reflect the city’s existing zoning regulations were developed. From there, those buildings were assembled into logical groups often referred to as development types, which are analogous to land use types or zoning districts. They include a mix of buildings (e.g. a main street development type could include some single-story retail buildings, low-scale apartment buildings, and townhomes) as well as roadway, park, civic, and other elements. Development types are then “painted” on parcels or grid cells using a GIS plug-in, thus representing the addition of, or new investment in, neighborhoods, downtown areas, employment centers and other places to the city.

This methodology has been used successfully in cities and regions around the United States including Baton Rouge, Tulsa, Dallas, and the Southern California region.

* Built-out cities or towns, predominantly suburban in character that are located just outside a central city.
CIVIC STRATEGY GROWTH SCENARIO

In June 2010, E.D. Hovee & Company completed the Beaverton Economic Opportunities Analysis (EOA). The EOA was prepared to address the Oregon State Planning Goal 9, which requires cities to “provide for at least an adequate supply of sites of suitable sizes, types, locations, and service levels for a variety of industrial and commercial uses consistent with plan policies.” In addition, Oregon cities are encouraged to adopt plan policies to maintain, provide for the redevelopment of, and increase the productivity of existing industries and firms.

The EOA identified several jobs growth scenarios, which ranged from about 15,000 new households and 63,000 new jobs over the next 20 years. In November, 2010, Beaverton’s City Council informally adopted a target of 30,000 new jobs over the next 20 years. The selected forecast is in line with maintaining a proportional share of regional job growth over the forecast period, approximately 7.1% of the region’s total employment.

The Civic Strategy Growth Scenario was designed to reflect the middle-range scenario identified in the Economic Opportunities Analysis (EOA) and the City’s preferred employment growth forecast. It was based upon an employment forecast from the City’s recent EOA (Hovee, 2010), adjusted from 2030 to 2035. The target numbers in this scenario are approximately 13,555 households and 30,000 jobs.

The scenario only used Vacant and Buildable Lands from the city’s most recent inventory, but it should be noted that lands outside this inventory may also be suitable for redevelopment, depending on local market conditions. That said, this scenario should be viewed as a guide for the city in monitoring housing and employment growth over time.


2 On November 2, 2010, Beaverton’s City Council heard EOA results and identified that a year 2030 employment growth scenario of 30,000 new jobs is appropriate for planning purposes in the City.

3 Out of six employment forecasts presented in the recently completed Economic Opportunities Analysis by E.D. Hovee & Co., the mid-range employment forecast was selected. This assumed the city would capture the same share of the 4-county region as it has today, approximately 7%. It was assumed that the current ratio of jobs-to-housing would remain constant through the forecast period. By applying the 1.2 residents per job to the 30,250 new jobs added to the city for the mid-range scenario, and a household formation rate of 2.44 (2000 Census), the analysis found an increment of 13,555 new households.

ADDITIONAL OREGON STATE POLICY REGARDING INDUSTRIAL AND OTHER EMPLOYMENT DEVELOPMENT POLICIES (OAR 660-009-0020)

Comprehensive plans must include:

- Community economic development objectives
- Commitment to provide a competitive short-term supply for jurisdictions within metropolitan planning organizations
- Commitment to provide adequate sites and facilities
- Detailed strategies for preparing the total lands supply for development and replacing the short-term supply as it is developed for jurisdictions within metropolitan planning organizations

Cities and counties are encouraged to adopt plan policies relating to:

- Brownfield redevelopment and maintaining industrial lands in industrial use
- Expansion, retention and increased productivity from existing industries and firms
- Protection of prime industrial lands
- Additional approaches to achieving local objectives
FIGURE 1: CIVIC STRATEGY GROWTH SCENARIO

Source: Fregonese Associates
HOUSING

The first element of the scenario focuses on housing supply. The scenario modeling process revealed an acute deficiency of land for accommodating forecasted population growth. When looking at buildable land and the City’s zoning capacity, it at first appeared that Beaverton had a slight excess in housing capacity to accommodate the growth forecast. Many of Beaverton’s multi-use zones, for example, do not impose limits on housing density. Market factors, such as the cost of construction versus achievable rents and sales prices, usually prevent the maximum housing densities. Introducing the financial reality test indicated that the growth capacity allowed by maximum zoning would likely not occur within the market. Using this more realistic approach, a total of 8,472 housing units were added via the scenario (see Table 1, below). As the majority of the city’s buildable land supply for housing is in multi-use zones, the majority of future units were produced in multi-family buildings.

**TABLE 1: CIVIC STRATEGY GROWTH SCENARIO HOUSING INCREMENT (2035)**

<table>
<thead>
<tr>
<th>Single Family</th>
<th>Townhome</th>
<th>Multi-Family</th>
<th>Total New Housing Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,567</td>
<td>516</td>
<td>6,389</td>
<td>8,472</td>
</tr>
<tr>
<td>19%</td>
<td>6%</td>
<td>75%</td>
<td>100%</td>
</tr>
</tbody>
</table>

Source: Fregonese Associates

The city’s residential zones accounted for virtually all of the expected single-family homes, with 1,917 units primarily located in the R5 and R7 zones. The Central City area accounted for approximately 2,685 housing units, 95% of which are included in multi-family buildings. The balance of 4,602 units was allocated to Town Center and Station Area zones outside the Central City.

**TABLE 2: CIVIC STRATEGY GROWTH SCENARIO RESIDENTIAL ZONE UNIT BREAKDOWN (2035)**

<table>
<thead>
<tr>
<th>Zone</th>
<th>New Dwelling Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential Urban High Density</td>
<td>165</td>
</tr>
<tr>
<td>Residential Urban Medium Density R2</td>
<td>263</td>
</tr>
<tr>
<td>Residential Urban Medium Density R4</td>
<td>92</td>
</tr>
<tr>
<td>Residential Urban Standard Density R5</td>
<td>716</td>
</tr>
<tr>
<td>Residential Urban Standard Density R7</td>
<td>665</td>
</tr>
<tr>
<td>Residential Urban Low Density</td>
<td>16</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>1,917</strong></td>
</tr>
</tbody>
</table>

Source: Fregonese Associates

*Does not include residential zones in the Central City area

**TABLE 3: PROJECTED HOUSING DEMAND COMPARED WITH CAPACITY (2035)**

<table>
<thead>
<tr>
<th>Housing Type</th>
<th>Capacity (Units)</th>
<th>Demand (Units)</th>
<th>Gap (Units)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single family</td>
<td>1,567</td>
<td>4,593</td>
<td>-3,026</td>
</tr>
<tr>
<td>Multi-family (apartments and condos)</td>
<td>6,389</td>
<td>7,651</td>
<td>-1,262</td>
</tr>
<tr>
<td>Townhomes</td>
<td>516</td>
<td>1,311</td>
<td>-795</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>8,472</strong></td>
<td><strong>13,555</strong></td>
<td><strong>-5,083</strong></td>
</tr>
</tbody>
</table>

Source: Fregonese Associates
There are several ways the city can make up the projected net deficit in housing capacity, of approximately 5,000 units:

- Assume higher density development will take place in the Central City or in the Town Center and Station Area zones. However, as noted in the Central City strategy document, at least in the near term, the ability for the market to achieve rents sufficient to support higher density building is limited

- Assume that lands outside of the City’s Buildable Lands Inventory will also redevelop for housing

- Assume that the city may need to expand its boundaries to bring in additional land, in particular at its southwestern border with the inclusion of Urban Reserve Area 6B

While each of these options is reasonable and achievable, the first two options are unlikely to address a pivotal issue in Beaverton, which is the availability of buildable land for single-family homes. There is undoubtedly a need for multi-family homes in the future. A strong focus on redevelopment, infill and other programs will ensure that development can occur in the Central City and other mixed-use centers, the demand for single-family homes will also need to be satisfied. Accommodating some or a portion of the 5,000 unit deficit in the Urban Reserve 6B area would help address the need to meet single-family home demand.
URBAN RESERVE 6B

Urban reserves are lands currently outside the Metro urban growth boundary that are suitable for accommodating urban development over the next 50 years. Through a collaborative process, local governments, Metro, and the state of Oregon identified urban reserve areas. The urban reserve area to which Beaverton is limited to expand in the future is the area known as Area 6B.

Urban Reserve Area 6B is located on the southwest-facing slopes of Cooper Mountain and is bordered by the existing UGB on the north and east, SW Scholls Ferry Road, SW Tile Flat Road, and SW Grabhorn Road on the south. Urban Reserve Area 6B includes approximately 1,777 acres of which approximately 50% is developable due to a variety of natural constraints and public ownership. Urban Reserve Area 6B includes a variety of existing land uses including rural very large lot low density housing with connections to public water, landscape horticulture and plant nurseries, orchards, field crops, small woodlands and many areas of unmanaged vegetation. The area is characterized by a number of steep slopes and drainage ravines. This area adjoins the city of Beaverton on the east and the unincorporated Aloha-Cooper Mountain area on the north.

As indicated by its pre-qualifying concept plan, the City of Beaverton has indicated that the lands in Urban Reserve Area 6B can reasonably be designed to be walkable and appropriately served with a well connected system of streets, bikeways, recreation trails and public transit and can be efficiently and cost-effectively served with schools and other urban level facilities and services. The Beaverton School District is seeking to locate a new high school in the area, which would support both the existing district and a new community.

ECONOMIC DEVELOPMENT AND EMPLOYMENT LANDS

The second key issue for ensuring the health of Beaverton as a community is the need to accommodate new employers and support those who are here today. This is a principal challenge for most municipalities; the competition for ever more footloose enterprises is significant and the public must carefully choose its investments.

Beaverton plays a key role in the economy of the Metro region. The city is home to 7% of the region’s employment, benefits from an excellent school system, and is proximate to major employment centers in Hillsboro, Washington County, and Portland. Beaverton’s economy is currently based on small businesses; 87.6% of business establishments in Beaverton have fewer than 20 employees and nearly 95% of businesses have less than 50 employees. This is a similar base of small businesses to the other metropolitan suburbs of Hillsboro and Gresham, as well as to similarly-sized Bend, Oregon. 4

Manufacturing is a cornerstone of the City’s economy, employing significantly more workers in Beaverton than in comparable cities: 19% in Beaverton to Hillsboro’s 12%, Gresham’s 8.6%, and Bend’s 6.6%.5 In Beaverton, the specific industries of rubber and plastics processing and machinery and equipment manufacturing alone employ 14.9% of the workforce. The City workforce is very well-educated: Over 40% of workers 25 years and older have a bachelor’s degree or higher. This is significantly higher than the state average (28%), and even somewhat better than neighboring Hillsboro (33.3%) . This is not only attractive to employers but is an asset for the City and its residents. Education is a primary factor in determining overall income. With a reported 12.9% unemployment in early 2010, Beaverton is on par with Washington County but is faring somewhat better than Hillsboro and Bend. Up to the point of the beginning of the recession, Beaverton experienced robust job growth rates that outpaced most other cities in the region. The rapid job growth is one sign that Beaverton is an attractive place for new businesses.

4 ECONorthwest; Oregon Prospector, 2010
5 ECONorthwest; Oregon Prospector, 2010
BEAVERTON AND THE EMPLOYMENT MARKETPLACE

The spatial needs of employment and commerce have changed over the decades, and the direction of that change may favor employment lands in places like Beaverton. Over the last fifty years, industrial enterprises were increasingly segregated into special parks, even as the characteristics of those enterprises that motivated the zoning diminished. Today, the characteristics of industrial uses that remain incompatible with commercial and residential uses are primarily truck traffic and the inappropriate scale of some industrial buildings. Industrial parks generally are not easily accessed via public transit, do not provide many of the daily needs for employees and businesses, and lead to traffic congestion due to large block configuration. Many employers and employees prefer an active street life, a safe and dense neighborhood, a mix of uses, walkability, and proximity to cafes and other informal meeting spaces.

Together, the city’s competitive advantages and limited land supply suggest the need for an Economic Development Strategy that focuses on a functional classification of businesses based on their space needs, and the intersection between those needs and the city’s employment land supply.

*Businesses that match this profile might have these characteristics:*

- Small- to medium-sized (20–200 employees)
- Recent start-ups, businesses more focused on research and development, or businesses that support larger-scale employment uses in nearby Hillsboro or Portland
- Require a mix of office and production space (flex space)
- Want access to retail amenities in the Central City and to public transit options
- Appreciate the proximity to a mix of residential options and quality schools
These future employment factors need to be placed in the context of Beaverton’s economic development potential in regard to land supply. Beaverton’s employment land supply is characterized by relatively small parcels in fractured ownership, developed with a mix of flex space and more traditionally suburban industrial and commercial buildings. The recently completed EOA noted that employment land supply in the city is both limited in quantity and is made up of relatively small parcels. Based on the city’s latest Buildable Lands Inventory (completed in May 2010), the city has 595 individual sites, comprising 525.3 acres of unconstrained, buildable land. That equates to an average parcel size of less than an acre (and only two industrially-zoned sites larger than 10 acres). In addition, the employment land supply is roughly evenly split between vacant and redevelopable parcels.

**MEETING THE FORECAST**

The findings of the EOA noted that the available land supply in the Buildable Lands Inventory was not sufficient to meet any but the lowest of the employment forecasts. Depending on the mix of employment by industry, the selected forecast of 30,000 new jobs would require between 902 and 959 acres of land, almost double the amount of land available according to the Buildable Lands Inventory. In part this is a result of assumptions regarding the land use efficiency of the employment sectors; it was assumed that office and institutional uses would have an average floor area ratio (FAR) of 0.5, and 0.4 for retail uses, and 0.3 for industrial and distribution uses. These FAR assumptions are consistent with suburban-style developments with ample surface parking.
To address this, the EOA presented several policy recommendations:

- Increased density of employment (within a range feasible for private development).
- Conversion of lower density employment uses such as older retail strip centers to higher density with redevelopment (as for urban retail, multi-level flex, office and/or institutional space).
- Redevelopment of higher value sites (than currently contemplated).
- Identification of urban reserves for employment use (a challenging option as reserves identified to date are not well located or served by transportation infrastructure for substantial employment use).
- Public investment to incentivize higher cost redevelopment (including possible public sector role and land assembly for job-intensive development), as in the employment lands east of 217.

An additional policy option that should be considered is a commitment on the part of the city to retain the employment lands that it currently has available, especially those intended to allow higher density employment uses such as the Office-Industrial zone. It should be noted that cities often face challenges in maintaining employment land supplies. Landowners or investors often request retail or other higher-value zoning designations, especially when employment land is vacant or underutilized. It is crucial to adopt and adhere to a policy of maintaining employment land supplies, while also committing resources for infrastructure and services to keep them viable in the marketplace.

EMPLOYMENT SCENARIO
The Civic Strategy Growth Scenario also included an employment lands component that was developed to further explore the capacity of Beaverton’s land supply in regard to job growth. Some implicit assumptions in this scenario-building process were that employment densities would be increased from the baseline EOA assumptions. In office settings, employee densities can vary widely, and trends recently have pointed toward less space per employee than in the past. The following illustrates the building types with predominantly employment uses that were applied citywide to create the scenario.

WORKFORCE HOUSING
In addition to addressing the challenge of employment lands and space for future businesses, a strong employment growth strategy will include encouraging workforce housing in the Central City and employment areas. The Housing Strategy document discusses potential strategies and incentives that could dovetail with employment land initiatives in more detail.
The Office High Rise building type (a local example would be the 12-story Lincoln Tower in Tigard), with its very high employment density was used sparingly; amounting to the equivalent of four 12-story buildings in the scenario. However, when these buildings were removed and replaced with Mixed-use Office Mid-Rise buildings, the employment total for the city dropped to 26,538 jobs, or about a 10% decline, illustrating that while the city can accommodate much of its needed employment growth without depending on high rise development, it is important to find ways to increase employment densities in general.

**TABLE 4: CIVIC STRATEGY GROWTH SCENARIO: EMPLOYMENT BUILDING TYPE CHARACTERISTICS**

<table>
<thead>
<tr>
<th>Employment Building Types</th>
<th>Net Employees per Acre</th>
<th>Floor Area Ratio (FAR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Live/Work Townhomes</td>
<td>23.3</td>
<td>0.95</td>
</tr>
<tr>
<td>Main Street Retail</td>
<td>23.4</td>
<td>0.54</td>
</tr>
<tr>
<td>Strip Commercial</td>
<td>22.2</td>
<td>0.51</td>
</tr>
<tr>
<td>Neighborhood Shopping Center</td>
<td>18.3</td>
<td>0.42</td>
</tr>
<tr>
<td>Traditional Big Box</td>
<td>14.6</td>
<td>0.34</td>
</tr>
<tr>
<td>Urban-Style Big Box</td>
<td>44.9</td>
<td>1.03</td>
</tr>
<tr>
<td>Office (High Rise)</td>
<td>1,103.2</td>
<td>6.96</td>
</tr>
<tr>
<td>Mixed-Use Office (Mid Rise)</td>
<td>303.8</td>
<td>2.24</td>
</tr>
<tr>
<td>Mixed-Use Office (Small Lot)</td>
<td>200.6</td>
<td>1.42</td>
</tr>
<tr>
<td>Office (Low Rise)</td>
<td>111.7</td>
<td>0.71</td>
</tr>
<tr>
<td>Adaptive Reuse</td>
<td>129.7</td>
<td>1.00</td>
</tr>
<tr>
<td>Industrial Flex Campus</td>
<td>57.8</td>
<td>0.87</td>
</tr>
<tr>
<td>Industrial</td>
<td>13.4</td>
<td>0.67</td>
</tr>
<tr>
<td>Main Street Retail (No Parking)</td>
<td>41.4</td>
<td>0.95</td>
</tr>
<tr>
<td>Vertical Creative/Industrial</td>
<td>104.7</td>
<td>1.88</td>
</tr>
</tbody>
</table>

*Source: Fregonese Associates*
A result of the Civic Strategy Growth Scenario was identification of an employment capacity of approximately 29,800 jobs, the majority of which were in office environments. This is just shy of the recommended employment scenario of 30,000 added jobs from the EOA.

### TABLE 5: CIVIC STRATEGY GROWTH SCENARIO: EMPLOYMENT INCREMENT BY ZONE (2035)

<table>
<thead>
<tr>
<th>Zoning District</th>
<th>Total New Jobs</th>
<th>Employment Mix</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Retail</td>
</tr>
<tr>
<td>Neighborhood Service</td>
<td>245</td>
<td>64</td>
</tr>
<tr>
<td>Community Service</td>
<td>1,490</td>
<td>448</td>
</tr>
<tr>
<td>Corridor Commercial</td>
<td>155</td>
<td>75</td>
</tr>
<tr>
<td>General Commercial</td>
<td>2,275</td>
<td>908</td>
</tr>
<tr>
<td>Office Industrial</td>
<td>9,647</td>
<td>1,791</td>
</tr>
<tr>
<td>Industrial</td>
<td>4,392</td>
<td>413</td>
</tr>
<tr>
<td>Downtown Regional Center Transit Oriented</td>
<td>1,892</td>
<td>99</td>
</tr>
<tr>
<td>Downtown Regional Center Old Town</td>
<td>172</td>
<td>46</td>
</tr>
<tr>
<td>Downtown Regional Center East</td>
<td>1,071</td>
<td>66</td>
</tr>
<tr>
<td>Market-Based Downtown and Center</td>
<td>943</td>
<td>122</td>
</tr>
<tr>
<td>Station Area Low Parking</td>
<td>5,062</td>
<td>659</td>
</tr>
<tr>
<td>Town Center Multiple Use</td>
<td>734</td>
<td>399</td>
</tr>
<tr>
<td>Station Community Multiple Use</td>
<td>1,689</td>
<td>93</td>
</tr>
<tr>
<td>Station Community High Density Residential</td>
<td>36</td>
<td>30</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>29,802</strong></td>
<td><strong>5,212</strong></td>
</tr>
</tbody>
</table>

Source: Fregonese Associates analysis
The Central City area accounts for about 29% of the total job growth, with about 8,600 total jobs.

**TABLE 6: CIVIC STRATEGY GROWTH SCENARIO: CENTRAL CITY EMPLOYMENT INCREMENT BY ZONE (2035)**

<table>
<thead>
<tr>
<th>Zoning District</th>
<th>Total Jobs</th>
<th>Employment Mix</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Retail</td>
</tr>
<tr>
<td>Community Service</td>
<td>852</td>
<td>256</td>
</tr>
<tr>
<td>General Commercial</td>
<td>848</td>
<td>338</td>
</tr>
<tr>
<td>Office Industrial</td>
<td>1,322</td>
<td>246</td>
</tr>
<tr>
<td>Industrial</td>
<td>168</td>
<td>16</td>
</tr>
<tr>
<td>Downtown Regional Center Transit Oriented</td>
<td>1,892</td>
<td>99</td>
</tr>
<tr>
<td>Downtown Regional Center Old Town</td>
<td>172</td>
<td>46</td>
</tr>
<tr>
<td>Downtown Regional Center East</td>
<td>1,071</td>
<td>66</td>
</tr>
<tr>
<td>Market-Based Downtown and Center</td>
<td>943</td>
<td>122</td>
</tr>
<tr>
<td>Station Area Low Parking</td>
<td>1,264</td>
<td>165</td>
</tr>
<tr>
<td>Station Community Multiple Use</td>
<td>37</td>
<td>2</td>
</tr>
<tr>
<td>Station Community High Density Residential</td>
<td>25</td>
<td>21</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>8,594</strong></td>
<td><strong>1,375</strong></td>
</tr>
</tbody>
</table>

*Source: Fregonese Associates analysis*

To accommodate this employment growth, the scenario consumed approximately 476 acres of land, 258 acres of which was vacant and 217 of which was redeveloped. Redeveloped land refers to parcels which currently have structures, but are underutilized or vacant, and ready for reuse or replacement. The fact that about half of Beaverton's employment land capacity exists in already developed areas has important implications for city investments, staff expertise, and planning.

Redevelopment is typically more complicated and time-consuming than building on vacant land. The redevelopment process requires more active participation, and sometimes investment, on the part of local and regional agencies. Basic factors needed in these areas include transportation and utility infrastructure capacity (including high speed internet and communications), land assembly, and assistance with redevelopment finance.
The emphasis on redevelopment suggests an emphasis on development finance and public-private partnership for implementation, as well as coordination with urban renewal, comprehensive planning updates, and capital improvements plans. Even if the city were to pursue a lower employment forecast or achieve lower job densities than assumed in this scenario, redevelopment would still be a major factor in the city's economic development strategy.

**BEAVERTON’S KEY EMPLOYMENT INVESTMENT OPPORTUNITY AREAS**

There are several important employment opportunity areas that the city should consider carefully. Due to Beaverton’s relatively low supply of vacant land and the fractured nature of its land supply in general, there is a need for a focused and deliberate program of redevelopment and reinvestment. In contrast to development of vacant land, redevelopment usually requires significant attention and resources from the public sector. For example, infrastructure upgrades are often necessary, but existing land uses may be disrupted by such projects, necessitating careful planning and phasing.
EMPLOYMENT INVESTMENT OPPORTUNITY AREA 1: INDUSTRIAL LANDS EAST OF HIGHWAY 217

Located east of Highway 217 and south of Beaverton Hillsdale Highway, this sizable area is primarily classified as industrial, and contains a number of warehouse, distribution, bulk sales, and other businesses. The area is well served by access to Hwy 217 as well as the Portland and Western Railroad spurs. However, while Area 1 is clearly underutilized, it is not currently included in the Buildable Lands Inventory.

FIGURE 3: EMPLOYMENT INVESTMENT OPPORTUNITY AREA 1: CURRENT ZONING DESIGNATION

Source: City of Beaverton
While precise vacancy information by building is ever changing, there is a relatively high rate of vacancy for industrial properties in Beaverton, 16-17% as compared to the regional average of 8%. This indicates that while Beaverton’s industrial properties may be available, the city has some disadvantages for industrial users that cause them to look elsewhere. Further constraints on attracting large industrial users include Beaverton’s distance from a major port area and traffic congestion on local and highway routes. Traditional industrial uses that receive, process, and distribute large quantities of goods may not represent a major factor in Beaverton’s employment future. Thus, while the current firms in Area 1 may be viable and continue to be so for some time, it may be difficult to find similar occupants in the future without new investment.

Beaverton’s role as an important supplier of flex space in the region may represent an opportunity for this area. According to the Urban Land Institute’s Guide to Classifying Industrial Property, flex space is the third largest category of industrial real estate in the country, representing approximately 9% (2 billion square feet) of the total industrial supply nationwide. As the name suggests, users of flex space are widely varied, but often include research and development (R&D), small manufacturing, showroom facilities, offices, and service centers. They commonly require loading docks for small shipments. However, the office and showroom component of a flex building is typically more pronounced than that found in a typical industrial warehouse building. As such flex space usually has a high degree of “curb appeal”, since they often serve as corporate headquarters or primary points of contact with customers and vendors. These sorts of spaces are familiar in Beaverton. Office and flex space properties located along SW Arctic Drive are one example.

As described, additional flex space uses could be well suited for the areas east of Highway 217. The area provides access to regional transit and transportation (the reliance on heavy freight routes is minimal for such uses, a bigger concern is employee and client access), is located near Beaverton’s Central City, and is positioned so tenants have access to some of the larger regional employers.
However, there are a number of challenges in the area that must be overcome with careful planning, coordination, and investment in order to lay the groundwork for such a transition. The transportation network is fairly sparse and disconnected, though the railroad spurs contribute a great deal to those challenges. Roadways are primarily auto-oriented, with few continuous sidewalks, which would hamper efforts to leverage transit benefits from more intense development. There are several large parcels of land, but much of the area is fractured into small parcels, which makes addressing network issues all the more difficult. Furthermore, a sizeable portion of the area is within a floodplain, which carries regulatory requirements that further hamper redevelopment.

Above all, a common understanding, vision, and plan for the area may be needed to help ensure that it can transition from lower density employment uses to a flex space environment. The City of Beaverton, potentially through the Beaverton Urban Redevelopment Agency (BURA) should take a more active role in working with land owners to develop a framework for planning and investing in this area.

**FIGURE 4:**
EMPLOYMENT INVESTMENT OPPORTUNITY AREA 1: FLOODPLAIN CONSTRAINTS

Source: Fregonese Associates
A coordinated approach to addressing these constraints and providing a framework for redevelopment is advisable; for example, this area may be considered as part of the Creeks Master Plan study area (discussed in more detail in the Central City strategy document).

The Small Area Planning process, outlined in Appendix 1, can serve as a model for this process. Particular emphasis should be placed on infrastructure investment and finance, including exploration of Urban Renewal funding programs, Business and Local Improvement Districts (BIDs and LIDs), and other options. Major objectives for such a process should include creating guidelines to create an employment community that includes pedestrian circulation, retail locations, shared parking, and other amenities.

- Circulation plans that emphasize on-street parking, pedestrian connectivity, and transit access
- Access management to minimize driveways & curb cuts
- Building orientation that reinforces the street wall
- Inclusion of small-scale services and retail
- Shared parking lots for employees
- Freight access and circulation areas along shared alleys or service roads
- High speed telecommunications infrastructure
- Transit circulator

While Beaverton’s Office-Industrial zone is relatively flexible, the city may need to engage in the pre-design and permitting of desired flex space buildings or developments. Further incentives for projects that meet the area’s planning criteria may include:

- Waived, delayed, or amortized development fees or system development charges (in coordination with area taxing districts)
- Financial assistance in the form of land assembly
- Low or no interest loans through urban renewal
EMPLOYMENT INVESTMENT OPPORTUNITY AREA 2: AUTO DEALERSHIP SITES

Beaverton has a large supply of auto-oriented retail sites and benefits from a strong retail position in the region. However, there are several factors which may point toward reduced or relatively flat demand for additional retail space in the future. Retail demand is largely dependent upon the disposable income of residents, and thus tracks with incomes and population growth. Beaverton currently attracts a significant amount of retail sales from outside its boundaries, and is unlikely to generate demand above what is currently supplied. Secondly, shopping preferences are shifting toward more urban-style formats with smaller footprints in walkable environments. Given these factors, it is likely that large format retail areas and shopping centers, if they become vacant, may remain so.

Of particular note is Beaverton’s collection of auto dealerships, located primarily along SW Canyon Road in the Central City and also in the vicinity of the Tualatin Valley Highway. Beaverton has a long history as an auto sales center in the region. But national shifts in the industry and the closure or relocation of a number of auto dealers in the city indicates that Beaverton should be prepared to work with landowners to find viable uses for these properties should auto dealers decide to vacate them.

FIGURE 5:
EMPLOYMENT INVESTMENT OPPORTUNITY AREA 2: AUTO DEALERSHIPS

Source: Fregonese Associates
Auto dealerships tend to have specific land use needs that are often at odds with functional pedestrian districts, including large areas dedicated to vehicle storage and display, and multiple curb cuts or driveways. Transit and multi-modal connectivity improvements planned for the Central City are not expected to substantially improve business for dealerships as customers shopping for cars will likely visit many dealerships in their search, and are unlikely to use transit to do so. In considering their future space and functional needs, auto dealerships currently located in the Central City could decide that they would be better served outside the Central City.

Based on an aerial survey and analysis of assessor parcel data, auto dealerships outside the Central City area along Tualatin Valley Highway and to the west of Hocken Road occupy a significant amount of land area. Some of these auto dealerships are vacant and the parcels are classified as vacant or redevelopable according to the city’s most recent Buildable Lands Inventory. Furthermore, they are located in areas that have a high concentration of vacant or redevelopable lands, which may indicate an opportunity to approach redevelopment at a broader district scale.

FIGURE 6:
EMPLOYMENT INVESTMENT OPPORTUNITY AREA 2: TUALATIN VALLEY HIGHWAY AUTOMOTIVE DEALERSHIPS AND AUXILIARY LOTS

Source: Fregonese Associates
With the exception of two parcels on the northwest corner of Carousel Court and SW 141st and a small parcel to the north of the Carr Auto Group at SW 153rd, these areas are currently zoned for General Commercial use, which permits auto sales and service uses and is generally auto-oriented. The city should explore allowing additional uses that can make use of large parcels with good access, such as small-scale manufacturing, brewing & sales, and flex-space uses.

It may be advantageous for the city to develop a program to assist auto dealerships that are currently located in or near downtown with their relocation efforts. This would help to free up large land parcels and benefit revitalization efforts within the Central City, allowing denser, more walkable development to transform the area. Redevelopment of these parcels would help to build a consistent, continuous urban form that supports pedestrians, bicyclists and shared parking.

There are many tools available to promote relocation of land uses that are desirable in the city but not ideal for the Central City. The City of Beaverton should consider a strategy to create incentives that encourage dealerships to relocate from the Central City to an area where the land use is anticipated to remain auto-oriented in the future. Strategic relocation of multiple dealerships to the same area could form an “auto park” – an advantageous business cluster of dealerships and other auto-oriented businesses. A cluster has been developing on Canyon Road east of Highway 217, and could be expanded with assistance from the city. The city could offer relocation assistance to these businesses in the form of limited-term property tax abatement, discounted permitting, small area planning for the clustered locations, and other assistance with development review, planning, and economic development (such as marketing). For
destination properties that are not currently within the city limits, annexation would be a means to provide a range of incentives and relocation assistance. This clustered relocation strategy will allow the city to actively partner with this industry sector to collaboratively achieve the goals of the Central City Strategy.

This could lead to a broader effort to assemble parcels, improve connectivity and create more cohesive employment districts where auto dealerships were previously located. This strategy would include potentially rezoning these areas from a General Commercial designation to a less auto-oriented zone that requires smaller or no setbacks from the sidewalk, prohibits auto-oriented uses like car sales and leasing, and is generally designed to promote mixed-use development in line with incentives ODOT is considering for modifying the Transportation Planning Rule.
CREATING NEIGHBORHOOD CENTERS

During the Civic Plan workshop held in September 2010, participants were asked to show if they would like to see the addition of mixed-use centers for retail, services, and housing located within walking or biking distance of existing neighborhoods around the city. They were given a set of “chips” representing three types of centers:

- Neighborhood centers, which are small scale, single-story collections of retail, service, and other amenities;
- Mixed-use centers, which include the same mix of uses, but allow for one- to three-story buildings, and
- Traditional shopping centers, which typically include several uses, but not housing, and tend to have large surface parking lots.

Most of the twelve workshop groups placed neighborhood and mixed-use center chips on their maps; only two placed the traditional shopping center chips.

Live polling results at the Civic Plan workshop and subsequent open house also registered a strong support for the idea of locating mixed-use centers around the city. Of approximately 50 respondents, 64% agreed strongly with this idea. Respondents were also interested in ensuring that these new centers reflect the surrounding neighborhood’s goals and desires; 80% strongly agreed that a small area planning process should be used to define new centers’ location, uses, and character.
Neighborhood mixed-use centers are located in areas with close proximity to residential areas and good transportation network connections to surrounding neighborhoods. They provide a range of services such as grocery stores, dining, convenience stores, retail, dental offices, salons, and laundromats. Depending on the location and needs of the community, the centers can either serve primarily a local neighborhood or several neighborhoods.

These centers are primarily horizontal mixed-use areas, with one- to three-stories buildings. Buildings should be placed along the sidewalk with entrances and display windows oriented towards pedestrians. Automobile parking should mostly be on the street. Any off-street parking should be shared between businesses and located on the side or to the rear of buildings.

The size, look and feel of these centers will vary throughout the city. The primary difference between different centers is the scale of buildings and uses that make up the center. For example, small neighborhood mixed-use centers could allow small-scale grocery and convenience uses (up to 10,000 square feet), whereas larger centers may allow mid-sized grocery stores (up to 30,000 square feet). Larger centers with a more regional draw could include three-story buildings, whereas small centers, particularly those close to residential areas, may need to limit heights to one or two stories.

### TABLE 7: NEIGHBORHOOD MIXED-USE CENTER CHARACTERISTICS

<table>
<thead>
<tr>
<th>Building Height</th>
<th>1 –3 stories</th>
</tr>
</thead>
<tbody>
<tr>
<td>Front Setbacks</td>
<td>None (or permit 10’ setback with hardscape pedestrian easement to extend the sidewalk)</td>
</tr>
<tr>
<td>Auto Parking</td>
<td>Primarily on-street; off-street parking must be shared between uses and utilize efficient perpendicular configuration</td>
</tr>
<tr>
<td>Lot size and Dimensions</td>
<td>No minimum</td>
</tr>
<tr>
<td>Frontage and Lot Coverage</td>
<td>At least 50%</td>
</tr>
</tbody>
</table>
Participants identified places that could serve as neighborhood and mixed use center chips during the Civic Plan workshop.

**FIGURE 7: NEIGHBORHOOD MIXED USE CENTERS – WORKSHOP RESULTS**

**FIGURE 8: NEIGHBORHOOD MIXED USE CENTERS – PRIORITY LOCATIONS**

- **Mixed-Use Centers**
  - Larger scale of buildings
  - Close to the Central City and major corridors
  - Draw people from several surrounding neighborhoods

- **Neighborhood Centers**
  - Serve local neighborhoods
  - 1-3 story buildings
  - Scattered throughout Beaverton
WHAT MAKES A GOOD LOCATION FOR A CENTER?
These maps depict the desired locations of new centers as identified by workshop participants; while not an exhaustive list, these locations indicate there are a variety of options around the city. Because the feasibility of creating new centers relies on the selection of plausible locations, a series of criteria was applied to each center identified by workshop participants and the most strategic of these sites are shown in Figure 8.

- **Is vacant or underutilized land available?** A site that is already well utilized is an asset to the community, therefore it is best to focus redevelopment efforts on areas that aren’t currently serving the community to their capacity.
- **Are surrounding lands compatible?** Compatible lands for mixed use centers are generally residential.
- **Good connectivity to surrounding neighborhoods.** Areas with barriers such as highways present challenges to connecting residents with the centers.
- **Is it civic property?** i.e. Is there a church or park located there?
- **Does it have good visibility,** and is it located on a street that is suitable for some additional commercial development?
- **Is there a current lack of available neighborhood services in close proximity?**

PRIORITY LOCATIONS FOR CENTERS IN BEAVERTON
Using the selection criteria and workshop results, the team produced a map detailing potential neighborhood mixed-use centers (Figure 8). Two are highlighted in the next section as examples of potential small area planning sites.
Figure 9 illustrates the five, ten, fifteen and twenty minute walking distances around each potential neighborhood mixed-use center. Nearly every residence in Beaverton is within a 20-minute walk of these potential mixed-use centers, supporting the walkable 20-minute neighborhood design. The centers with larger buffers benefit from increased street connectivity thereby making them accessible to a wider geographic area. Walk sheds are evaluated on transportation network connectivity, which includes sidewalks. But walkability requires not only streets and sidewalks but infrastructure like frequent and safe crosswalks, and lighting.

Performing a walkability audit as part of a Small Area Planning process can help identify the subtle but important barriers and solutions to walking.

**Figure 9: Neighborhood Mixed Use Centers: Walksheds**

An example of well-defined and direct pedestrian facilities in a parking lot at Orenco Station, in Hillsboro.

Pedestrian facilities in the public right-of-way are crucial for creating more walkable neighborhoods, but the design and layout of sidewalks, walkways and parking lots are also important. In reviewing its Development Code and design guidelines, the city should consider how to create pedestrian-orientated development citywide. Issues to address may include building placement, so that a pedestrian can enter a store from the street and not have to traverse a parking lot. The design of parking lots themselves is also important, so pedestrians are provided direct routes to entrances on clearly marked or separated sidewalks or walkways. Encouraging development to serve the pedestrian, which is what most visitors are ultimately, will help make walking an easy and pleasurable way to travel in the city.
SMALL AREA PLANNING PROGRAM

The Civic Plan team has developed a small area planning process to help accomplish the goals of retaining and improving employment lands and helping neighborhoods envision and implement mixed use centers and other improvements.

WHAT IS A SMALL AREA PLAN?

Beaverton is made up of unique neighborhoods and places. Each one of these areas has its own distinct set of qualities to be preserved and problems to address. Small area plans are a way to identify these unique issues and find feasible solutions that lead to desired outcomes.

The advantage of a small area plan is its ability to engage people on a close-up, personal scale. While the city’s Comprehensive Plan identifies solutions to generalized issues, a small area plan can make recommendations about focused issues. However, the potential disadvantage of a small area plan is they can become unrealistically narrow in scope, considering only local issues while ignoring the city-wide context. There are also disadvantages when each small area plan uses a different process or proposes unique solutions to similar problems. The result can be delayed implementation and difficult administration.

If each neighborhood plan includes its own unique zoning designations, design standards, or street types, the planning and zoning would become complex and fragmented.

Therefore, Appendix 1 outlines minimum necessary content for a small area plan to ensure that, while addressing the localized issues of the area, it also responds to the city-wide context and addresses city-wide goals. This section also details a standardized process and set of tools for small area plans so that they are smoothly crafted, readily adopted, efficiently administered, and readily implemented.

HOW SHOULD SMALL AREA PLANS BE INITIATED?

The pressures of growth, change, or the need for public investment can create the need for undertaking small area plans. Small area planning is a partnership between the City and the area’s stakeholders—residents, businesses, institutions and other government entities. None can do an effective small area plan alone.
The focus area for a small area plan is not predetermined; it can cover a few parcels, a corridor, or a neighborhood. The scope of issues considered can be narrow, such as pedestrian improvements along a main street area or a particularly difficult intersection. However, because the demand for small area planning projects may exceed available resources to conduct them, it is essential to use criteria to evaluate and prioritize requests for small area plans.

**Priorities for Selecting Small Area Planning Projects:**

- Areas with public facilities and/or physical improvements that need to be addressed
- If significant change is occurring or anticipated in the neighborhood
- Opportunities for substantial infill or redevelopment are present or needed
- Opportunities arise to influence site selection, development or major expansion of a single, large activity generator
- Evidence of disinvestment, deteriorating housing, and high vacancy, unemployment and poverty rates
- Opportunity for development in conjunction with a transit station exists
- Minimization of the impact on surrounding or adjacent areas

**BELMONT/MORRISON LIVABILITY AND ZONING STUDY, PORTLAND 1995**

Together with surrounding neighborhood associations, the City of Portland reviewed and revised land use and zoning designations on Belmont Avenue, an historic streetcar line. The objective was to bring zoning designations in line with existing and desired land uses along the corridor. Many uses along Belmont were commercial in nature, but zoned for residential uses and were considered non-conforming. At the same time, the vision for the corridor was as a mixed-use main street keeping with its origins as a streetcar route. Commercial uses that the city considered appropriate for the corridor were threatened by incompatible zoning, which effectively stood in the way of infill, revitalization and redevelopment.

The planning and analysis process and resulting rezoning helped bring clarity and certainty to both businesses and the neighborhood. It was followed by one of the city’s most successful public-private demonstration projects, the Belmont Dairy. This project resulted in a new grocery store, retail spaces, and housing options which helped spark additional investment in the area.
SMALL AREA PLANNING TOOLS

Small area plans should make use of existing tools (i.e. street cross sections, zoning districts, and design standards). However, a small area planning process can also serve as a way to develop new tools. For example, as discussed above, residents expressed interest in creating small-scale mixed use centers to serve neighborhoods outside of the Central City. A small area planning process could be used to develop a set of zoning standards for such areas.

Those zoning designations could then serve as tools or models for other neighborhoods. Additionally, infill development guidelines developed for one area may serve as the basis for use in another. Thus, in the early years of a small area planning program, the city may elect to fund projects that will help build a set of tools that are needed throughout the city. Similar problems should have similar solutions. The process and tools

FIGURE 10: BEAVERTON NEIGHBORHOOD ASSOCIATION

NEIGHBORHOOD ASSOCIATION COMMITTEES

Beaverton presently has eleven Neighborhood Association Committees (NACs), which serve residents, business owners, and other stakeholders in their area. NACs are independent organizations that work closely with the City to address issues in their area, provide support for local events, and feedback on projects and development. Beaverton's NACs are a natural constituency for Small Area Planning processes.

BEAVERTON NEIGHBORHOOD ASSOCIATIONS

Central Beaverton NAC
Denney Whitford/Raleigh West NAC
Five Oaks/Triple Creek NAC
Greenway NAC
Highland NAC
Neighbors Southwest NAC
Sexton Mountain NAC
South Beaverton NAC
Vose NAC
West Beaverton NAC
West Slope NAC

Source: City of Beaverton
Note: Geographies are not precise and may include areas outside the City of Beaverton.
presented in Appendix 1 offer a variety of mechanisms for developing implementation strategies for small area plans. If plans take advantage of the broader range of tools in the regulatory, public infrastructure, and partnership categories, city implementation should be readily available.

Implementation takes place on many levels for the city and other partners. Regular recommendations and decisions such as review of proposed developments and recommendations on zone changes can benefit from a thoughtful, clear small area plan. Similarly, a neighborhood association’s annual work program can be more targeted based on clear recommendations. Some of the more substantial recommendations, such as public infrastructure, are dependent on the highly competitive annual funding of capital improvements.

One of the criteria the city will use to consider implementing a plan’s programs is the effectiveness of proposed investments in improving conditions in the city, as measured by objective benchmarks. For instance, neighborhood plans that incorporate zoning designations and improvements that will help expand the range of housing options available should receive implementation and funding priority.

A small area planning program will serve to reinforce Beaverton’s general goals of creating neighborhood services, community services and main streets at a local scale. In some cases, the current code supports these types of walkable community oriented places, while in others, minor adjustments to the zoning code will make pedestrian-oriented centers a possibility. A small area plan that has broad community support gives a developer the confidence that, for instance, a building oriented along the sidewalk with parking behind will be welcomed and successful in that particular location.
EXAMPLE SMALL AREA PLAN SITES

These two locations illustrate the opportunities for modest and practical changes throughout the city that could improve many residents’ access to their daily needs. But these kinds of changes should be initiated by residents and neighborhood groups, who can then make use of a standard small area planning process in coordination with the city.

HALL BOULEVARD AND ALLEN BOULEVARD

The intersection of Hall Boulevard and Allen Boulevard has a mixed-use land use designation of Main Street and is zoned Neighborhood Service Center. This intersection is a designated Main Street on the Metro 2040 Growth Concept Map. As part of assessment phase of a small area plan, described on page 55, the city will conduct a thorough evaluation of the compatibility of zoning with the vision statement. In the case of Hall and Allen, Beaverton’s zoning requires minimum setbacks, minimum lot size, parking requirements and maximum building heights that the zoning compatibility evaluation will address.

The Neighborhood Service standard’s minimum front setback requirement of 20 feet for parcels less than 60,000 square feet should be reduced because is inconsistent with the goal of locating buildings along the sidewalk edge. The maximum building height of 35 feet in the near term may be reasonable, however, as successful new growth catalyzes additional growth over time, it may make sense to increase it.

FIGURE 11: HALL BOULEVARD AT ALLEN BOULEVARD

The current zoning of the area is consistent with the goals of mixed use centers. Neighborhood Services Centers are “intended to provide minimal areas of service and convenience uses to meet the frequent needs of nearby residents.”

RECOMMENDED ZONING CHANGES

Recommended zoning changes generally apply when locating neighborhood mixed-use centers in the four commercial zones:

- Neighborhood Service
- Community Service
- Corridor Commercial
- General Commercial
158TH AND WALKER ROAD
The 158th and Walker Road location meets the criteria of being close to residential neighborhoods, having frontage on a well connected road, and is currently zoned for Community Service which allows both commercial and residential development. This site currently provides commercial uses for the community, therefore developing a mixed use center here would not require an overall zone change. However, the adjustments to the Community Service designation, identical to those discussed in the aforementioned Hall and Allen example, would allow for the type of development appropriate for a neighborhood mixed-use center.

The site contains a substantial amount of surface parking. Reducing minimum parking requirements from the current 2.7-3.3 spaces per 1,000 square feet of gross floor area would allow a larger portion of the parcel to be developed and buildings to locate closer to the street. A shared parking analysis and implementation program could help ensure that there is sufficient parking. The reduction in parking requirements should be combined with the consideration of alternative methods for reaching the destination. Assessment of intersection improvement needs, new crosswalks, bike routes and pedestrian connections to encourage alternate modes of travel should also be a part of the small area planning process.

FIGURE 12: 158TH AND WALKER ROAD
**IMPLEMENTATION MATRIX**

The Civic Plan process was focused on developing implementable solutions for the city's future. In keeping with that objective, the following strategies have been categorized by likely implementation phase and ranked by priority. They reflect the following criteria:

- Initiatives that have had strong resonance with the community
- Initiatives that are achievable in the short term and can have an immediate impact
- Initiatives that set in place the policies, code amendments or programs that lay a foundation for future actions or developments
- Initiatives that can leverage potential financing resources

The full matrix of strategies is also available, and will serve as a working document for implementation of the Civic Plan. It should be noted that the matrix is meant to serve as a guide and should be a flexible document. Opportunities to implement long-term strategies sooner than expected may come up, and the city should be ready to act when they arise.

**TABLE 8: CITYWIDE LAND USE STRATEGIES IMPLEMENTATION MATRIX**

| 2011-2015 |
|---|---|
| **Priority 1** | |
| Revise Land Use, Transportation, Economy, Housing Elements of the Comprehensive Plan to reflect Civic Plan strategies. | |
| Update the City’s Economic Development Strategy, include determination of likely employer types, space needs, and relationship to available land supply. | |
| **Priority 3** | |
| Develop policy to monitor the city’s zoning capacity for housing and employment land. | |
| Conduct concept planning and advocate for inclusion of Urban Reserve Area 6B in Metro Urban Growth Boundary to help meet long-term housing and school district land supply needs. | |
| Engage with landowners, businesses, and stakeholders in the area east of Hwy 217 in a small area planning process to identify long-term vision for the employment community and identify infrastructure needs. | |
| Update Development Code: Revise Design Review requirements to allow for expedited permitting, specify design criteria for gateway sites, add new pre-permitting criteria and building prototype designs, provide a low impact development toolbox. | |

<table>
<thead>
<tr>
<th>2016-2020</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Priority 1</strong></td>
<td></td>
</tr>
<tr>
<td>Establish a policy supporting the creation of mixed-use neighborhood centers through a small area planning process. Establish a policy for funding investments identified in adopted small area plans.</td>
<td></td>
</tr>
<tr>
<td>Conduct a pilot small area planning project for a mixed-use center with an interested neighborhood group. Use this process to review regulatory code and recommend adjustments to better support desired development.</td>
<td></td>
</tr>
</tbody>
</table>

Note: Not all priority levels are represented in each section (i.e. some items may appear as being Priority 2 or 3 without a Priority 1 listing). All implementation items are provided in the consolidated matrix.
SECTION TWO: ACTIVE TRANSPORTATION NETWORKS

The Beaverton Civic Plan focuses on pedestrian and cyclist improvements that can improve the safety and quality of Beaverton’s transportation network. The Civic Plan recommends that the recently developed Transportation System Plan prioritize improvements to pedestrian and bicycling routes and infrastructure. Please note that many of the location specific pedestrian issues are addressed in the Central City Strategy.

BICYCLING IN BEAVERTON TODAY

In general, Beaverton has a relatively well-developed bicycle network compared to suburban cities of its size. Since 2003, Beaverton has been recognized as a Bronze-level Bicycle Friendly Community by the League of American Bicyclists. This designation has been renewed through 2011 resulting from continued development of bicycle facilities and implementation of Safe Routes to School programs aimed at improving bicycle access to school for local children. Although only 1.9% of residents’ commute trips are by bicycle, Civic Plan outreach shows that 37% of residents are interested in bicycling regularly for transportation, while 43% would like to bike occasionally in the future. Providing bicycle facilities for a wide range of bicycling skill levels is an important step toward encouraging widespread bicycle use.

BEAVERTON’S CURRENT BICYCLE NETWORK

Beaverton currently offers 48.4 miles of bike lanes on arterials and collectors and 25.9 miles of local and regional multi-use paths. Arterial and collector bikeways form the backbone of bicycle travel in the city. The key north-south corridors used by cyclists include SW Murray Boulevard, SW Scholls Ferry Road, SW Lombard Avenue, SW Cedar Hills Boulevard, and SW Hall Boulevard. With the exception of SW Lombard, these streets carry high automobile volumes and encourage relatively high speed travel for an urban area (between 30 and 40 mph posted speed limits). Bicycle lanes on high-speed and high-traffic volume streets, and gaps in the network, do not encourage broad bicycle use by cyclists of varying skill levels. East-west corridors are direct and typically lower volume route options. Key east-west bike facilities are located on SW Hart Road, SW Davis Road, SW Brockman Street, SW 5th Street, Jenkins Road, Millikan Way, and SW Walker Road. Beaverton’s Transportation System Plan (TSP) identifies
designated bikeways that in actuality are not suitable for bicycle travel. These include SW Allen Boulevard, SW Denney Road, and the portions of Tualatin Valley Highway and Beaverton-Hillsdale Highway without bike lanes. The City should follow its policy of installing bike facilities on these arterial designated bikeways as they are redeveloped.

The key strengths and challenges of the current bike network include:

**Strengths**

In addition to the existing network of bike lanes, Beaverton’s bicycle network includes neighborhood accessway connections through cul-de-sacs, which offer more direct route choices for cyclists. Many neighborhood streets also include traffic calming features such as speed humps and choke points, which help manage vehicle speeds.

Regional off-street multi-use paths and accessways in Beaverton, owned and maintained by the Tualatin Hills Park and Recreation District, provide a low-stress, off-street alternative to bike lanes, and in many cases, a direct cut-through to main arterials. The Fanno Creek regional multi-use path serves a critical north-south transportation and recreation function for the city. Once complete, the path will connect into Central City and other east-west serving bikeways.

**Challenges**

The greatest challenge to improving bicycle travel is insufficient or non-existent crossing facilities and unnecessary signal wait times (especially along Canyon, Farmington, and Allen). Bicycle routes lack wayfinding signage—akin to roads without street and directional signs—making it more difficult to understand the network and negotiate a bicycle trip across the city, particularly for newer cyclists. Additionally, access to new Central City development and transit facilities (Beaverton TC and Beaverton Central) is limited due to long blocks, gaps in the bike lane network (especially on SW Hall and SW Cedar Hills), and a disconnected grid north of Canyon. Although they vastly improve neighborhood connectivity, local neighborhood trails lack wayfinding signage, and present issues such as exposed tree roots, sharp turn angles, and constrained widths that could cause bicycle-pedestrian conflicts. These accessways are also underlit, reflecting a policy choice made to respect the area’s natural resources.
BICYCLE PARKING
Bicycle parking is an essential destination amenity needed to encourage bicycle use and ensure security. Bicycle parking is limited throughout the city, especially within the Central City. Cyclists typically lock their bicycles to sign posts and guard rails, which can cause tripping hazards for pedestrians. TriMet offers short-term bicycle parking (inverted-U) and bike lockers at MAX stations to promote bicycling for the last mile of transit trips. Likewise, TriMet plans to install a secure Bike and Ride facility (similar to the facility found at Sunset Transit Center) with 100 spaces by the end of 2011. The City of Beaverton adopted bicycle parking standards in 1998 in the Engineering Design Manual (Chapter 7), however bicycle parking guidelines have evolved greatly in recent years. This may require amendments to the design manual.

In order to ensure future provision of bike parking, Beaverton Ordinance 3965—found in Development Code Section 60.30—requires the installation of short-term and long-term bicycle parking in new development for a variety of land use types. Although the ordinance recognizes the need for different types of bicycle parking facilities, many of the requirements are not sufficient to accommodate future demand or encourage bicycle use.

BARRIERS TO BICYCLING IN BEAVERTON
Crossing major transportation corridors: Examples include railroad tracks north of Farmington and crossing 5th Street, Hwy 217, Tualatin Valley Hwy, SW Farmington Road, and SW Allen Boulevard.

Disconnected grid: Despite some efforts to fuse the grid with bicycle and pedestrian cut-through paths, the loop-and-lollipop form of Beaverton’s neighborhoods forces cyclists to use roadways with unsafe and uncomfortable conditions for bicycle travel.

Bike lane gaps: Where cyclists are forced to mix with automobile traffic (e.g., SW Hall in Central City and north of SW Allen), in most cases without signage to alert motorists that bicycles will be sharing a travel lane.

Lack of low volume bike routes: Bicycle facilities primarily focus on major traffic streets.

Lack of wayfinding signage: Signage that improves network legibility, especially along neighborhood routes, greatly improves the bicycling experience.

Lack of bicycle parking: Requires accessible and visible short- and long-term parking options, proper design of facilities, and continuing enforcement of codes specifying correct parking rack design.

BARRIERS TO BICYCLING
Addressing some of these barriers to cycling can also help improve pedestrian access throughout the city. For example, infrequent crossings on wide arterial streets can have the effect of dividing one part of the city from another. Additional paths or cut-throughs, especially those designed just for bikes and pedestrians, can connect neighborhoods that before were isolated from one another. Signage and wayfinding systems can serve both cyclists and pedestrians (and even motorists).
COMMUNITY DESIRES

The public outreach conducted for this plan found that roughly 80% of residents would like to bike at least occasionally for all trip types. Based on a small subset of the community—a Civic Plan workshop with about 40 participants—about 13% of residents desire to commute to and from work, compared to the 2% who currently commute by bike. In order to facilitate this shift, the community developed a “wish list” of new or enhanced bicycle connections as part of this plan. The map in Figure 2 illustrates the desired bike connections identified by participants at public workshops.

FIGURE 13: COMMUNITY DESIRED BIKE ROUTES

The community identified desired bicycle connections during a Civic Plan open house.
**PROPOSED BICYCLE NETWORK IMPROVEMENTS**

A critical strategy for encouraging broader levels of bicycling throughout Beaverton is to develop a non-arterial bike corridor network. This network would complement the existing arterial bike network using streets with low traffic volumes, commonly referred as bicycle boulevards. It would include installation of intersection treatments at critical junctures to ensure safety and proper yielding for cyclists and pedestrians, alike.

**TABLE 9: FEASIBILITY ASSESSMENT OF DESIRED BIKE ROUTES**

<table>
<thead>
<tr>
<th>Desired Bike Connection</th>
<th>Direction</th>
<th>Traffic Volumes (ADT2)</th>
<th>Traffic Speeds</th>
<th>Existing TSP Bicycle Network Designation / Actual Facilities</th>
<th>Bike Lane Feasibility Given Existing Roadway Width, # of Lanes, Other factors</th>
<th>Recommended Facility or Alternate Route</th>
</tr>
</thead>
<tbody>
<tr>
<td>SW Allen</td>
<td>E-W</td>
<td>High (22,100–24,600)</td>
<td>High</td>
<td>Designated bikeway / None</td>
<td>Low—insufficient width and traffic volumes higher than typical range for a road diet</td>
<td>Division/6th/5th bike boulevard and Hart/Blakeley bikeway</td>
</tr>
<tr>
<td>SW Denney (west of 217)</td>
<td>E-W</td>
<td>Mod. (11,870–14,952)</td>
<td>High</td>
<td>Bikeway / None</td>
<td>Low</td>
<td>Bike lanes and shared street route on Hart</td>
</tr>
<tr>
<td>SW Hart</td>
<td>E-W</td>
<td>Low to Mod. (5,848–11,295)</td>
<td>Low</td>
<td>Bike lanes west of Murray</td>
<td>Not needed</td>
<td>Shared street bicycle route</td>
</tr>
<tr>
<td>SW Brockman / SW Greenway</td>
<td>E-W</td>
<td>Mod. (11,841–15,433)</td>
<td>High</td>
<td>Bike lanes west of 125th</td>
<td>High (Greenway)</td>
<td>Bike lanes on Greenway (125th to Hall)</td>
</tr>
<tr>
<td>Sorrento-Hyland Trail Connection</td>
<td>E-W</td>
<td>Low (3,342 – 5,716)</td>
<td>Low/Moderate</td>
<td>Designated bikeway / None</td>
<td>Not needed</td>
<td>Shared street route as part of Central bike corridor</td>
</tr>
<tr>
<td>SW Hall</td>
<td>N-S</td>
<td>High (16,457–25,714)</td>
<td>High</td>
<td>Bike lanes (except near Allen)</td>
<td>Low at Allen due to insufficient width</td>
<td>Shared street route on Main</td>
</tr>
<tr>
<td>SW Main</td>
<td>N-S</td>
<td>Low (1,541 – 1,549)</td>
<td>Low</td>
<td>None</td>
<td>Not needed</td>
<td>Shared street bicycle route</td>
</tr>
<tr>
<td>SW Menlo</td>
<td>N-S</td>
<td>Low (2,526–3,526)</td>
<td>Low</td>
<td>None</td>
<td>Not needed</td>
<td>Central bike corridors (variety of bike boulevard treatments)</td>
</tr>
<tr>
<td>SW Wilson/136th</td>
<td>N-S</td>
<td>Low (1,166–2,397)</td>
<td>Low</td>
<td>None</td>
<td>Not needed</td>
<td>Central bike corridors (variety of bike boulevard treatments)</td>
</tr>
<tr>
<td>SW Sorrento</td>
<td>N-S</td>
<td>Low (3,657–6,735)</td>
<td>Low</td>
<td>Bikeway (section south of Hart) / speed humps</td>
<td>Not needed</td>
<td>Central bike corridors (variety of bike boulevard treatments)</td>
</tr>
<tr>
<td>SW Davies/Can/135th/Hyland</td>
<td>N-S</td>
<td>Low (306–3,708)</td>
<td>Low</td>
<td>None</td>
<td>Not needed (except for SW Davies)</td>
<td>Central bike corridors (variety of bike boulevard treatments)</td>
</tr>
<tr>
<td>SW 125th</td>
<td>N-S</td>
<td>Mod. (8,029–10,079)</td>
<td>Low</td>
<td>Bike lanes (Scholls Ferry to Brockman)</td>
<td>Low—lack of street connectivity north of Brockman</td>
<td>Crossing and wayfinding improvements</td>
</tr>
<tr>
<td>SW 130th with Forest Glen Park Trail</td>
<td>N-S</td>
<td>Low (1,248–2,049)</td>
<td>Low</td>
<td>None</td>
<td>Not needed</td>
<td>Crossing and wayfinding improvements</td>
</tr>
<tr>
<td>Fanno Creek Trail</td>
<td>N-S</td>
<td>Low (N/A)</td>
<td>Low</td>
<td>Regional Trail</td>
<td>N/A</td>
<td>Central bike corridors (variety of bike boulevard treatments)</td>
</tr>
</tbody>
</table>
Table 1 evaluates each of the community’s desired bike connections according to several key criteria that affect their suitability as a bike route, including traffic volumes, posted speeds, and existing bikeway designation (in the Beaverton Transportation System Plan). It provides an assessment of bike lane feasibility based on existing roadway characteristics and indicates the recommended facility on the community-identified street, or an alternate route recommended in this plan that helps provide the desired transportation connection.

Recommended Civic Plan bicycle improvements, focused on enhancing bicycle connections into the Central City, consist of:

- Corridor improvements with a range of bicycle boulevard treatments
- Intersection and crossing improvements
- Multi-use path/trail development

These improvements are described more fully in the Central City Strategy.

**MULTI-USE PATH/TRAIL DEVELOPMENT**

Figure 3 identifies potential bike lanes, shared lane streets (marked by sharrow pavement markings), and multi-use path development as well as priority intersection and crossing treatments. All recommended intersection and bike corridor projects are coded and described in greater detail in the Appendix. Although the majority of improvements are focused on non-arterial, neighborhood-serving streets, the recommendations address key network gaps identified in the Beaverton’s TSP along arterial and collector roads—most notably on SW Hall, SW Watson, SW Denney, and SW Greenway. Figure 2 illustrates the current network of bicycle facilities in Beaverton and identifies system gaps that are priorities for bikeway development.

However, the non-arterial focus of this plan supplements the recommended improvements slated in the TSP. The non-arterial bike network is divided into Central, North, West, and East Bike Corridors, each of which employs various types of on-street bicycle facilities and supplemental bicycle boulevard treatments such as traffic calming measures, wayfinding signage, and enhanced crossing features at major roadways (e.g., SW Allen, SW Hall). Several other east-west connectors are ripe for bicycle boulevard development. These include Division, Hart, and SW 152nd / 155th.
FIGURE 14: EXISTING BICYCLE NETWORK AND TSP PLANNED IMPROVEMENTS

Source: Nelson\Nygaard
FIGURE 15: PROPOSED BICYCLE NETWORK

Recommended Actions
- Bike boulevards
- Bike lane
- Sharrows
- Multi-use path or trail connection
- Intersection/Crossing Improvement*
- Corridor Improvement*

Existing Facilities
- MAX
- Bike lane
- Regional or community trail
- Parks
- City limits
- Freeways
- Major roads
- Local streets

Source: Nelson\Nygaard

* Icon letters/numbers correspond to project sheets in the Appendix.
In addition, roadway extension projects planned in Beaverton’s TSP—including Millikan, Rose Biggi, and other new north-south street connections—will vastly improve bicycle access in the Central City and to MAX stations. If implemented, existing bike lanes on Millikan Way will extend eastbound to SW 117th Avenue, while Rose Biggi will serve as the primary bicycle connection between Beaverton’s Old Town (south of Farmington) and emerging development and activity centers north of Canyon.

Several proposed corridor improvements identified in the Civic Plan are located along Washington County owned streets. These improvements would be implemented just outside of the City of Beaverton, although many link two parts of the City or provide a critical transportation function for Beaverton’s cyclists. The City and County should partner to provide these critical bicycle network linkages, but the responsibility of implementation falls on Washington County.

Separated bicycle facilities should be expanded with the planned extension of the Fanno Creek multi-use path northward to Beaverton Transit Center, construction of a new trail along Beaverton Creek, and an improved trail connection through Hyland Forest Park.

**KEY OPPORTUNITIES**

- Build upon Beaverton’s rich network of neighborhood streets and traffic calming efforts by developing a network of bike routes
- Improve bicycle access to Beaverton’s Central City and future activity centers using facilities on neighborhood streets
- Leverage future roadway construction and street extensions to develop bicycle facilities north of Canyon Road and improve connections to Beaverton Central and Beaverton Transit Center
- Partner with Washington County to develop bicycle improvements on County-owned streets where cyclists from both Beaverton and the County circulate between the two locales.

---

**COMMON BICYCLE IMPROVEMENT AND PROGRAM TERMS:**

- **Bike Lane**: Bike lanes are designated facilities for the exclusive use of cyclists, usually marked with striping, signs and pavement markings. Bike lanes are often a part of the existing road network, located between the travel lane and the parking lane (if present).
- **Shared Use Path**: These trails or paths are for the exclusive use of bicyclists and pedestrians that provide additional connections separate from sidewalks and roadways.
- **Shared Lane Marking**: Also known as “sharrows” (from the combination of share lane + arrow), these markings indicate that the roadway is shared by automobiles and bicycles. Sharrows alert drivers that bicycles use the same travel lane, help bicyclists position themselves to avoid the “door zone” from parked cars, and encourage safe passing.
- **Bicycle Boulevard**: A bike boulevard is a low speed, low traffic street optimized for bicycle traffic. While local traffic is allowed, bicycle boulevards use traffic calming elements to discourage through traffic that could utilize other routes.
- **Traffic Calming**: Traffic calming refers to physical modifications to roadways that slow traffic, including speed humps, speed tables, raised intersections, and mini-roundabouts
- **Wayfinding System**: Bike route signage gives cyclists roadway information to assist in navigating the bicycle network. The best signage gives bicyclists directions, including destinations that can be reached and approximate distances.

*Source: Pedestrian and Bicycle Information Center, Bicyclinginfo.org.*
ACTIVE NETWORK WAYFINDING SYSTEMS

Driving through the city, street signs are universally available to guide people to where they need to go. On a bike or on foot, the same is not true, but it could be. The City of Beaverton has an opportunity to build specialized wayfinding systems to guide bicyclists, pedestrians, and motorists around the Central City (and along future citywide bike boulevards).

Signage should make it easier to locate public parking facilities, locate specialized bicycle infrastructure such as bike boulevards, and reach destinations using the safest, most comfortable, and most direct routes using sidewalks and an expanded bicycle network. Beaverton’s wayfinding system should be phased, beginning in downtown and expanding as facilities grow.

Pedestrian wayfinding often incorporate destinations, directions and/or a map to guide visitors around. It also provides a terrific opportunity to incorporate public art throughout the city, aiding visitors and bringing interest to the streets.

The City of Portland has installed over 100 pedestrian wayfinding signs in downtown and surrounding neighborhoods. Each sign is sponsored by a local business or entity residing within the district, which helps to offset the cost of the signage system.
BIKE NETWORK WAYFINDING
To encourage biking as an alternative to driving, travelling by bike must be convenient, safe, and easy to begin as a novice. It is vital to build a robust wayfinding system that is integrated with other components of the bicycle network. Beaverton’s future bike network will include multiple facilities of many types, but the bike boulevards may not be readily apparent since they are located off the main arterials on less visible connected side streets.

Signage is important for safety as well as wayfinding. Informative signs can familiarize users with the bikeway system; identify the best routes to significant destinations; help address misperceptions about time and distance. All this is done in an effort to overcome the barriers that prevent large numbers of would-be cyclists who are “interested but concerned” and get them on the road.

The City of Berkeley, California has a world-class bicycle network, and wayfinding signs work together with the other elements of the system. Important components of such a system include: identification (“this is a bicycle boulevard” or “this way to the bike boulevard”); destinations and distances; special treatment of existing signs (see Clinton Street sidebar); components that are reflective and easily visible at night; and system-wide maps for trip planning.

CLINTON STREET MAKEOVER
One of the oldest and most used bike boulevards in Portland, Clinton Street has been chosen for an enhancement project that includes improved signage, pole and pavement markings, public art, and two new on-street parking corrals. The project’s ultimate goal is to simply communicate “this is a bike boulevard.” All users will understand they are travelling a street prioritized for cyclists, and drivers can choose to relocate to parallel routes. If successful, the program may be expanded to other bike boulevards across Portland.
CONSIDERATIONS REGARDING TUALATIN VALLEY HIGHWAY AND EXTRA-JURISDICTIONAL PLANNING

Washington County is in the beginning stages of a study and livability plan for the Aloha-Reedville area, which is located directly west of Beaverton. This three year planning effort is intended to promote livability and sustainability, and prioritize future improvements within this unincorporated area located between Beaverton and Hillsboro. The County’s opportunity mapping revealed the area has low or inconsistent access to transportation options and living-wage employment. The plan will focus on affordable housing, transit connections, infrastructure improvements, and opportunity access.

Among the many subjects to be considered will be the form and function of the Tualatin Valley Highway (TV Highway) corridor that connects Hillsboro, Aloha, and Beaverton. One of the specific questions to be addressed is whether this section of TV Highway should be expanded to seven lanes (including three through lanes in each travel direction plus a center lane that can be used for protected left turns at designated locations).

Priorities set during the Aloha-Reedville planning effort will have an important influence on Beaverton's own planning initiatives, and vice versa. It is crucial that the future design and function of TV Highway is not placed at odds with Beaverton’s vision for the roadway and its Central City revitalization.

Within Beaverton’s Central City, TV Highway feeds directly into Canyon Road. Improvements and traffic calming measures proposed for Canyon Road are at the core of Beaverton’s Central City Strategy. The priority in recommending these changes is to transform Canyon Road into a place that supports pedestrians, cyclists, and transit riders, as well as local and regional vehicular traffic. This has been addressed in a number of ways, including strategies for enhancing the urban landscape with a strong street wall defined by building frontages; slower through-travel speeds on Canyon Road; narrower lanes; restricting the number of through lanes on Canyon Road to two in each direction; and wider sidewalks.
As Beaverton proceeds with the coordination with ODOT, planning, and implementation of roadway improvements along Canyon/TV Highway, it is critical that the city engage and remain “at the table” when changes are discussed for other segments of this corridor. More broadly, as a major stakeholder in the future of the larger area, Beaverton should make it a priority to participate throughout the three year Livable Community Plan process.

**RECOMMENDED STRATEGIES FOR COORDINATION ON ALOHA-REEDVILLE**

1. As a major stakeholder, the City of Beaverton should stay informed and involved throughout the three-year planning process in Aloha-Reedville.

2. This planning process should serve as an opportunity to work with neighbor jurisdictions to strengthen collaborative relationships and realize common goals. One important component of the Aloha-Reedville Study/Plan is development of Urban Service Agreements between the County and neighboring jurisdictions, including Beaverton.

3. Use the strategies and underlying goals of the Civic Plan to guide the city’s involvement and advocacy. Major changes to the size, traffic load, or character of roadways that connect Beaverton to Aloha-Reedville (especially Tualatin Valley Highway) will influence the roadway’s character in Beaverton as well.
IMPLEMENTATION MATRIX

The Civic Plan process was focused on developing implementable solutions for the city’s future. In keeping with that objective, the following strategies have been categorized by likely implementation phase and ranked by priority. They reflect the following criteria:

- Initiatives that have had strong resonance with the community
- Initiatives that are achievable in the short term and can have an immediate impact
- Initiatives that set in place the policies, code amendments or programs that lay a foundation for future actions or developments
- Initiatives that can leverage potential financing resources

The full matrix of strategies is also available, and will serve as a working document for implementation of the Civic Plan. It should be noted that the matrix is meant to serve as a guide and should be a flexible document. Opportunities to implement long-term strategies sooner than expected may come up, and the city should be ready to act when they arise.

**TABLE 10: CITYWIDE ACTIVE TRANSPORTATION STRATEGIES IMPLEMENTATION MATRIX**

<table>
<thead>
<tr>
<th>2011-2015</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Priority 1</strong></td>
<td></td>
</tr>
<tr>
<td>Revise Land Use, Transportation, Economy, Housing Elements of the Comprehensive Plan to reflect Civic Plan strategies.</td>
<td></td>
</tr>
<tr>
<td>Engage in the Aloha-Reedville planning process to ensure that the Central City is not adversely affected by plans for TV Highway corridor.</td>
<td></td>
</tr>
<tr>
<td><strong>Priority 3</strong></td>
<td></td>
</tr>
<tr>
<td>Update the bicycle parking design requirements from 1998 standards and adopt standards to provide for on-street bike parking corrals in the Central City.</td>
<td></td>
</tr>
<tr>
<td>Plan and construct immediate-term bike facility improvements.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2016-2020</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Priority 2</strong></td>
<td></td>
</tr>
<tr>
<td>Plan and construct short-term bike facility improvements.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2021-2025</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Priority 1</strong></td>
<td></td>
</tr>
<tr>
<td>Plan and construct mid-term bike facility improvements</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2026-2030</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Priority 1</strong></td>
<td></td>
</tr>
<tr>
<td>Plan and construct long-term bike facility improvements</td>
<td></td>
</tr>
</tbody>
</table>

Note: Not all priority levels are represented in each section (i.e. some items may appear as being Priority 2 or 3 without a Priority 1 listing). All implementation items are provided in the consolidated matrix.
APPENDIX ONE: SMALL AREA PLANNING PROCESS

WHAT IS THE PROCESS?

The small area plan development process entails:

- An inclusive public process
- Established level of analysis
- A standardized set of tools
- Consideration of citywide needs and goals

There are four positive consequences for having a standardized process to develop small area plans. First, citizen and staff time will be better utilized. Those who develop plans often learn some of the same lessons and come to the same conclusions as those who developed plans before, but only after spending valuable time reinventing the wheel. Second, a smooth process assures broader participation, more timely completion and faster response to changing conditions. Third, the content of each plan is improved because time saved can be spent on evaluating citizen input, thorough technical analysis and clearly articulated implementation strategies. Fourth, administering a completed small area plan becomes easier because plans are in a similar format and address similar issues with similar recommendations and tools. As a result, small area plans will be undertaken and updated more often, administered more easily and include more effective recommendations to improve conditions in the subject area.

Before beginning the plan, some basic research on the area, including a review of existing plans and studies should be completed so that a well-established set of steps can be outlined. Every plan must incorporate these steps, although the details may vary from plan to plan. The following sections describe the major steps, or phases, and the order in which they come in the standardized planning process. The time and effort spent on each phase will vary depending on the characteristics of the area and experience of the participants. Creating a timeline is an easy method for ensuring the timely progress of a plan. The actual plan — the written document — may be arranged so that its contents best relay the information, so long as the plan document is well organized, clear, concise and tailored to the findings.
PHASE 1 – VISION STATEMENT

The vision statement is a concise description of the area at some point 10 to 20 years in the future. There also may be guiding principles to further advise the planning process and recommendations. Defining the purpose of the plan for the city and for the other stakeholders early in the process is an important task. Define the primary goal(s) in undertaking the plan. If necessary, these goals, and the overall vision statement, can be adjusted through the process.

PHASE 2 – BACKGROUND AND INTRODUCTION

This first phase sets the stage for the planning process to come. Typical components include:

DEFINING THE PLANNING AREA AND SUBAREAS, IF APPLICABLE

The planning area should be a community of like interests, natural boundaries, definitive architecture, or other similar characteristics. If the planning area is of significant size or if some sections have perceived or real differences, the subareas can be defined within.

DISCUSSING THE PLANNING PROCESS

Before undertaking the development of a small area plan, an initial schedule should be established. The schedule should outline steps, timelines and responsibilities. The plan’s vision statement can act as a guide to set priorities and identify key stakeholders.

CREATING A PUBLIC INVOLVEMENT STRATEGY AND IDENTIFYING STAKEHOLDERS AND PARTNERS

Public involvement is a key element to ensuring each community member has the opportunity to voice his or her opinions during small area plan development. Issues and solutions addressed in small area plans often have an effect on more than just that area. For instance, nearby residents, business owners and their employees all might be affected by transit improvements recommended in a corridor study, even if their business or home is not within the study area boundary. A successful public involvement strategy includes a wide range of mechanisms for people to share their ideas, questions and concerns. The strategy should inform a broad variety of citizens, provide ample opportunities for participants to provide feedback, and give more involved citizens an opportunity to interact directly in the process.
It is important to involve community members at key steps throughout the planning process, such as during the development of the vision statement, after research completion and key findings, during issue and solution development and at the final draft stage. Depending on the size and complexity of the plan or group, several of the methods described below may be used for one planning effort. No matter which methods are selected, the goal is to engage as many citizens as possible in an efficient, effective and timely manner.

**The following are some common methods for citizen participation.**

**Workshops**
A workshop is where participants actively design a future for the planning area using maps or aerial photographs. For example, participants may identify specific land uses they want to change, specific landmarks to be preserved, locations for additional growth, changes to the street cross sections, or key public improvements. A workshop is an informative way to gain knowledge of how residents view and interact with their community, as well as a way to make participants feel like their individual concerns are being addressed.

During the Civic Plan process, workshop participants were divided into small groups and given large-scale maps of the city, stickers representing various development types, and markers. Participants were asked to place stickers where they, as a group, would like to see the given development type. The markers were used to delineate barriers, gateways, problem areas or any other points of significance. These maps were then analyzed and used to create the Civic Plan concepts and strategies. A similar process can be used at the neighborhood scale.

**Citizen Advisory Committee**
A citizen advisory committee is a group of informed citizens representing a full range of interests that meets regularly to review information and products and make recommendations as the plan is being developed. They are useful as a sounding board for new ideas, to ensure that the plan’s content reflects the values of citizens and stakeholders in the area, and to develop innovative ideas.
Beaverton’s existing Neighborhood Association Committees can serve as a starting point for forming a Citizens Advisory Committee, if the planning area is generally focused on an existing neighborhood geography.

**Newsletters and Surveys**

Newsletters and surveys are an easy way to inform and solicit ideas from a broad constituency. They are also an excellent way to grab the attention of community members who would not otherwise be able or willing to participate in the planning process. Generally, most recipients will not spend a great deal of time reading a newsletter and should be designed to be read in no more than 10 to 15 minutes, containing a maximum of 2,500 to 3,500 words. Therefore, it has to be visually appealing with informative graphics and articles to capture interest. A newsletter should highlight the main purpose, issues, and goals of the project.

Response surveys are a way to discover important issues and opportunities near the beginning of the planning process. Survey questions should be simple and concise, not leading to a desired response (this may be done unconsciously by the author) and open to opinions to a diversity of opinions.

Newsletters and surveys can be delivered through a variety of means, such as the mail, as a newspaper insert, or through the Internet. An increasingly popular survey form is the “visual preference survey.” Visual preference surveys allow community members to rate various concepts based on their visual appeal. Concepts may include architectural styles, traffic calming measures, urban design and street characteristics. The survey results give valuable feedback to citizens’ likes and dislikes. A visual preference survey can be available on the Internet and/or at open houses and workshops.

**Open Houses**

Open houses are a good way to keep citizens informed while giving them the opportunity to discuss issues with planners and stakeholders. Open houses not only allow citizens to get questions answered but also to provide feedback directly to those involved in the plan development. Whether a formal meeting with presentations or an informal gathering around displays and maps, periodic updates on the plan’s progress can be easily showcased in the open house format. Open houses should be fun, informative and get people talking. They can even help foster a sense of community in a neighborhood, district, or corridor, helping to motivate support for the planning process.
STRENGTHS, WEAKNESSES, OPPORTUNITIES AND THREATS (SWOT)
SWOT is an effective participation method designed to engage many ideas from many people on an equal basis. Participants are asked to identify the strengths and weaknesses of, the opportunities present in, and the threats facing their area. The resulting list can be used throughout the process to develop a vision statement, check identified issues and verify that implementation covers those issues. It also can help focus planning efforts on issues that have the greatest impact on the area.

PHASE 3 – PLANNING CONTEXT
Every area of the city has a planning context based on already adopted plans and previous studies. This phase defines the context, which may include some or all of the following:

COMPREHENSIVE PLAN
The Comprehensive Plan lays out city-wide goals, policies and objectives. Small area plans should strive to meet and adhere to these when formulating individualized goals and policies.

SMALL AREA PLANS ADOPTED AS SUPPLEMENTS TO THE COMPREHENSIVE PLAN
Existing small area plans refer only to their stated planning area. However, they can be helpful in determining strengths and weaknesses of tools. Existing plans for areas adjacent to a proposed plan area can be especially useful.

TRANSPORTATION, URBAN DESIGN, UTILITIES, NATURAL RESOURCES, OR OTHER SPECIFIC STUDIES
Often, the City researches specific issues that may be germane to a small area plan. For example, the Civic Plan bicycle network assessment and recommendations may provide valuable and detailed information for small areas.

STATE OR FEDERAL POLICY DIRECTION THAT MAY BE APPLICABLE
State and federal policies generally supersede local policies and should be considered during the planning process.
PHASE 4 – ASSESSMENT

Assessment is the inventory and analysis phase of the process. It includes an inventory of existing conditions and an analysis of the issues to be addressed by the plan. The assessment process may include:

DEMOGRAPHIC TRENDS

Analysis of demographic trends should include past trends for the area, available projections and comparison with the city for population and household characteristics, income and poverty rates, education levels, and human services. Demographic trends can help to track changes in the area as well as identify potential issues. An area’s strengths and weakness can begin to emerge through comparisons with city-wide demographics.

NATURAL SYSTEMS

Analysis of environmental quality should include topics such as physical setting and topography, tree canopy (the uppermost spreading branchy layer of trees which provides cover and shade), street trees, flood plain, brownfields (abandoned, idled, or under-used industrial and commercial facilities where expansion or redevelopment is complicated by environmental contamination), and localized air and water quality issues. The focus and depth of the discussion will depend on the attributes of the planning area.

LAND USE AND ZONING

The existing land-use regulatory framework (zoning, view plane, historic structures and districts, design review districts) must be defined and mapped. The same must be done for the existing land uses and built form attributes. A comparison of these can identify needed buffers and transitions between different uses and densities and significant discrepancies between land use and zoning. Another component is to define the likely change agents such as significant land assemblages, opportunity sites, and major proposed projects.

HOUSING

Analysis of housing should include housing characteristics and change over time, an inventory of housing by type, home ownership and tenancy trends, and housing cost compared to city and metro area. Opportunities to meet a broader range of housing types and prices also should be identified, in keeping with the city’s overarching housing strategy.
MOBILITY
Major components of mobility may include the street system (overall street pattern, street classification, street type), traffic patterns and volumes, parking issues and inventory, transit routes and frequencies, bike routes, pedestrian connections (especially related to destinations), and issues relating to pedestrian and bike facility safety, completeness, and attractiveness. In some planning areas, attention may be given to identifying existing or potential pedestrian or transit priority areas and to neighborhood traffic management issues.

ECONOMIC ACTIVITY
Economic activity will vary considerably from one area to another. Where considerable employment, retail and other activity is an important present or future attribute, information about existing businesses and employment, retail, and industrial areas and sub-areas is essential. Other information may include estimates of employment by category and inventory of other economic generators, significant retail shopping patterns in and out of the planning area, and development trends. In some cases, it may be appropriate to conduct a market study.

CULTURAL RESOURCES
The key attributes of neighborhood issues may include the social fabric of the area (community organizations and informal gathering places, for example), communication, and an inventory of community facilities (schools, recreation centers, religious institutions, senior centers, libraries, other public facilities, and major private facilities). In some areas, public safety and health issues (crime rates) will be significant.

Artistic and cultural facilities not only increase an area’s economic base by drawing people to the vicinity, but they also increase the education and awareness of area residents.

Arts and culture is sometimes an important component for an area. Artistic and cultural facilities not only increase an area’s economic base by drawing people to the vicinity, but they also increase the education and awareness of area residents. An inventory of large and small arts and cultural facilities often is the best way to depict this characteristic.

PHASE 5 – PLAN RECOMMENDATIONS
The plan recommendations must incorporate three components: a concept plan for the planning area (based on public and Community Advisory Committee input); plan recommendations in the form of goals and objectives, issue identification and resolution; and civic responsibilities.
PHASE 6 – PLAN IMPLEMENTATION PROGRAM

The final component of the plan is to create an implementation program by applying the tools described in this handbook to achieve the plan recommendations. There are three types of tools — regulatory, public infrastructure, and public-private partnership — that need to be considered and used to achieve the plan recommendations. Other components of the implementation program may include discussion of the capacity and resources for implementation (public, private, nonprofit, organizational) and assignment of priorities, responsibility and schedule. Follow up for evaluating progress and setting new priorities also should be discussed.

In addition to the basic order and minimum content, each plan should accomplish the following:

SUMMARIZE RECOMMENDATIONS
Recommendations made during the plan process should be summarized in a concise and understandable manner. An additional section of the plan should outline recommendations through a more detailed analysis.

DETERMINE PRIORITIES AMONG RECOMMENDATIONS
The plan should determine priorities among its recommendations based on need, benefit and feasibility. A matrix showing priorities, timeline for implementation, responsibility and estimated or known costs (if any) is a simple way to represent the information.

USE STANDARDIZED TOOLS
Land-use and transportation conclusions in the small area plans should use standard tools, available Citywide, that are explained below. If a new tool is needed, it will be developed for use in other neighborhoods as well. The use of standardized tools keeps the administrative burden on the City within a reasonable level and enables recommendations to be drafted and implemented more quickly.

USE REGULATORY TOOLS
Regulatory tools can be implemented to shape, encourage and discourage future land-use changes.

WHAT IS AN OVERLAY ZONE?
An overlay zone district is a zone district that modifies a base zone district, but it does not replicate the breadth of the base zone. An overlay zone district is essentially “laid over” the base zone district.

For example, a commercial zone district may have an overlay zone that enhances ordinances on pedestrian friendly design such as wider sidewalks, elevated design standards and lower parking standards.
ZONING
- Zoning tools include:
  - Amend language in code (Note: Amending code language is often difficult because it affects all properties in a zone, not just properties within the planning area.)
  - Rezone selected parcels to a new district
  - Apply fundamental overlay zones — e.g. transit or pedestrian overlay
  - Utilize a specific overlay zone district

The advantage of zoning changes is that they can correct both city-wide and localized problems at the same time. However, zoning changes can be time consuming, politically charged and use finite city resources.

LANDMARK DISTRICT
For those buildings or districts with architectural, historical or geographical significance, a landmark district may be recommended to provide protection from demolition or inappropriate remodeling. However, not all areas may qualify for landmark distinction, and strict policies may not appeal to all property owners.

PUBLIC INFRASTRUCTURE TOOLS
Public investments in an area have an immediate impact and are not subject to market conditions and private decisions. However, they are subject to a competitive city budgetary process. Plans should prioritize desired investments to ensure that the most beneficial investments are addressed first. Recommendations from city-wide and small area plans will be included in the annual budget process.

TRANSPORTATION INVESTMENTS INCLUDE:
- Street improvements, including, Green Street tools, medians, and traffic calming
- Transit service improvements
- Improvements to transit stops, including pedestrian connections
- Bike lanes or boulevards, paths, and wayfinding systems
- Sidewalk improvements and completion
- Priority signals for pedestrians, bikes and transit
- Street trees/widened walks
- Street furniture
- Parking structures and/or surface lots (shared-use)
PARKS
New parks and open spaces have obvious benefits to the community and surrounding property owners. Combining facilities such as parks and open space with storm water quality and detention facilities are important but require additional operation and maintenance coordination.

- Green streets — street designed to capture, absorb and filter runoff using rain gardens, planters, swales, porous pavement, tree canopy and other methods.
- Parkways — streets with broad medians and treelawns
- Parks — neighborhood, community or regional scale
- Open spaces — natural or enhanced areas
- Plazas — public space within more dense urban districts

PARTNERSHIP TOOLS
In the absence of a strong private development market that can produce positive change without public money, partnerships can be formed between public and private partners. Partnership can help stimulate additional private investment by changing market perceptions.

Examples of investments that can occur through partnerships include:
- Shared parking lots or garages
- Public plazas or parks
- Affordable and workforce housing
- Land assemblage
- Business recruitment
- Façade improvement loans
- Small scale business incubators
- Pilot or catalyst projects
- Brownfield mitigation

Park facilities are popular and sought after but can be expensive to create, operate and maintain.
CIVIC RESPONSIBILITIES OF SMALL AREA PLANS

A basic tenet of small area plans is that specific areas cannot solve problems at the expense of their neighbors or the City as a whole. Each small area should address a set of civic responsibilities that will improve the City’s livability. One example is that it is a civic responsibility to provide many different housing types to accommodate people of different ages and income levels. By addressing this responsibility, Beaverton can be an accessible place for many different types of individuals and families.

AFFORDABLE HOUSING

The need for a broad range of housing types and prices throughout the City is very important to the quality of life for Beaverton, as well as the entire region. A diversity of housing is essential in every part of the City. Housing types that meet the needs of each particular stage in life enables a resident to age within the same neighborhood. This allows the young and old to live in the same neighborhood with their parents and children, if they so choose. Affordable housing also can mean modest-wage workers living closer to their jobs, decreasing transportation expenses and increasing transportation efficiency.

TRANSPORTATION SYSTEM INTEGRITY

Having a connected regional system of roads and rapid transit is essential to continuing the metropolitan area’s vitality. For example, there may be an opportunity to increase sidewalk width, provide on-street parking or add a transit stop along certain commercial streets. However, to reroute a transit line may have adverse impacts on other parts of the City. This does not mean that it can never be considered, but the impacts external to the small area must be evaluated.

TRANSPORTATION ORIENTED DEVELOPMENT (TOD)

TOD is an example of another transportation element that has broad importance for the City. TODs bring employees and residents within walking distance of high-frequency transit routes, and, as a result, improve the efficiency of the regional transportation system.
COMMUNITY FACILITIES
While most community facilities are viewed positively, those that are deemed less desirable nonetheless often are essential to serving the needs of the neighborhood and the City. Some of these facilities are best clustered, while others need to be dispersed throughout the City. Every plan needs to deal with existing facilities and potential expansions, as well as new facilities. Some major facilities will require special planning and site selection processes.

CONSISTENCY WITH ADOPTED PLANS
A proposed plan must be consistent with already adopted plans and plans for adjacent small areas. Substantial differences between the proposed plan and adopted plans must be identified. In some cases, the difference may point out a new trend that should be incorporated into the other plans; if not, the proposed plan should be adjusted. The Planning Commission's review and recommendations regarding proposed plans will take this into consideration.

REGIONAL COORDINATION
Regional coordination is an important feature of planning in the Metro area. In some cases, consistency with regional smart growth and transportation policies may take priority over local neighborhood recommendations.
HOW DOES THE PLAN GET IMPLEMENTED?
Because small area plans are so important in helping direct future resources, adoption involves a thorough evaluation, as well as formal action. The process, in order, is as follows:

1. A completed plan draft is formally submitted to the Planning Director.
2. The Planning Director directs a staff-level review of the plan and recommends changes as needed. The recommended changes, if any, are reviewed by the entity that drafted the plan, and then a response to the recommendations is submitted.
3. The Planning Director transmits the revised plan to the Planning Commission for a work session to review the contents, committee recommendations and compatibility with citywide plans, goals, and objectives.
4. The Planning Commission conducts a public hearing and makes a recommendation to City Council based on the review committee’s findings and public testimony.
5. City Council acts on adopting the proposed plan as a supplement to the Comprehensive Plan.
6. The adopted plan is put into digital format and published electronically. Limited numbers of printed copies will be available.
APPENDIX TWO: BICYCLE AND PEDESTRIAN DESIGN TOOLBOX

The bicycle and pedestrian strategies identified in the Beaverton Civic Plan intend to improve the transportation and recreational experience for those that walk and bike throughout the city. The following section is a design and policy toolbox comprised of proven, and in many cases, innovative approaches to enhancing the bicycle and pedestrian environment. Each design type listed below is recommended in the Civic Plan, thus this section describes their benefits and application. These interventions constitute only a fraction of bicycle and pedestrian facilities used around the nation. However, these select design options provide context appropriate countermeasures to improving active transportation in Beaverton.

BIKE LANES

Bike lanes are the most visible and apparent means of encouraging cycling on-street, and they make up the bulk of Beaverton’s current bicycle network. Striping bicycle lanes on roadways defines visible space for bicycle users separate from vehicle space and allow users of either mode to have more predictable movements with respect to the other. Generally, bike lanes should be considered on streets with over 10,000 average daily traffic (ADT) and 85th percentile travel speeds of 30 mph or higher. Some local and collector streets with wide curb lanes that do not meet these thresholds should be considered for bike lane striping as these streets encourage higher speeds than posted. Bike lanes should be between 5 – 6 feet minimum, the latter being the preferred width when striped along on-street parking in order to mitigate conflicts with car doors. The City of Beaverton’s bike lane width standard is five feet.

SHARED LANE DESIGNATIONS

Shared lane markings, more commonly known as sharrows due to their chevron-like design, direct cyclists out of the “door zone” and inform motorists to share the road. Streets that use these pavement markings should be supplemented by “Bicycles May Use Full Lane” signage (sign R4-11 in the MUTCD). A shared street environment should be considered on low volume and low speed neighborhood streets—although sharrows are permitted on highways, arterials, and roadways
Figure 1: Proposed Bicycle Network

Source: Nelson\Nygaard
with a 35 mph speed limit. While bicycle lanes delineate a separate space for primary use by cyclists, they cannot be provided on all streets without modification to street dimensions at great cost and community impact. In these cases, shared use streets complement the on-street bicycle lane network.

**MULTI-USE PATHS**

Not all cyclists are comfortable using on-street facilities for bicycle trips. Multi-use paths and trail facilities allow them to enjoy a cycling experience away from the street. Multi-use paths provide a recreational facility that allows interface with Beaverton’s natural assets. Beaverton boasts of a high quality multi-use path – Fanno Creek multi-use path – that serve as a critical north-south bicycle and pedestrian corridor. This facility is well-used by Beaverton’s utilitarian and recreational cyclists as a direct facility that is separated from vehicular traffic. Future multi-use path development should aim for 12 – 14 feet (FHWA guidance) in order maximize user comfort and reduce bicycle-pedestrian conflict (10 feet is the accepted minimum). Some key common issues with regards to designing separated off-street facilities include poorly designed intersection crossings and lack of wayfinding signage to re-integrate users onto on-street facilities. These considerations are of critical importance and are addressed throughout the bicycle and pedestrian strategy.

**BICYCLE BOULEVARDS**

Bike boulevards utilize a range of treatments in order to establish bicycle priority by managing vehicle speeds and volumes. These treatments are categorized into five elements: signage, bicycle priority and pavement markings, intersection treatments, traffic calming, and traffic diversion. Traffic diversion—engineering intersection to force motor vehicle turn movements while allowing bicycle to proceed through the intersection—is a common bicycle boulevard feature, although implementation can be politically difficult. Residents living along bike boulevards generally perceive bike boulevards as positive community assets—even as vehicular access is managed (See the linked report on residential perceptions of bike boulevards). Traffic diversion would not likely work where bike boulevards cross arterial intersections in Beaverton due to their primary function of facilitating neighborhood access. However, internal neighborhood diversion should be considered for application. Traffic diversion should be considered along streets that may see increases in traffic volume or bicycle demand, using the City’s existing Traffic Calming Program criteria.
INTERSECTION AND MERGE TREATMENTS

Bicycle and vehicle travel lane interactions are most complicated at intersections. Bicycle lane striping does not commonly extend through an intersection, but instead stops at the near-side stop bar and starts again on the opposite side of the farside crosswalk. As stipulated in the MUTCD, where vehicle or bus traffic is anticipated to travel into or through the bike lane, such as with the presence of right-turn lanes or bus stops, bike lane striping should be dashed instead of solid, with proper “Begin Right Turn Lane - Yield to Bikes” signs. Right turn lanes create conflicts between vehicles that are turning and the cyclists that continue straight, in which case the vehicles are required to yield. The pavement markings shown below display the proper markings for a continuing bike lane between a continuing vehicle lane and a right-turn lane and demonstrate a color treatment applied to the bike lane through the intersection approach.

Bike boxes are an experimental intersection countermeasure that further reduce conflicts with right-turning vehicles (proven reduction in “right-hook” events) and offers bicycle priority at intersections. Bike boxes should always be combined with right turn on red (RTOR) restrictions to eliminate vehicle encroachment into the facility. In addition, green-colored turn boxes provide safe and comfortable left turn queuing where merging to a left turn pocket is difficult or dangerous. See Project E in the Appendix for more information on potential applications.

BICYCLE AND PEDESTRIAN ACTIVATED SIGNALS

Bicycle and pedestrian signal actuation at intersections and crossings is a critical element of improving the active transportation experience in Beaverton. Bicycle and pedestrian activated signals initiate bicycle/pedestrians signal phases, while reducing signal delay and travel times. Two examples of user actuation are bicycle loop detectors and pedestrian activated hybrid signals (e.g., HAWK signals and Rectangular Rapid Flashing Beacon):

BICYCLE LOOP DETECTORS

Because bicycles are unable to trigger larger inductor loops, bicycle loop detectors provide invaluable savings in signal delay. Bicycles place their wheels on the pavement marking and the specially designed inductor loop recognizes the presence of waiting bikes.
RECTANGULAR RAPID FLASHING BEACON (RRFB)
RRFB signals are user activated signal beacons that use a series of rapid amber flashes from LED indicators to force motorists to yield. These beacons along with crosswalk signage are mounted onto poles and supplemented by pedestrian push buttons and continental crosswalk markings. RRFB signals have substantial effects on motorist stop/yield compliance.

Pedestrian signal timing is another important component of improving crossing safety. Leading pedestrian intervals (LPI) offer pedestrians a 4 – 6 second head start at crosswalks with high turn movement volumes. These are often used at freeway on-ramps, however, they becoming more common in urban locations. Canyon is a prime candidate for LPI at select intersection due to the number of arterial junctions in Central City.

CROSSING TREATMENTS
Mid-block crossings reduce indirect routing and pedestrian travel distances. Mid-block crossings break up longer block faces and can act as traffic calming features when coupled with other interventions such as curb extensions and signage. These crossing types should be developed in areas of high pedestrian demand or where pedestrians would otherwise cross unsafely at an unmarked location. Raised median refuges are highly beneficial crossing features because they allow for two phase crossing and improved yield rates by motorists. Other crossing treatments that could further improve safety, stop and yield compliance rates, and reduce vehicle speeds include raised crosswalks and imbedded in-pavement flashing lights. The flashing in-pavement crosswalk design is currently being tested for effectiveness by FHWA as a new device and are not currently included in the MUTCD.

TRAFFIC CALMING MEASURES
Traffic calming is a broad term used for physical features that effectively reduce vehicle speeds and manage traffic volumes. The range and cost of traffic calming features vary, however successful interventions already installed in Beaverton include speed humps (also known as speed tables), curb extensions or bulb outs, roundabouts, and pinch-points (also known as chokers). Pinch-points can combine bicycle bypass lanes in their design. Neighborhood traffic circles are another countermeasure proven to improve traffic...
movement and pedestrian safety, while reducing traffic speeds. Traffic circles may be yield controlled (preferred operation) or stop controlled. Curb extensions minimize crossing distances for pedestrians and visually reduce the roadway forcing motorists to slow down. Curb extension design should consider potential car-bike conflicts if curb extensions extend too far into a bike lane. Difficult trade-offs are often evaluated before implementation including on-street parking removal and increased maintenance costs, especially if facilities are landscaped.

**WAYFINDING SIGNAGE**

Perhaps the most critical component to improving low stress bicycle and pedestrian travel in Beaverton is reinforcing connections, routes and destinations with wayfinding signage. Recently some cities have begun implementing pedestrian- and bicycle-scaled signage. Since pedestrians and cyclists travel at much lower speeds, smaller and more detailed signs can be used. While these signs can warn of an upcoming intersection or similar changes, they are particularly useful for providing wayfinding information. These signs typically include elements of direction (arrows), destination (place names), and distance (miles until destination).

Aside from standard signage in the MUTCD, many communities have developed custom branded wayfinding strategies that allow them to enhance aesthetics and celebrate a sense of place, while providing spatial orientation and guidance to visitors. Examples of wayfinding systems can be found above in this document. Such approaches to signage take into account the key destinations of a place and focus more on these locations than standard MUTCD signage, which is intended to convey information on roadway conditions, users, and decision points.
BICYCLE PARKING PROVISION

Security from theft is a key concern for those deciding to make a trip by bicycle. Bike parking should be secure, visible, easy to access and use, and abundant. Covered parking is preferred which require adequate lighting. Generally, bike parking should be located in clearly defined spaces, in areas of high pedestrian activity, and should place no more than 50 feet away from building entrances. There are two types of parking: short-term (racks or stands for parking durations no longer than 2 hours) and long-term parking (secure access and weather-protected lockers or bike storage facilities—usually for bicycle commuters seeking reliable parking during office and school hours).

Although Beaverton’s current bicycle parking ordinance (found in Development Code Section 60.30) provides progressive bike parking targets for a variety of land uses, the ordinance can be improved in three areas:

MISSING REQUIREMENTS FOR STRUCTURED PARKING FACILITIES

Parking structures are excellent locations for siting an abundant supply of long-term covered parking. Future structured parking in Beaverton should provide covered long-term (1 space per 20 auto spaces with minimum 2 spaces) and short-term (minimum 6 spaces or 1 per 20 auto spaces) parking.

BEAVERTON BIKE PARKING REQUIREMENTS FOCUS ON NEW DEVELOPMENT ONLY

The city currently does not provide targeted policies or programs to increase the existing parking supply for existing land uses. The city should develop a bike parking program offering partially subsidized short-term bike parking installation and technical assistance for retrofitting offices, multi-family residential complexes, and other uses that could generate bicycle trip demand with covered and secure long-term bike parking.
In addition, the city currently offers bicycle parking standards for rack design and siting in Chapter 7 (Section 740) of the Engineering Design Manual (EDM). However, these standards could be more targeted. The city should specifically stipulate recommended and permitted parking rack types. The Inverted-U rack is a most reliable form of short-term bicycle parking. Comb racks, commonly referred as “wheel benders”, and wave racks do not provide the needed security seen with racks with two points of bike frame contact. The city should consider amending the EDM in the following ways:

- Amend Section 740.1.B to state: “Bicycle parking shall be visible and conveniently located for cyclists. If bicycle parking is not visible from building entrances, directional signage shall be provided to facilitate parking.”

- Develop design dimensions in section 740.2 indicating minimum design standards for lateral rack configuration along the curb face (i.e., end-to-end). The current design standards only portray racks installed face-to-face.

- In section 740.2.D, the City should consider reducing the motor vehicle parking clearance from 5 feet to 2 feet if the rack is installed parallel to the curb face and 3 feet if the rack is installed perpendicular to the curb face. Five feet of clearance is excessive and can reduce the chance of installing bike parking on space-constrained sidewalks like Main Street.

- Develop a sub-section under section 740.4 that classifies short-term bicycle parking racks as:
  
  “Recommended” – including Inverted-U and post-and-ring racks.
  
  “Permitted” – including modified coathanger racks and tree-guard bike racks.
  
  “Not recommended” or “Discouraged” – including comb, undulating/wave, coathanger, and wheel-well racks.
The City should also consider studying the feasibility of developing on-
street bicycle parking corrals in retail districts with high bicycle demand
and where on-street parking is underutilized. If deemed feasible, on-street
bike parking dimensions should be included in the Engineering Design
Manual.

COST CONSIDERATIONS

Deciding between different bicycle and pedestrian investments greatly
relies on facility cost. The table below offers a list of unit costs for some of
the facilities described in the toolbox.

### TABLE 1: COST BREAKDOWN BY FACILITY TYPE

<table>
<thead>
<tr>
<th>Facility Type</th>
<th>Unit</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bike lanes</td>
<td>Mile</td>
<td>$3,266</td>
</tr>
<tr>
<td>Colored bike lanes</td>
<td>Square feet</td>
<td>$10</td>
</tr>
<tr>
<td>Sharrows</td>
<td>Each</td>
<td>$71</td>
</tr>
<tr>
<td>Multi-use path</td>
<td>Mile</td>
<td>$225,000 - 600,000</td>
</tr>
<tr>
<td>Signage</td>
<td>Each</td>
<td>$200 - $350</td>
</tr>
<tr>
<td>Bike Box</td>
<td>Square feet</td>
<td>$10</td>
</tr>
<tr>
<td>Speed tables</td>
<td>Each</td>
<td>$2,500 - $5,000</td>
</tr>
<tr>
<td>Curb extensions</td>
<td>Intersection corner</td>
<td>$5,000 - $20,000</td>
</tr>
<tr>
<td>Neighborhood traffic circle</td>
<td>Circle</td>
<td>$5,000 - $12,000</td>
</tr>
<tr>
<td>Rectangular Rapid Flashing Beacon</td>
<td>Each (full system)</td>
<td>$25,000</td>
</tr>
<tr>
<td>Bicycle loop detector</td>
<td>Each</td>
<td>$1,000 - $2,000</td>
</tr>
<tr>
<td>Median refuge</td>
<td>100 feet</td>
<td>$15,000 - $30,000</td>
</tr>
<tr>
<td>Bike Rack (Inverted-U)</td>
<td>Each</td>
<td>$190</td>
</tr>
<tr>
<td>Bike Locker</td>
<td>Each</td>
<td>$1,000</td>
</tr>
</tbody>
</table>

Note: Figures do not incorporate cost of installation and labor—which vary by location.
APPENDIX THREE: PROPOSED BICYCLE IMPROVEMENT PROJECTS

BICYCLE PROJECT DESCRIPTIONS
This section details bicycle corridor improvements (both on- and off-street) and intersection projects. Selected projects are described in further detail in individual project sheets based on critical importance for Beaverton's bicycle network, need for implementation guidance, or illustration of design techniques or elements. Several proposed corridor improvements identified in the Civic Plan are located along Washington County owned streets and are highlighted below. Any project designated by “County-owned” indicates that implementation falls squarely on the shoulders of Washington County.

IMPLEMENTATION PRIORITIES
Projects are prioritized into the four categories of implementation priority – immediate, short-term, mid-term, and long-term – described below. The recommended phasing was based on a preliminary assessment of importance to the bicycle network and feasibility (including cost and implementation barriers such as land use constraints). For example, in some cases project phasing depends on implementation of other bicycle improvements or planned roadway extension or re-alignment projects.

1. IMMEDIATE = FIRST YEAR (OR EARLY SHORT-TERM)
Several projects have been identified as immediate implementation projects with first-year development potential. These are considered catalytic projects that lack significant barriers to implementation such as right-of-way constraints, land use compatibility, and funding. These projects will develop key connections or improvements that can enhance the bicycling in Beaverton.

2. SHORT-TERM = 1-5 YEARS
Short-term projects include most shared street roadways, which can be implemented at low cost using pavement markings and wayfinding/route signage. Traffic calming features can be implemented over time.
3. MID-TERM = 6-10 YEARS
Projects were typically categorized as mid-term due to assumed constraints, connectivity or feasibility issues, including need for negotiation over access or right-of-way acquisition, assumed higher cost and funding requirements. The presence of nearby parallel routes and the need to build out the network in different parts of the city were additional factors.

4. LONG-TERM = 11-20 YEARS
Long-term projects are similar in nature to mid-term projects, but were assumed to have more extensive feasibility constraints or dependencies, such as roadway extensions.

PLANNED CORRIDOR PROJECTS
The following table compiles the planned on- and off-street bicycle facilities recommended in the Civic Plan. Additional project detail is provided for select corridor improvements in project sheets. As described in previous sections, the Bicycle and Pedestrian strategy emphasizes the importance of a connected network of facilities (without gaps where bicycle lanes disappear) that is made legible and coherent to cyclists both through its design and wayfinding signage that links routes and route segments.
### TABLE 1: RECOMMENDED CORRIDOR AND INTERSECTION IMPROVEMENTS

<table>
<thead>
<tr>
<th>Corridor Improvements</th>
<th>Project</th>
<th>Project Location / Extent</th>
<th>Proposed Facility Type</th>
<th>Priority</th>
<th>Project Detail</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1</strong></td>
<td>Main St Bike Boulevard</td>
<td>- Main (Farmington to end of public right-of-way at Beaverton Nazarene Church) - Neighborhood accessway (end of Main to 22nd) - 22nd (130th to Hall)</td>
<td>Sharrows</td>
<td>Immediate</td>
<td>Provides a direct connection to downtown on a low traffic volume/low speed street on the west side of Watson, complementing Lombard on the west side of Hall. In the future a railroad crossing and extension on Rose Biggi Way would connect to Beaverton Central MAX station. See Project 1a detail sheet below. A future crossing of Farmington and railroad tracks (see intersection projects A and B) continues the route onto Rose Biggi Way and a future Rose Biggi street extension to Beaverton Central.</td>
</tr>
<tr>
<td><strong>1a</strong></td>
<td>Main St</td>
<td>- Main (Farmington to end of public right-of-way at Beaverton Nazarene Church) - Neighborhood accessway (end of Main to 22nd) - 22nd (130th to Hall)</td>
<td>Sharrows Wayfinding Signage</td>
<td>Immediate</td>
<td></td>
</tr>
<tr>
<td><strong>1b</strong></td>
<td>Rose Biggi Way</td>
<td>- Rose Biggi (Farmington to Beaverton Central MAX station)</td>
<td>Sharrows Wayfinding Signage</td>
<td>Mid-Term</td>
<td></td>
</tr>
<tr>
<td><strong>2</strong></td>
<td>Central Bike Corridors</td>
<td>- 149th (Farmington to Division) - 17th (Erickson to 17th) - 135th (Hart to Carr)</td>
<td>Sharrows Wayfinding Signage</td>
<td>Immediate</td>
<td>This corridor consists of several north-south bike boulevard options in Central Beaverton between Murray Blvd. and Hall Blvd. Wayfinding signage should be provided at transitions between streets for all routes. See Project Sheet 2 for details.</td>
</tr>
<tr>
<td><strong>2a</strong></td>
<td>Erickson/130th/Sorrento Bike Blvd.</td>
<td>- Erickson (Farmington to 17th) - 17th (Erickson to 130th) - 130th (17th to Hart) - Sorrento (Hart to Brockman) - 130th (Brockman to Weir) - Weir (130th to Davies) - Neighborhood accessway/131st/Hanson Sub-Option</td>
<td>Sharrows</td>
<td>Immediate</td>
<td>Bike boulevard just west of Hall, serving Beaverton High School. This is likely the easiest to implement and therefore the highest priority of the Central Bike Corridor options. Major portions of this facility are identified in the TSP. There is also a north-south neighborhood accessway sub-option that could bypass conflicts at the Sorrento/Hart roundabout, re-connecting with Sorrento using 131st and Hanson Rd. (see Project 2 Detail for routing details).</td>
</tr>
<tr>
<td><strong>3</strong></td>
<td>Menlo/Wilson Bike Boulevard</td>
<td>- Menlo (Farmington to Allen) - Wilson (Allen to Hart)</td>
<td>Sharrows</td>
<td>Short-Term</td>
<td>Bike boulevard just east of Murray, serving Fir Grove Elementary School. South of Hart, an off-street path through Hyland Forest Park (see 2e) may be used to continue this route.</td>
</tr>
<tr>
<td><strong>3a</strong></td>
<td>Menlo/Wilson Bike Boulevard</td>
<td>- Menlo (Farmington to Allen) - Wilson (Allen to Hart)</td>
<td>Sharrows</td>
<td>Short-Term</td>
<td>Provides a north-south connection between 2a and 2b and is an alternative to the multi-use path through Hyland Forest Park (2e).</td>
</tr>
<tr>
<td><strong>3b</strong></td>
<td>Valley/Hyland/135th Bike Boulevard</td>
<td>- Valley/Hyland (17th to Hart) - Hyland/135th (Hart to Carr)</td>
<td>Sharrows</td>
<td>Short-Term</td>
<td>Connects to Scholls Ferry Road and serves Hilton Elementary School.</td>
</tr>
<tr>
<td><strong>4</strong></td>
<td>Davis/Carr Bike Boulevard</td>
<td>- Davies (Scholls Ferry to Brockman) - Carr (Brockman to Sorrento)</td>
<td>Sharrows</td>
<td>Short-Term</td>
<td></td>
</tr>
<tr>
<td><strong>4</strong></td>
<td>Hyland Forest Park Multi-Use Path Connection</td>
<td>- Wilson Bike Boulevard spur (Hart to Hyland Forest Park) - Sexton Mountain / Secretariat / Tennessee Bike Boulevard spur (Hyland Forest Park to Davies)</td>
<td>Off-Street / Sharrows Wayfinding Signage</td>
<td>Mid-Term</td>
<td>Trail connection links corridors 2b and 2c. The city would need to initiate discussions w/Tualatin Parks and Recreation about improvements (paving, lighting, and signage) and partnering for maintenance.</td>
</tr>
</tbody>
</table>

### West Bike Corridors

These corridors include both north-south and east-west connections primarily serving neighborhoods east of Murray.

<table>
<thead>
<tr>
<th>Project</th>
<th>Project Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>3a</strong></td>
<td>Blanton/156th Bike Boulevard (County-owned) - Blanton (City Limits to 156th) and 156th (Blanton to Farmington) - 145th (Farmington to Division)</td>
</tr>
<tr>
<td><strong>3b</strong></td>
<td>Runs parallel to TV Highway beyond city limits, serving Beaverton International School and Aloha, and connects to downtown using the Division/6th/5th bike corridor. Existing bicycle lanes on Farmington Blvd. link segments 3a and 3b. Segment 3a is an alternative to using existing bicycle lanes on Murray Blvd. to reach the Division/6th/5th bike corridor.</td>
</tr>
<tr>
<td><strong>4</strong></td>
<td>Division/6th/5th Bike Boulevard - 167th (Oak to Division – County-owned) - Division (149th to 167th – County-owned) - 6th (Erickson to 149th)</td>
</tr>
<tr>
<td><strong>5</strong></td>
<td>Oak/Davis/20th/22nd Bike Boulevard - 20th (Murray to Wilson) - 22nd (Murray to Hall)</td>
</tr>
<tr>
<td><strong>5</strong></td>
<td>Builds on existing bike lanes on Oak and Davis west of Murray with a shared street facility. Sharrows should be installed on 20th and 22nd. Accessway where 22nd ends briefly allows for movement between Murray and Hall.</td>
</tr>
</tbody>
</table>
### TABLE 1 (CONTINUED): RECOMMENDED CORRIDOR AND INTERSECTION IMPROVEMENTS

<table>
<thead>
<tr>
<th>Corridor Improvements</th>
<th>Project Location / Extent</th>
<th>Proposed Facility Type</th>
<th>Priority</th>
<th>Project Detail</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>6</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| • 152nd/155th Bike Boulevard | - 6a: 152nd (Division to Hart)  
- 6b: 155th (North of Hart to Davis) | Sharrows Wayfinding Signage | Short-Term | Connects three east-west bike corridors. It extends existing bike lanes on 155th that end just north of Hart to Davis using sharrows and adds a shared street route on 152nd that connects to Division St., paralleling 155th between Davis and Hart. 152nd serves Vale Park and would connect to a planned neighborhood trail south of Hart. |
| **7**                 |                           |                        |            |                |
| • Hart/Blakeney Bikeway | - Hart (Murray to Hall)  
- Blakeney (Hall to Bel Aire and Fanno Creek Trail) | Sharrows Wayfinding Signage | Immediate | Extends existing bike lanes west of Murray using a shared street route. It provides an east-west route that spans most of the city, using an existing trail connection between Bel Aire Dr. and the Fanno Creek Trail. Hart is a designated bikeway in the TSP. |
| **8**                 |                           |                        |            |                |
| • East Bike Boulevard |                           |                        |            |                |
| • 8a: Alger/King (Allen to Denney) | - Alger/11th/Lee/King (9th to Allen)  
- King (Allen to Denney) | Sharrows Wayfinding Signage | Immediate | This segment of the east bike boulevard starts at 5th Street and intersects Denney across from Vose Elementary School, near the current northern termination of the Fanno Creek Trail. It provides an alternative route to bike lanes on Lombard Ave., which have a gap around Allen Blvd. This route is a designated bikeway in the TSP. |
| **9**                 |                           |                        |            |                |
| • Greenway (Hall to 125th) |                           | Bike Lanes Wayfinding Signage | Short-Term | Greenway has sufficient space to stripe bike lanes (roughly 36 feet minimum); between 14,877 and 19,175 average daily traffic. Serves Greenway Elementary School and connects to existing bicycle lanes on Hall, Brockman, and 125th. This route is a designated bikeway in the TSP. |
| **10**                |                           |                        |            |                |
| • Hall/Watson Bike Lane Gap signage | - 10a: Hall merge signage (Hall/ Crescent, Broadway/Hall, Hall/12th, and Hall/Allen)  
- 10b: Watson sharrows (Crescent to Farmington) | Sharrows Merge Signage | Short-Term | Sharrows to be applied to Watson between Crescent and Farmington. Adds ODOT Bike Lane merge signage (4BW1-9) to indicate the presence of bicycles in the travel lane north of Farmington, where bicycle lanes currently end. These segments of Hall and Watson are designated bikeways in the TSP. |
| **11**                |                           |                        |            |                |
| • Broadway (Hocken to Canyon) |                           | Sharrows Wayfinding Signage | Short-Term | Shared street bicycle route on Broadway. Should be coordinated with intersection improvement Project E. |
| **12**                |                           |                        |            |                |
| • 1st Street (Stott to Lombard) |                           | Sharrows Wayfinding Signage | Short-Term | Shared street bicycle route on 1st. Should be coordinated with the Main St. Bicycle Boulevard (see Project 1). |
| **13**                |                           |                        |            |                |
| • Hocken (Millikan to Farmington) |                           | Bike Lanes | Mid-Term | Extends bicycle lanes from where they currently end at Millikan to Farmington. This section of Hocken is a designated bikeway in the TSP. |
| **14**                |                           |                        |            |                |
| • Millikan Way (Cedar Hills to Lombard) |                           | Bike Lanes Wayfinding Signage | Long-Term | This project would extend existing bike lanes on Millikan from Cedar Hills to 117th, in conjunction with a future street extension. |
| **15**                |                           |                        |            |                |
| • Beaverton Creek Trail |                           | Multi-Use Path | Long-Term | This trail would connect Beaverton Transit Center to Hocken Ave. It would also be linked to a future extension of the Fanno Creek Trail. |
| **North Bike Corridors** |                           |                        |            |                |
| **16**                |                           |                        |            |                |
| • Park Way (Wilshire to Walker - County-owned) |                           | Sharrows Wayfinding Signage | Short-Term | Shared street bike route continuing existing lanes on Wilshire that connect to the regional multi-use path, with bike lanes on Walker Rd. Also serves Sunset Transit Center via a bicycle/pedestrian bridge over U.S. 26. |
| **17**                |                           |                        |            |                |
| • Roxbury (Marlow to Walker - County-owned) |                           | Bike Lanes Wayfinding Signage | Short-Term | Extends bike lanes serving a freeway bicycle/pedestrian overpass from Sunset Transit Center to Walker Road. |
| **18**                |                           |                        |            |                |
| • Walker (113th to 123rd - County-owned) |                           | Sharrows Wayfinding Signage | Short-Term | Shared street route in segment of Walker that lacks bike lanes, and where it is likely too narrow to support bike lanes. |
| **19**                |                           |                        |            |                |
| • 123rd / 124th (Walker to Center – County-owned) |                           | Sharrows Wayfinding Signage | Short-Term | Shared street connection from Walker Road to Center, linking to bike lanes on Lombard and Beaverton Transit Center. |
### Project Description

The Main Ave. bike boulevard is a shared street route designated with sharrows (pavement markings) and wayfinding signage. It provides a direct connection to downtown on a low traffic volume/low speed street. As illustrated at right, in the future a railroad crossing, cycle track along Broadway, and extension of Rose Biggi Way between Broadway and Canyon would serve the Round and Beaverton Central MAX station.

As shown at right, south of Allen Blvd. the public portion of Main Ave. ends at a gate and it becomes private right-of-way through the Beaverton Nazarene Church parking lot. The city can attempt to negotiate access rights with the church, however just beyond the gate, the route can currently continue on a neighborhood accessway to 22nd St. Wayfinding signage at the accessway connection and at 22nd St. should be installed in conjunction with this project.

### Proposed Facility

<table>
<thead>
<tr>
<th>Proposed Facility Type</th>
<th>Priority</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bike Boulevard / Sharrows</td>
<td>Immediate</td>
</tr>
<tr>
<td>Wayfinding signage</td>
<td></td>
</tr>
</tbody>
</table>

### Project Location/Extent

- Main (Farmington to gate north of Beaverton Nazarene Church)
- Neighborhood accessway (to 22nd)
- 22nd (130th to Hall)

---

**FIGURE 1: MAIN BIKE BOULEVARD**

A proposed long-term street extension of Rose Biggi Way between Broadway and Canyon would provide a key bicycle and pedestrian route to the Round. A proposed cycle track would connect Main and Rose Biggi (see intersection project B).

A new bicycle and pedestrian crossing of the railroad tracks and pedestrian-activated “rectangular rapid flashing beacons” across Farmington would connect Main to Broadway and a future connection to the Round on Rose Biggi Way (see intersection project A).

Where Main dead-ends at a gate north of the Beaverton Nazarene Church, a neighborhood trail can be used to reach 22nd St. Cyclists can then access bike lanes on Hall or the recommended Erickson/130th/Sorrento bicycle boulevard. Wayfinding should be installed to assist cyclists at these connections.
### Proposed Facility Type

<table>
<thead>
<tr>
<th>Proposed Facility Type</th>
<th>Priority</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bike Boulevard / Sharrows (varies)</td>
<td>Immediate or Short-term</td>
</tr>
<tr>
<td>Wayfinding signage</td>
<td></td>
</tr>
</tbody>
</table>

### Project Location/Extent

2a: Erickson/130th/Sorrento Bike Blvd.
- Erickson (Farmington to 17th)
- 17th (Erickson to 130th)
- 130th (17th to Hart)
- Sorrento (Hart to Brockman)
- 130th (Brockman to Weir) – Sharrows
- Weir (130th to Davies)
- Neighborhood accessway/131st/Hanson Sub-Option

2b: Menlo/Wilson Bike Boulevard
- Menlo (Farmington to Allen)
- Wilson (Allen to Hart) – Sharrows

2c: Valley/Hyland/135th Bike Blvd.
- Valley/Hyland (17th to Hart)
- Hyland/135th (Hart to Carr) – Sharrows

2d: Davies/Carr Bikeway
- Davies (Scholls Ferry to Brockman)
- Carr (Brockman to Sorrento) – Bike Lanes/Sharrows

2e: Hyland Forest Park Multi-Use Path Connection
- Wilson Bike Boulevard spur (Hart to Hyland Forest Park)
- Sexton Mountain / Secretariat / Tennessee Bike Boulevard spur (Hyland Forest Park to Davies) – Off-Street/Sharrows

### Project Description

This project consists of a network of bike boulevards in central Beaverton that can be implemented in phases. These routes provide low-traffic alternatives to bike lanes on Murray and, in particular, to bike lanes on Hall, where there is a gap both north and south of Allen.

They also offer potential bicycle connections to the mixed use centers on Allen that are proposed in the Beaverton Civic Plan.
This project provides a lower traffic volume east-west bike connection spanning Beaverton as far east as the Fanno Creek multi-use path, which is a primary spine for bicycle travel.
PLANNED INTERSECTION AND CROSSING PROJECTS

The following table compiles the planned bicycle and pedestrian intersection and crossing improvements identified in Figures X in the Civic Plan’s Bicycle and Pedestrian Strategy. Additional project detail is provided for select improvements in project sheets with conceptual diagrams of potential improvements (Note: diagrams are highly conceptual and do not represent a final design. Diagrams are also not to scale).

<table>
<thead>
<tr>
<th>Project</th>
<th>Facility Type</th>
<th>Project Location / Extent</th>
<th>Priority</th>
<th>Est. Cost</th>
<th>Project Detail</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Rectangular rapid flashing beacon signal and bicycle / pedestrian only railroad crossing</td>
<td>Farmington / Main T-intersection across Railroad ROW to Broadway</td>
<td>Long-Term</td>
<td>High</td>
<td>See Project Sheet A</td>
</tr>
<tr>
<td>B</td>
<td>Off-set intersection cycle track facility</td>
<td>Broadway (New crossing from Main Ave to future Rose Biggi extension)</td>
<td>Long-Term</td>
<td>Medium</td>
<td>See Project Sheet B</td>
</tr>
<tr>
<td>C</td>
<td>Left-turn sidewalk facility and Marking/ Signaging enhancement</td>
<td>Hall / MAX Crossing (south of Crescent)</td>
<td>Short-Term</td>
<td>High</td>
<td>See Project Sheet C</td>
</tr>
<tr>
<td>D1</td>
<td>Bicycle loop detector pavement marking</td>
<td></td>
<td>Short-Term</td>
<td>Low</td>
<td>Install loop detectors pavement marking on both sides of the intersection to ensure proper alignment to trigger the signal to change. Also, adjust loop sensitivity to sense bicycles’ presence. This will facilitate bicycle travel along the Division / 5th Street bicycle boulevard.</td>
</tr>
<tr>
<td>D2</td>
<td>Left-turn green bike box, right-turn on red restriction, and bicycle loop detector and pavement marking</td>
<td>Menlo / Allen</td>
<td>Short-Term</td>
<td>Medium</td>
<td>Install loop detector and detector marking for northbound cyclists on Menlo (there is an existing loop detector on southbound Menlo). If school parking lot connection between Wilson and Menlo is permitted, the bike box project element becomes a longer-term priority. Bike box at this intersection would necessitate a right-turn on red restriction for the right turn lane.</td>
</tr>
<tr>
<td>D3</td>
<td>Bicycle loop detector pavement marking</td>
<td>Greenway / Hall</td>
<td>Short-Term</td>
<td>Low</td>
<td>Install loop detector pavement marking at Greenway to ensure proper alignment to trigger the signal to change. Also, adjust loop sensitivity to sense bicycles’ presence. This will facilitate bicycle travel along the North Bike Corridor.</td>
</tr>
<tr>
<td>D4</td>
<td>Bicycle loop detector pavement marking</td>
<td>Park Way / Cedar Hills (County-owned)</td>
<td>Short-Term</td>
<td>Low</td>
<td>Install loop detector pavement marking on both sides of Park Way to ensure proper alignment to trigger the signal to change. Also, adjust loop sensitivity to sense bicycles’ presence. This will facilitate bicycle travel along the North Bike Corridor.</td>
</tr>
<tr>
<td>D5</td>
<td>Bicycle loop detector pavement marking</td>
<td>Denney / King</td>
<td>Short-Term</td>
<td>Medium</td>
<td>Install loop detector pavement marking on the southbound bicycle traffic on King to ensure proper alignment to trigger the signal to change. Also, adjust loop sensitivity to sense bicycles’ presence. This will facilitate bicycle travel along the East Bike Corridor.</td>
</tr>
<tr>
<td>E</td>
<td>Left-turn green bike box and green bike box</td>
<td>Canyon / Broadway / 117th Ave</td>
<td>Immediate</td>
<td>Medium</td>
<td>See Project Sheet E</td>
</tr>
<tr>
<td>F1</td>
<td>Mid-block crossing improvement</td>
<td>Fanno Creek Trail Crossing / Denney</td>
<td>Short-Term</td>
<td>Low</td>
<td>Improve the existing median crossing with signage, advanced yield bars, and continental crosswalk markings</td>
</tr>
<tr>
<td>F2</td>
<td>Mid-block crossing with median</td>
<td>Fanno Creek Trail Crossing / Hall</td>
<td>Short-Term</td>
<td>Medium</td>
<td>See Project Sheet F2</td>
</tr>
<tr>
<td>G1</td>
<td>Unsignalized crossing enhancements</td>
<td>Hall / Ridgecrest</td>
<td>Short-Term</td>
<td>Medium</td>
<td>Install advisory signage (MUTCD R1-5 or R1-6), advanced yield bars, and continental crosswalk marking (west leg of Hall only). Crosswalk marking should be situated in front of the left turn lane.</td>
</tr>
<tr>
<td>G2</td>
<td>Unsignalized crossing enhancements</td>
<td>Denney / Bel Aire</td>
<td>Short-Term</td>
<td>Medium</td>
<td>Improve the existing median crossing to include advisory signage (MUTCD R1-5 or R1-6), advanced yield bars, and continental crosswalk markings</td>
</tr>
<tr>
<td>H</td>
<td>Signalized crossing improvement with sidewalk path connection</td>
<td>Hall / Hart / Blakeney cul-de-sac</td>
<td>Short-Term</td>
<td>Medium</td>
<td>See Project Sheet H</td>
</tr>
</tbody>
</table>
### Proposed Facility Type

<table>
<thead>
<tr>
<th>Proposed Facility Type</th>
<th>Priority</th>
<th>Project Location / Extent</th>
<th>Estimated Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bike/Pedestrian Railroad Crossing</td>
<td>Long-Term</td>
<td>Farmington / Main T-intersection across Railroad ROW to Broadway</td>
<td>High</td>
</tr>
<tr>
<td>Rectangular Rapid Flashing Beacon</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Project Description:** A new bicycle and pedestrian only crossing across Farmington and the railroad right-of-way at Main will require signal control and various countermeasures to ensure high visibility as well as more predictable pedestrian behavior. The city should install a rectangular rapid flashing beacon (RRFB) and new curb ramps with detectable warnings on the west intersection leg. Between Broadway and Farmington, a bicycle and pedestrian only railroad crossing facility should be constructed to eliminate barriers to Broadway and new development and transit facilities north of Canyon (e.g., The Round and Beaverton Central). Although development will occur in the long-term project, the city should aim to implement these improvements with the Broadway ‘festival street’ construction.

**Design Options:** The RRFB signal should be supplemented by a continental crosswalk, advanced stop bars set at a minimum 30 feet from the crossing, and advisory signage.

The rail crossing could be constructed with a variety of different options. The preferred design option would include a Z-pattern crossing with no crossing arm. This design would force users to momentarily face down the track to ensure safe crossing. A sub-option would integrate pedestrian swing gates. Other design options include a simplified crossing with pedestrian automated crossing arms. The final design should include signage and pavement markings instructing users to look both ways before crossing (R15-8 in MUTCD).

---

**FIGURE 4: MAIN AVENUE RAILROAD CROSSING AND BEACON**

Source: Nelson\Nygaard
### Project Description:
In order to facilitate bicycle movement across Broadway between SW Main Ave and Rose Biggi, a two-way cycle track should be constructed. This contraflow design would mitigate any crossing conflicts between cars and cyclists. A sidewalk would run parallel to the cycle track facility offering safe facilities for all users. Construction should only occur after Rose Biggi is extended across Canyon to Broadway and after the construction of the Main Ave bicycle and pedestrian only crossing across Farmington and the railroad right-of-way (see Project Sheet A).

### Design Options:
An unsignalized pedestrian crossing should be developed once the Rose Biggi extension is completed. The preferred treatment is a continental crosswalk.
### Proposed Facility Type

<table>
<thead>
<tr>
<th>Proposed Facility Type</th>
<th>Priority</th>
<th>Project Location / Extent</th>
<th>Estimated Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sidewalk turn facility / Marking and signing enhancements</td>
<td>Short-Term</td>
<td>Hall / MAX Crossing</td>
<td>High</td>
</tr>
</tbody>
</table>

**Project Description:** A left-turn sidewalk facility with enhanced crossing facilities should be developed immediately south of the MAX tracks at the northern end of the Hall-Watson one-way couplet. Cyclists seeking access into The Round or Beaverton Central will have the option to merge across three travel lanes to turn left on Crescent or utilize a protected turn facility with a bicycle / pedestrian activated signal. Several actions are needed for successful implementation. Access to the Damerow Ford Service Department property will need to be managed by eliminating the property's northern most driveway cut. Once motor vehicle access is restricted, the driveway cut will serve as a curb ramp for northbound cyclists looking to cross Hall and Watson, while reducing pedestrian conflicts at the driveway. This access management measure is not considered a significant impact as this property has four additional driveway cuts.

**Design Options:** In order to ensure stop compliance, advanced stop bars should be installed at least 20 feet from the crossing. The current stop bar (for the light rail crossing arms) is roughly 8 feet. The current unsignalized crossing at this location should be improved to a continental crossing with “yield here to pedestrians” signage (either R1-5 or R1-5a) for enhanced pedestrian visibility.

---

**Figure 6:** LEFT-TURN SIDEWALK FACILITY AND MARKING/SIGNING ENHANCEMENTS

Source: Nelson\Nygaard
**FIGURE 7: GREEN BIKE BOX INTERSECTION DESIGN**

<table>
<thead>
<tr>
<th>Proposed Facility Type</th>
<th>Priority</th>
<th>Project Location / Extent</th>
<th>Estimated Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bike Box</td>
<td>Immediate</td>
<td>Canyon / Broadway / 117th Ave</td>
<td>Medium</td>
</tr>
<tr>
<td>Bike Box (Left-turn queue)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dotted Intersection Bike Lane</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Project Description:** In order to improve access to Broadway and the old downtown, green bike boxes should be installed at the intersection of Broadway and Canyon and 117th Ave and Canyon. In addition, a left-turn green bike box should be installed in front of the north-side crosswalk on Canyon. These facilities are needed to ensure safe and prioritized crossing for cyclists traveling westbound on Canyon and southbound on SW 117th. Only experienced cyclists are comfortable exiting the westbound bike lane on Canyon to access the left turn lane in order to access Broadway. The left turn bike box would facilitate left turn movements for bicycles.

It should be noted that these improvements are conceptual and must be vetted through ODOT.

**Design Options:** In order to reduce car-bicycle conflicts, right turn on red restrictions (sign R10-11 a/b in MUTCD) should be instituted for right turns off of Broadway and 117th onto Canyon. The city should strongly consider striping a dotted green bike lane through the intersection to mitigate right-turn conflicts with bicycles.
### Proposed Facility Type

<table>
<thead>
<tr>
<th>Proposed Facility Type</th>
<th>Priority</th>
<th>Project Location / Extent</th>
<th>Estimated Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mid-block crossing with enhanced crossing measures</td>
<td>Short-term</td>
<td>Fanno Creek Trail Crossing / Hall</td>
<td>Medium/High</td>
</tr>
</tbody>
</table>

**Project Description:** This location is of critical importance. The lack of direct crossing facilities encourages unprotected crossings and exposes a clear gap in the trail system. Because Hall is a 4-lane arterial with 25,000 vehicles per day at Fanno Creek, significant countermeasures are recommended. Backed by a $359,000 Metro grant, the City and Tualatin Hills Parks and Recreation District are currently studying the most appropriate design options to ensure safer crossing.

**Design Options:** Potential countermeasures the City could advocate for may include:

- Installation of pedestrian activation, continental crosswalks, and ADA-compliant curb ramps and detectable warnings.
- A rectangular rapid flashing beacon could be installed in order to ensure yield compliance and increase pedestrian visibility.
- A raised median with a diagonal cut-through would enhance pedestrian and bicycle safety by allowing users to cross in two phases. This would provide a far more comfortable crossing experience for users. A potential trade-off is longer queuing for motorists looking to turn left onto Greenway. Signal timing could be used to maintain traffic flow and reduce delay.
- Because this is not a traffic controlled crossing, any crossing facility should be supplemented by advanced yield bars (minimum 30 feet distance from crossing) and Yield Here to Pedestrians signs (R1-5 in MUTCD) due to their high yield compliance rate.
- If nighttime crossing is deemed unsafe or if motorist compliance to crossing pedestrians is low, embedded LED crosswalk lighting could be installed.

These design options are a small sample of potential solutions. This project should be initiated in coordination with improvements along the West Bike Corridor (especially the Greenway bike lanes) as access to the Fanno Creek multi-use path will be enhanced and bicycle/pedestrian volumes will increase.
**FIGURE 9: SIGNALIZED CROSSING IMPROVEMENT WITH SIDEWALK PATH CONNECTION**

<table>
<thead>
<tr>
<th>Proposed Facility Type</th>
<th>Priority</th>
<th>Project Location / Extent</th>
<th>Estimated Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sidewalk multi-use path segment</td>
<td>Short-term</td>
<td>Hall / Hart / Blakeney Cul-de-Sac</td>
<td>Medium</td>
</tr>
<tr>
<td>Bicycle Loop Detector Marking</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Project Description:** In order to facilitate eastbound bicycle travel and reduce bicycle signal delay, a bicycle loop detector should be installed at SW Hart Ave’s existing right turn lane at SW Hall Blvd. Signage will indicate that the lane is a right turn only lane except for bicycles. Cyclists can either turn left or right on Hall, or go straight through the intersection in order to travel along a sidewalk multi-use path connection allowing access to SW Blakeney St—a critical link to the East Bike Corridor—using a cul-de-sac accessway. Cyclists looking to connect to the Hart bicycle boulevard will use the sidewalk path and activate the pedestrian signal using a push-button.

**Design Options:** A long-term design option, leveraged upon Hall street reconstruction projects, is to widen the sidewalk between Hart and the Blakeney cul-de-sac cut-through path and to relocate the street light impediment several feet to the west. The cut-through entrances should include wayfinding signage showing key destinations such as the Fanno Creek multi-use path, the East Bike Corridor, downtown, and the Hart bike boulevard.
### H - Signalized Crossing with Sidewalk Path Connection

<table>
<thead>
<tr>
<th>Facility Type</th>
<th>Priority</th>
<th>Project Location / Extent</th>
<th>Estimated Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sidewalk multi-use path</td>
<td>Short-term</td>
<td>Hall / Hart / Blakeney Cul-de-Sac</td>
<td>Medium</td>
</tr>
<tr>
<td>Bicycle Loop Detector</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Project Description:** In order to facilitate eastbound bicycle travel and reduce bicycle signal delay, a bicycle loop detector should be installed at SW Hart Ave’s existing right turn lane at SW Hall Blvd. Signage will indicate that the lane is a right turn only lane except for bicycles. Cyclists can either turn left or right on Hall, or go straight through the intersection in order to travel along a sidewalk multi-use path connection allowing access to SW Blakeney St—a critical link to the East Bike Corridor—using a cul-de-sac cut-through. Cyclists looking to connect to the Hart bicycle boulevard will use the sidewalk path and activate the pedestrian signal using a push-button. This project should be developed in coordination with Project D5.

**Design Options:** A long-term design option, leveraged upon Hall street reconstruction projects, is to widen the sidewalk between Hart and the Blakeney cul-de-sac cut-through path and to relocate the street light impediment several feet to the west. The cut-through entrances should include wayfinding signage showing key destinations such as the Fanno Creek multi-use path, the East Bike Corridor, downtown, and the Hart bike boulevard.

---

![Image of Signalized Crossing with Sidewalk Path Connection](Graphics/Beaverton_Hall-Hart-Blakeney-
intersection.pdf)

**FIGURE 10: SIGNALIZED CROSSING WITH SIDEWALK PATH CONNECTION**
APPENDIX FOUR: CIRCULATOR CONCEPTS FOR BEAVERTON

One of the questions regarding transportation in Beaverton at the outset of the Civic Plan process is whether it is a suitable market for a circulator, particularly in the Central City area. The following information provides some basic factors needed for successful circulators, potential routes, and estimates of cost and service need.

Circulators are typically short, frequent transit services that are designed to serve a specific market that is either not being served or is difficult to serve with traditional transit services. While several TriMet lines in Beaverton could be considered “circulators,” most of the lines are much longer and serve a regional function. Based on other circulators, the success of these services is dependent on adhering to the following steps in the planning stages:

1. Develop a Clear Definable Objective for the Circulator
   This is essentially where a “problem statement” is developed by identifying exactly why a circulator is being proposed. The objective is the most important step in this process, and thus should be as specific as possible. If a clear objective is difficult to articulate, this may be a sign that a circulator is not the right solution. Key questions to ask include:
   a. Should the service operate peak-only, midday only, or all-day?
   b. Is this service for commuters, visitors, residents?
   c. Should the circulator focus on a specific site, or a wider area?

2. Understand the Market You Are Trying to Serve
   Once it is clear why a circulator is being proposed, it is important to define and understand the market to be served. This can be very specific, such as “commuters at a large employer,” or more general such as “visitors and workers in the Central City area.” While both types of circulators can be successful, different target markets have very different travel needs. This step can also incorporate future planned or proposed land use changes, but implementation of a circulator should take phasing of these changes into account.
3. Design the Circulator to Serve Your Target Market

Once the objective is clear, and the market to be served is fully understood, the design of the circulator can begin to be defined. Different route designs work better for some markets. For example, if the circulator is largely intended to provide circulation for seniors during the midday period, wider coverage may be more important than speed and reliability. If the target market is workers at a large employer, directness, speed and reliability are critical. It is at this point that estimated costs associated with operating a circulator can be developed, as well as vehicle needs, staffing and marketing approaches.

WHY DO CIRCULATORS FAIL?

Circulators are developed in response to a variety of needs, and some circulators are critical to the attractiveness of the larger transit system. However, circulators fail for a variety of reasons:

- They were developed without a clear idea of what mobility need is being addressed.
- The market to be served is not defined, poorly understood or not fully developed.
- The route is poorly designed and/or the schedule does not adequately meet service needs.
- The route is too short, making walking a more convenient and/or attractive mode.
- The vehicle itself does not respond to the market being served (i.e., the vehicle is too big or small or does not reflect positively on the community).
- The service is not marketed well or marketed to the wrong audience.
EXISTING TRANSIT SERVICE

To better understand whether or not a circulator in central Beaverton is feasible, it is important to first understand what transit services are already in place. To be successful, and politically acceptable, a circulator should not compete with the regular bus network that is already providing a circulation function. As such, Figure 1 and Figure 1 illustrate the TriMet fixed route services that currently serve Beaverton, as well as any other known transit services.

### TABLE 1: COST BREAKDOWN BY FACILITY TYPE

<table>
<thead>
<tr>
<th>Line</th>
<th>Name</th>
<th>Service Type</th>
<th>Approximate Weekday Frequency (Peak/Midday)</th>
<th>Weekday Service Span</th>
<th>Saturday Service</th>
<th>Sunday Service</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAX</td>
<td>Blue Line</td>
<td>LR</td>
<td>7.5/15</td>
<td>4:30 AM - 2:00 AM</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>MAX</td>
<td>Red Line</td>
<td>LR</td>
<td>15/15</td>
<td>3:30 AM - 1:00 AM</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>WES</td>
<td>WES</td>
<td>CR</td>
<td>30/--</td>
<td>5:30 AM - 10:00 AM; 3:30 PM - 8:00 PM</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>20</td>
<td>Burnside/Stark</td>
<td>Local Bus</td>
<td>15-20/15-20</td>
<td>4:30 AM - 2:45 AM</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>43</td>
<td>Taylors Ferry Rd</td>
<td>Local Bus</td>
<td>30/60</td>
<td>5:45 AM - 8:15 PM</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>45</td>
<td>Garden Home</td>
<td>Local Bus</td>
<td>30/60</td>
<td>5:30 AM - 9:30 PM</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>50</td>
<td>Cedar Mill</td>
<td>Local Bus</td>
<td>30/--</td>
<td>5:30 AM - 9:15 AM; 3:00 PM - 7:30 PM</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>52</td>
<td>Farmington/185th</td>
<td>Local Bus</td>
<td>15-20/20</td>
<td>4:45 AM - 12:45 AM</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>53</td>
<td>Arctic/Allen</td>
<td>Local Bus</td>
<td>30/--</td>
<td>6:00 AM - 9:00 AM; 3:00 PM - 6:30 PM</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>54</td>
<td>Beaverton-Hillsdale Hwy</td>
<td>Local Bus *</td>
<td>20-30/30</td>
<td>5:00 AM - 12:30 AM</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>55</td>
<td>Hamilton</td>
<td>Local Bus</td>
<td>30-90/--</td>
<td>6:00 AM - 8:30 AM; 4:00 PM - 7:00 PM</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>56</td>
<td>Scholls Ferry Rd</td>
<td>Local Bus *</td>
<td>20-30/30</td>
<td>5:30 AM - 1:00 AM</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>57</td>
<td>TV Hwy/Forest Grove</td>
<td>Local Bus *</td>
<td>15/20</td>
<td>4:00 AM - 2:45 AM</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>58</td>
<td>Canyon Rd</td>
<td>Local Bus</td>
<td>15-20/30</td>
<td>5:00 AM - 11:00 PM</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>59</td>
<td>Walker/Park Way</td>
<td>Local Bus</td>
<td>30-60/--</td>
<td>5:30 AM - 9:30 AM; 2:30 PM - 7:00 PM</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>61</td>
<td>Marquam Hill/Beaverton</td>
<td>Local Bus</td>
<td>30/--</td>
<td>6:15 AM - 8:30 AM; 3:30 PM - 6:15 PM</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>62</td>
<td>Murray Blvd</td>
<td>Local Bus</td>
<td>30/30</td>
<td>5:00 AM - 11:00 PM</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>67</td>
<td>Jenkins/158th</td>
<td>Local Bus</td>
<td>30/40</td>
<td>6:00 AM - 10:00 PM</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>76</td>
<td>Beaverton/Tualatin</td>
<td>Local Bus</td>
<td>30/30</td>
<td>5:30 AM - 11:30 PM</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>78</td>
<td>Beaverton/Lake Oswego</td>
<td>Local Bus</td>
<td>30/30</td>
<td>5:30 AM - 12:30 PM</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>88</td>
<td>Hart/198th</td>
<td>Local Bus</td>
<td>30/30</td>
<td>5:30 AM - 11:00 PM</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>89</td>
<td>Tanasbourne</td>
<td>Local Bus</td>
<td>30/60</td>
<td>5:30 AM - 11:00 PM</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>92</td>
<td>South Beaverton Express</td>
<td>Express Bus</td>
<td>30/--</td>
<td>5:30 AM - 9:00 AM; 3:30 PM - 7:00 PM</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>67</td>
<td>Jenkins/158th</td>
<td>Local Bus</td>
<td>30/40</td>
<td>6:00 AM - 10:00 PM</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>76</td>
<td>Beaverton/Tualatin</td>
<td>Local Bus</td>
<td>30/30</td>
<td>5:30 AM - 11:30 PM</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>78</td>
<td>Beaverton/Lake Oswego</td>
<td>Local Bus</td>
<td>30/30</td>
<td>5:30 AM - 12:30 PM</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>88</td>
<td>Hart/198th</td>
<td>Local Bus</td>
<td>30/30</td>
<td>5:30 AM - 11:00 PM</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>89</td>
<td>Tanasbourne</td>
<td>Local Bus</td>
<td>30/60</td>
<td>5:30 AM - 11:00 PM</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>92</td>
<td>South Beaverton Express</td>
<td>Express Bus</td>
<td>30/--</td>
<td>5:30 AM - 9:00 AM;</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Note: Figures do not incorporate cost of installation and labor which vary by location.
OTHER TRANSIT SERVICES

Nike operates a private shuttle connecting the Merlo Road/158th Avenue MAX Station with the Nike Campus. Also, Columbia County Rider offers a route between St. Helens/Scappoose and the Willow Creek MAX station on the border of Beaverton and Hillsboro.

PLANNED TRANSIT CHANGES AND IMPROVEMENTS

Due to recent budget reductions, no major transit improvements are planned on TriMet services, including in the central Beaverton area. In fact, several rounds of service reductions have taken place over the past few years, as outlined in TriMet’s Transit Investment Plan (TIP). Of those lines that serve central Beaverton, the following service reductions are proposed to occur in FY 2011:

- Line 20-Burnside/Stark. Weekday and Saturday service frequency.
- Line 52-Farmington/185th. Weekday service frequency.
- Line 53-Arctic/Allen. Route change.
- Line 57-TV Hwy/Forest Grove. Weekday and weekend service frequency.
- Line 58-Canyon Road. Weekday and Sunday service frequency.

According to the Transit Investment Plan (TIP), TriMet’s first priority will be to restore service that has been cut over the past few years on MAX and the Frequent Service bus network prior to implementing new service, and their next priority will be to restore service cuts to other routes.
FIGURE 1: EXISTING TRANSIT SERVICES IN BEAVERTON

![Map of existing transit services in Beaverton]

Legend:
- MAX / WES Routes
- TriMet Bus Routes Serving Beaverton
- Bus Stops
- Transit Center
- MAX Stations
- Park-and-Ride
- Beaverton City Boundaries

Source: City of Beaverton, TriMet, Metro
Once previous service levels have been restored and operating and capital revenues become available, several TriMet lines serving central Beaverton are suggested for improvements:

- Line 52, which connects the Beaverton Transit Center with the PCC Rock Creek Campus via Farmington and 185th Avenue, is slated for improved Saturday frequency.
- Line 76, which connects the Beaverton Transit Center and Tualatin, is one of TriMet's top priorities for expansion of the Frequent Service network.
- Based on an initial assessment of existing transit services and land uses throughout the city, the most likely location for a circulator is in central Beaverton. Based on this assumption, suggested objectives for a Beaverton circulator include:
  - Provide all-day, frequent circulation for residents and visitors
  - Promote a “park once” goal for visitors throughout the central Beaverton area
  - Provide a connection at least to the Beaverton Transit Center
  - Provide access to the heart of Beaverton (centered on Broadway between Hall and Watson)
  - Serve The Round development
  - Provide better circulation for neighborhoods immediately south of Farmington (i.e., the library, community center and farmers market)
  - Provide better circulation connecting City Hall on Griffith Drive
  - Connect high-density housing and commercial on the edge of the Central City planned in the Beaverton Civic Plan (when developed)
  - Provide a catalyst for future economic development
POTENTIAL CIRCULATOR CONCEPT

A circulator bus would connect many of the main destinations in central Beaverton. Based on existing land uses, a circulator in central Beaverton is not likely to attract high ridership or be highly productive if implemented today. However, as central Beaverton continues to develop, a circulator could help the City meet regional mobility goals outlined in Metro’s 2040 Growth Concept, and serve as a catalyst for future development.

As such, a conceptual circulator route and operating plan is presented below in figure 2. This concept does not make any assumptions about who would operate the route, vehicle type, or other elements that would need to be identified prior to implementation.

**FIGURE 2: CIRCULATOR ROUTE CONCEPT**

This route would serve destinations including the Beaverton Transit Center (BTC), The Round development, Cedar Hills Crossing Shopping Center, Beaverton City Hall, Beaverton Central Library and Beaverton Farmer’s Market. The entire loop, by direction, is approximately 4 miles long.
ROUTE DESCRIPTION
Based on the current and planned land uses in central Beaverton, as well as the current and planned roadway network, a conceptual bi-directional loop route was developed. The conceptual circulator uses several streets that either do not exist today or are planned for extension. These include Millikan Way between Watson and Lombard, Rose Biggi Avenue between Crescent Way and Westgate Drive, and a connection between Beaverton-Hillsdale Highway and Canyon Road in the vicinity of Griffith Drive. A possible extension of the loop route, if warranted by future land use changes, would be to extend the route north to Terman Road and 141st Street, serving the Milkan Way MAX Station. This extension would add approximately 1.5 miles to each direction of the loop.

SERVICE LEVELS
Because central Beaverton is relatively compact, and recommendations are being made to improve the connectivity of the street network (and thus improve the attractiveness of walking), service on a circulator must be as frequent as possible to encourage ridership. As such, it is assumed that the circulator would operate every 10 minutes in both directions between 6:00 AM and 6:00 PM, while evening service (between 6:00 PM and 9:00 PM) be reduced to every 20 minutes.

VEHICLE NEEDS AND ESTIMATED COSTS
Assuming service operates seven days a week at the same service levels, it is estimated that the short loop route would operate for about 18,800 vehicle hours annually, while the long loop route would operate for about 28,600 annual vehicle hours. Assuming a cost of $100.00 per service hour, annual operating costs for the short loop would be approximately $1,800,000, while the long loop would cost approximately $2,900,000.

Given the service levels discussed above, a maximum of four vehicles would be required to operate the short loop service and six vehicles would be required for the long loop. At least one spare vehicle would also be required for spares.

Specific vehicle costs are not estimates due to the uncertainty of who would operate the service and the type of vehicle used. In general, vehicles that might be appropriate for this type of circulator service could range from $60,000 to $400,000 each depending on propulsion system, style and vehicle capacity.
OTHER CIRCULATION IMPROVEMENTS
Because Beaverton covers a large area and is generally well served by TriMet service, there does not appear to be an immediate need for a city-wide circulator. Central Beaverton, however, could support a local circulator once higher densities and a mix of land uses are realized. To prepare for the eventual operation of a circulator, and to enhance the role of transit throughout the city, several strategies could be pursued in the near-term.

MARKET THE CIRCULATOR FUNCTION OF EXISTING SERVICES
One strategy would be to market the fact that many of the existing TriMet routes already provide circulation in Beaverton. For example, Lines 76 and 78 operate on roughly 30 minute headways between the Tigard Transit Center and Beaverton Transit Center but their schedules are adjusted in a way that service is provided on common segments every 15 minutes. Similarly, Lines 52 and 57 operate in roughly the same corridor (one on Farmington and the other on Canyon) between Hocken and the Beaverton Transit Center. While the schedules on these two lines are not offset to provide greater frequency, Line 57 is a Frequent Service line and Line 52 is very close to providing frequent service levels. Thus, both lines could be marketed together to convey their local circulation function.

POTENTIAL ROUTING OF LOCAL BUS ROUTES IN CENTRAL BEAVERTON
The Beaverton Civic Plan envisions an expansion of the street grid in central Beaverton, which will improve accessibility and connectivity for all modes. One street that is planned to be extended is Millikan Way between Watson and Lombard. While this new connection would need to be designed to handle bus operations, if Lines 76 and 78 were rerouted to Millikan Way, they could provide better service to The Round development and minimize potential operating conflicts with the WES train and other buses on Lombard Avenue. This new connection also opens up the opportunity for Lines 20 and/or 67 to better serve The Round development and other future land uses in this area.

An additional social marketing tool could include smart phone/mobile applications to provide real-time information regarding transit activity region-wide. Although there are numerous Portland metropolitan region-oriented transit apps available, TriMet has yet to develop such a marketing feature. The City would need to advocate this idea to TriMet and ensure that the app can be filtered to provide city-by-city transit information.
Another option would be to realign Line 52 slightly to travel from the Beaverton TC via Canyon Road, turn south on Watson Avenue and west on Farmington Road. If schedules on Lines 52 and 57 were offset (as they are on Lines 76 and 78), the frequency of these two lines combined could provide 7-10 minute circulation service in central Beaverton. It should be noted that Line 57 is currently a Frequent Service line, which means it operates every 15 minutes or better all day, while Line 52 is not designated as a Frequent Service line even though it is close to proving the same level of service as Line 57.

**WAYFINDING AND MARKETING**

Another option would be to implement a city-wide information and marketing campaign to encourage people to use transit as a way to travel within the city. This could also include a city-wide wayfinding program that clearly integrates transit with all other modes of transportation in the community. An example would be an enhanced transit, bike and pedestrian map or website that clearly explains how people can better use other modes. This campaign could also be directed at visitors and be distributed or posted at key destinations, businesses, or public gathering locations (such as along Broadway between Watson and Hall. Another option would be to make better use of residential and business based social marketing to promote the existing transit services in the city. It should be noted that the City of Beaverton is already a member of the Westside Transportation Alliance (WTA), which provides programs and services for member employers and employees.

**IMPROVED TRANSIT INFRASTRUCTURE**

Bus stops and shelters are the “front door” of transit and play an important role in how existing passengers, potential passengers and even non users perceive transit. Starting with identifying those stops in the city that have the greatest need for improvement, a program could be implemented to upgrade the physical condition of key bus stops throughout the city. This program could also be integrated with the city-wide information and wayfinding campaign discussed above.

**INTEGRATION WITH BIKE NETWORK**

The bike network in Beaverton should also continue to be integrated with the transit network to strengthen the connection between these two modes. This connection typically works best when cyclists travel relatively short distances to access transit for longer regional trips. TriMet currently has bike parking at a number of its MAX stations but is in the early phases
of implementing a more comprehensive regional Bike and Ride program. Using keycard technology, this program will provide secure bike parking at key transit stations throughout the region. The first of these stations recently opened at the Sunset Transit Center and new facilities are planned to open this year at the Beaverton TC and Gresham TC. Based on the same technology, the Bike and Ride network could be implemented at other key transit nodes throughout Beaverton. While this should be integrated with TriMet’s planning efforts, potential locations for small Bike and Ride facilities include: Murray Road and Scholls Ferry Road, Murray Road and TV Highway, Hall Boulevard and Scholls Ferry Road, and Walker Boulevard and Murray Road.

**POTENTIAL STREETCAR SERVICE IN BEAVERTON**

Streetcar service has been suggested as one possible option to provide circulation in Beaverton. For the same reasons discussed above (the need for higher densities and a greater mix of land uses), and because of the capital investment required for this mode, potential streetcar is most likely to happen in central Beaverton but is considered a long-term strategy. However, the success of several streetcar alignments in Portland, Seattle and Tacoma points to the potential value of this technology for economic development purposes and for circulating people through an urban area who make relatively short trips. As in Tacoma, the streetcar could serve a dual function of transporting people from a major rail terminal to downtown jobs.

While the design of a streetcar service should adhere to the same principles as a rubber-tired circulator, the capital investment needed for this technology requires a much more focused objective. Because streetcar is more effective at attracting new development compared to rubber-tired circulators, the most likely alignment will be one that also serves areas that have the potential for high-density, transit supportive development. Based on the transportation and land use strategies being developed as part of the Beaverton Civic Plan, a streetcar corridor would be most likely in the east-west direction with a connection to the Beaverton Transit Center. The desire to illustrate the conceptual routes for better comprehension is understandable, but any route is highly conceptual and subject to change. Also, mapping the routes may give the impression that this is the preferred alignment or that a fixed guideway circulator is justified in the short- or even mid-term.

For reference purposes only, streetcar construction costs are roughly $15-20 million per track mile, which also includes vehicles, maintenance/storage facility and contingency costs. This figure is based on construction costs in Portland, Seattle and Tacoma.
How were the Strategies Developed?

**TECHNICAL PHASE: Where Do We Begin?**

**APRIL – AUGUST 2010**

City Council endorsed commencement of the Civic Plan.
The team began researching key issues in Beaverton.

**DEVELOPMENT PHASE: How Should Beaverton Grow?**

**SEPTEMBER 2010 – JANUARY 2011**

The City hosted public events to gather ideas for the Civic Plan.
A Steering Committee and six Task Forces formed to guide the creation of the draft strategies using the input gathered at the community events.
The draft strategies were presented and immediate community input gathered at two Civic.
Strategy and Documentary Premiere events on January 31 and February 1.

**REFINEMENT PHASE: Putting the Pieces Together**

**FEBRUARY-APRIL 2011**

The team brought the Civic Plan strategies to City Council in a series of study sessions.
Community input on the draft strategies was gathered through the Civic Plan website, phone and online surveys and by email.
At the conclusion of the study sessions, the team incorporated comments into the revised strategy drafts.
The Steering Committee prioritized the steps necessary to implement and finance the strategies.
City Council viewed the public feedback report and heard from the community at a public hearing on March 29.
Council adopted the strategies on April 12, 2011.

**IMPLEMENTATION PHASE: Bringing the Ideas to Life**

**STARTING IN SPRING 2011**

Beaverton will begin making adjustments to city codes and policies using the adopted strategies.
City staff will initiate new projects and programs adopted through the Civic Plan, using the implementation and financing strategies to guide their work.