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INTRODUCTION

Even before the Portland to Milwaukie light rail line carries its first passenger, it will begin to demonstrate its transformative power as a regional investment in rail transit. From Portland to Milwaukie to Clackamas County, light rail could change travel behavior, create benefits for existing neighborhoods, and stimulate new investment around stations. Additional mixed use development could emerge in the Clinton Street area, new development could infill around the Rhine and Holgate stations on SE 17th, and retail and residential development could accelerate in downtown Milwaukie. Over time new high quality bicycle and pedestrian connections could radiate into the neighborhoods from the stations. These positive outcomes are not automatic. Good planning and deliberate action are essential to make each station area along the line a complete success.

Study Purpose

The purpose of the Portland to Milwaukie Light Rail Station Assessment is to establish a foundation for public and private actions that will maximize the community benefits for each station community. The assessment provides guidance to Metro, TriMet, Clackamas County, and the Cities of Portland and Milwaukie and reflects the public's preferences, the expert opinions of agency staff, and the recommendations of planning and development professionals. The recommendations of this assessment act only as guidance. Implementation will require additional analysis and public input, with active leadership by local jurisdictions.

This is the best possible time to assess the proposed stations. By providing this assessment in the early stages of project design before preliminary engineering, project planners and engineers can more easily and cost effectively adjust the engineering details, promote “Development Oriented Transit,” and provide local governments with a head start on planning for the capital improvements, policy, plan, and zoning changes needed to complement the considerable regional investment in the stations. The assessment is being completed concurrently with the preparation of a Supplemental Draft Environmental Impact Analysis (SDEIS) and is based upon basic concept designs for the stations and alignment. The assessment identifies, for example, whether moving a platform location 100 feet will improve pedestrian connections and the development potential of adjacent parcels. However, a design action like this would have trade-offs with cost or impacts not considered in this report that would need to be balanced with future design. In addition, input from the early assessment of stations can be provided to maximize future station access to existing and potential Transit-Oriented Development (TOD). Additional goals for stations include multi-modal access, placemaking, and distinctiveness that will complement the station investment.

Station Locations Evaluated

This report assesses the proposed stations from Clinton Street in Portland south to the project terminus at Park Avenue in Clackamas County—a total of 13 stations (six total stations in the City of Portland, six total stations in the City of Milwaukie, and one station within Clackamas County). (Note: The other stations in the project—Oregon Museum of Science and Industry, Oregon Health and Science University, Harbor, and Lincoln—are not part of this study. They are within areas that already have a planning framework in place and are located within urban renewal districts that provide some financial resources for improving these station areas). The SDEIS evaluates a total of 18 stations within several alignment alternatives. The Locally Preferred Alternative (LPA) endorsed by the local governments and adopted by Metro on July 24, 2008, includes ten stations and one future station (Harold). The LPA does not include four Milwaukie stations (Harrison, Monroe, Washington, and Bluebird) that are part of this assessment. However, these stations are included in the report in order to document the public discussion about these stations and the assessment completed for each of them.

Project Approach

In the Portland Metropolitan region, light rail is not just about tracks and ties, steel and concrete; it’s about the stations and what happens around them. Light rail improves access to and from neighborhoods, districts, and downtowns. The stations are the access points, so putting them in the right place with the right connections is essential. Stations can be an amenity and help focus development within a community, creating a synergy between transit and land uses that activates the public realm and adds places where people want to be, not just pass through. In a regional context, new light rail stations can leverage compact mixed use development where appropriate and reduce pressures to expand the urban growth boundary.

The Portland to Milwaukie Light Rail Project has been a regional priority for ten years, and the identification of station locations has been carefully considered throughout that period. Therefore, this report focuses on how to optimize selected station locations by providing recommended actions that TriMet and local governments can pursue to improve the benefits to the surrounding community and to the region.
There are four basic steps in the assessment methodology that is applied to each station:

1. **What There Is Now**: An in-depth evaluation of each station community that examines existing land use and transportation conditions, summarizes the existing policies and zoning, and identifies potential (re)development sites.
2. **What Is Proposed**: A graphic and text explanation of the LRT track, station, and other existing and proposed improvements.
3. **Assessment of Ideal Station Characteristics**: An evaluation of each station for the presence of ideal station characteristics and identification of missing elements for each ideal characteristic.
4. **Potential Actions**: A list of potential actions that, if implemented, would provide the missing characteristics.

**Good Connections**

Public transit riders begin and end their journey as pedestrians. Thus, access to stations and the areas around them should be safe and active pedestrian environments. Pedestrians need a robust network of clearly defined and simple route options to and from a station. These routes should be appealing, convenient, and safe and should directly link to adjacent shopping, services, homes, attractions, and local streets.

**Sidewalks connect the neighborhood to the station**.

Sidewalks or pedestrian routes are how all transit riders eventually get to and from a station. They provide pedestrian access to the neighborhoods and services surrounding the station. A well-developed sidewalk network, with high quality pedestrian treatments, that connects the station to the neighborhood and nearby services is integral to providing effective and efficient station access from as many routes as possible. Like vehicle facilities, "sidewalk corridors" should reflect the urban context (e.g., should be wider along main streets, or have sidewalks and tree lawns within single-family neighborhoods) and be wide enough for expected foot traffic, particularly around train stations.

All pedestrian routes that arrive at the station should continue past the station property edge to the platform entrance. To serve all riders, sidewalks need to be designed based on the physical needs of wheelchair users and visually impaired in order to have consistent, equitable, and reliable access. This access would include minimum 5-foot-wide sidewalks with seamless transitions between streets and other surfaces. Research shows that people are willing to walk about a half-mile, or 10 minutes, to light rail stations. The sidewalk improvements and network should reflect this distance along the actual street network to station entrances.

**Busy streets nearby have marked pedestrian crossings**.

Clearly marked pedestrian crossings with smooth, well-marked transitions to sidewalks and pedestrian routes to and from the station are essential. Pedestrians are most at risk when crossing a street, so reducing risk and increasing a sense of safety are very important in encouraging walking to...
stations. The longer the crossing distance and the higher vehicle speeds and volumes, the higher the exposure to risk.

Pedestrian crossing are provided over or across physical barriers (such as the railroad or major busy streets) between the surrounding communities and the station.

Pedestrian connections across busy streets can be provided by several means, such as traffic or pedestrian refuge islands where people can wait in the middle of a two-way street, traffic signal timing that is extended to provide additional time for pedestrians to cross the street, and traffic signal phases that are altered to give walkers priority over vehicles, such as prohibiting right turns on red signals or using an exclusive walk phase. Clearly marked, monitored, and well-positioned railroad and light rail track crossings can provide safe access across the tracks. When safe and effective at-grade pedestrian crossings are not feasible, well-designed, well-lit and, most importantly, well-placed pedestrian bridges can also provide safe and quick access across physical barriers.

Buildings are pedestrian-friendly (the front door or entrance faces the street or sidewalk and there are ground floor windows). Buildings will be oriented to the street with ground floor windows and possibly retail to create an active street edge and interactive pedestrian environment. With little or no front setbacks, facades will provide an “outdoor room” effect, fulfilling a natural desire for a sense of enclosure and protection from the elements while being outside, for passers-by. This building orientation also creates more “eyes” on the street and station area, thus increasing safety.

Streets and sidewalks are well lit. Well lit environments deter vandalism and increase people’s sense of security. Well lit walkways help deter crime. Station area and sidewalk lighting should be at intensities and heights that are oriented to the size and speed of pedestrians, that is, on the “human scale.”

Bike lanes, multi-use paths, or low traffic streets provide bike access to the station. Bicycle routes to the station should be attractive and convenient to all riders, including the inexperienced cyclist who might be uncomfortable cycling on arterials with high traffic volumes. Routes to and from light rail stations should include adequately wide bicycle lanes, multi-use paths, or wide curb lanes with sharrows, at a minimum, in addition to good signage and traffic signals. Sharrows are roadway paint stencils that remind cars to share the road with bicycles. Bicycles should trigger all actuated traffic signals near the station, and the location of bicycle-sensitive loop detectors should be identified with bicycle loop detector pavement markings. Cyclists should not have to dismount and walk to bicycle parking, but should be able to ride up to it. This means that bike routes should continue to a spot as close as possible to the platform entrance. Bicycle parking should be located in secure, well-lit locations with convenient access to the station and bikeways. It should be located in areas with high pedestrian flows or where other informal surveillance is possible. There should be enough Class I parking (bicycle lockers and attended parking) and Class II parking (“U” and wave racks) to meet demand, including seasonal fluctuations. Some bicycle parking should also be protected from weather, such as under a roof or awning.

Signage is an important element for riders and residents to better understand the bicycle network and how it is integrated with the transit system. There should be signs to the light rail station from adjoining streets and bikeways. All bicycle-related signs should be integrated with signs for other modes and should not interfere with Americans With Disabilities Act (ADA) requirements or pedestrian and vehicle circulation. Lastly, there should be maps in the station that help bicyclists orient themselves to surrounding streets, popular destinations, and existing bikeways. This investment in bicycle infrastructure and bicycle connections to the station can increase the number of new riders in the area and also greatly expand the geographic area from which transit riders travel without driving.

Bus stops are located near the station, with clear paths from the stop to the light rail station. Ensuring efficient transit connections to and from rail stations is crucial in the development of a seamless, well-integrated transit network. Transit stops and/or transfer wayfinding signage should be immediately visible upon exiting the platform. Well-located bus stops will minimize walking distances to and from the platform entrance and avoid the need to cross roadways, particularly busy arterials. Minimizing distances between bus stops facilitates bus-bus transfers and simplifies bus-light rail transfers. In some station areas that have pedestrian-friendly walking environments and where crossing busy streets isn’t necessary, short walks between the station platform and alternative modes of transportation may help support street-level retail and an active station area. Bus stops should be located on street in travel lanes with curb extensions (unless off-street facilities are necessary to accommodate layovers or transfers) to prioritize bus movements. Bus stops should not be located where they will block crosswalks, obstruct traffic signals, or be obscured from motorists, bicyclists, and pedestrians.

Density, Diversity, and Use

Residential and employment densities, which create the most potential riders, typically are the factors that make a transit station viable. Other uses, such as commercial and institutional, can benefit from and support a successful station area.

Station area includes a variety of housing types and densities such as apartments, condominiums, townhouses/rowhouses, live-work units, and single-family homes. Providing a mixture of housing types and targeting homeowners and renters at multiple price points helps create a vibrant, eclectic community. Having a home located close to transit may help to ease household budgets because transportation expenses are decreased. Affordable housing close to transit is essential because of the greater transit dependence of lower-income households. In order to increase ridership and ensure environmental justice (i.e., equitable access to light rail investments), transit-oriented redevelopment and reinvestment in station communities should be balanced with the preservation of mixed-income housing.

Station area provides transit access to a variety of jobs and/or employment centers. Light rail is often used for commuting purposes. Stations that are in proximity to jobs and employment centers provide access to jobs while increasing ridership. In some cases, light rail transit may provide transit riders with more job opportunities by providing convenient access to employment areas that may previously have been unreachable within a reasonable commute time.
Retail, restaurants, and other commercial uses present an opportunity to be supported by transit.

In order to thrive, retail development must be surrounded by supportive densities and by traffic, both pedestrian and vehicular. The increased draw of people to the station communities can stimulate commercial uses in those areas. On-street parking is also critical to neighborhood scale pedestrian-oriented retail and should be provided where practical.

Station area includes institutions such as schools, parks, and medical facilities that would benefit from transit service.

Light rail presents transit riders with opportunities to access institutions and facilities that otherwise may have not been available to them because of lack of means of transportation. Thus, both the riders and the institutions would benefit from increased public access and connections.

Opportunities for New Uses

Opportunities for new uses, either on vacant lots or through the modification of developed lots surrounding the station, allow for more control in ensuring that the station area is a transit-supportive environment.

There is vacant or underutilized land near stations.

Vacant or underutilized land near stations presents opportunities for new TOD. Land should have, or have the potential for, a physical (e.g., direct pedestrian) or functional (e.g., reasonable walking distance of less than 1,500 feet) connection to the station.

A light rail station could support or encourage new development consistent with the city and neighborhood plans and policies.

In addition to being a means of accessing transit, light rail stations provide increased pedestrian movements within and around the station. This activity, and the desirability of living and working near a station, could encourage development consistent with neighborhood, city, and regional plans and policies.

OTHER DESIRABLE CHARACTERISTICS FOR SUCCESSFUL STATION AREAS

Have a coherent vision for how light rail fits into the community

Start with the neighborhood plan and the city’s comprehensive plan.

Station areas should support the visions of the neighborhood plan and city’s comprehensive plan to successfully integrate and complement the surrounding land uses.

Conduct additional planning where needed to fully articulate a vision.

Focused planning around specific stations can clearly outline an initiative for a station area. This detailed planning makes implementation easier and more successful. Developers and other interested parties have a detailed framework to follow to ensure their projects adhere to the vision, thus increasing the likelihood of approval.

Involving stakeholders.

Stakeholder participation is crucial to ensure that development occurs in a manner consistent with the community’s goals. Stakeholders that should be involved in the planning process include citizens, landowners, developers, local businesses, the transit agency, local elected officials, and local government departments.

Focus on implementation from the beginning.

The planning and zoning tools needed to implement the final vision for a station area should be considered during the planning and visioning process, rather than after, to ensure that the desired outcome is feasible.

Understand the market and demographic trends.

The financial realities of development should be considered within the context of market and demographic trends, and these financial realities should be weighed upon during the planning process.

Get the land uses right

Make retail strategy market-driven, not transit-driven.

Evaluate the retail market for the area both independent of and interdependent of transit. Retail development should be viable on its own and complemented by transit, rather than dependent on it, for success.

Develop mixed-income housing and encourage every price point to live around transit.

As with any neighborhood, developments around transit that support and provide for diversity are oftentimes the most vibrant (and the most desired) urban neighborhoods.
Segregate uses and vary density where appropriate. Mixed uses don’t have to be in the same building. Allowing for a diversity of land uses around station areas, from single to mixed uses where appropriate, gives station areas the opportunity for distinct rather than competing identities. Similarly, a variety of building forms should be used provided that transit oriented densities are preserved.

Allow employment areas near the station to promote reverse commuting and optimize transit capacity. Employment areas should be spread out near stations along the transit corridor and not just focused in downtown areas. This will promote reverse commuting, optimize transit capacity, and serve the adjacent areas.

Build a place, not a project; ensure good urban design
Design the station as a positive edge, center of, gateway to, or main amenity for the station community. Designing stations as distinct focal points or gateways energizes station areas, thus increasing the desire for development surrounding them. Designing stations as focal points limits the chance that they will become “islands” and simultaneously increases safety. It is not always necessary for the station to be the nucleus of a station area or neighboring community; the station can balance or expand, rather than compete with, already developed centers.

Use high quality urban form to support mixed incomes and uses.
Station areas should be designed with high quality urban form that also fits into the fabric of the surrounding community. Buildings that front sidewalks in station areas should not create a wall of identical looks and uses but should have breaks and variations to make a more stimulating pedestrian environment.

Create landmarks and beacons.
Development adjacent to stations should include space defining elements, such as plazas and courtyards, as well as public art pieces, serve as landmarks or beacons and create vitality.

Preserve and invest in existing neighborhoods.
Build light rail to fit appropriately into the local context and provide community enhancements, without changing the community character.

Compact, well-connected blocks help to maximize pedestrian connectivity and convenience by providing multiple routes to and from destinations. They also serve to disperse automobile traffic, thereby minimizing the impact of cars on the pedestrian environment.

Transitions into the surrounding single-family residential areas of a neighborhood. Station areas should “step down” as the development transitions into the surrounding neighborhood. This helps to ensure a seamless, gentle transition into these parts of existing neighborhoods.

Get the parking right
For station locations that must accommodate park and ride facilities, locate them within a five-minute walk of the platform but not directly in front of the station. Locate utility structures so as not to preclude redevelopment of prime station proximate sites.

In the regional context of a transit system, park and ride facilities within a short walk of, but not immediately adjacent to, stations allow for both development around stations and access to stations for light rail riders who need to drive to a station. Less parking is needed as a result of transit. Parking is expensive and encourages driving. Patrons who drive their cars will then have the opportunity to patronize businesses located between their parking spaces and the platform.

Discourage station overflow parking into the neighborhood.
Unless a park and ride facility is provided, stations are meant and designed to serve the surrounding neighborhoods and land uses and be accessed by foot, bike, or bus rather than by automobile. On-street parking should be managed to avoid spillover from the station through programs such as parking permits and metered parking.

Design structured parking well—wrap structures with commercial and residential uses and with active ground floor uses.
Parking should not detract from the pedestrian street environment. Accommodating parking within a building (wrapping) maintains an active street level.

Design the interconnected street grid and establish a finer-grained lot and block structure in new or redeveloping neighborhoods.
## Ideal Characteristics Evaluation

This table documents the evaluation of each station area for the presence of the ideal characteristics for light rail station.

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<th>Good connections</th>
<th>Clinton</th>
<th>Rhine</th>
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<td>Sidewalks connect the neighborhood to the station</td>
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<td>Streets and sidewalks are well-lit</td>
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<td>Bike lanes, paths, or low traffic streets provide access to station</td>
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<td>Pedestrian connections are provided to cross physical barriers</td>
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<th>Transit-supportive land uses</th>
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<td>Station area includes a variety of housing types and densities</td>
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<td>Retail, restaurants, and commercial uses are supported by transit</td>
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<td>Station areas include institutions that would benefit from transit</td>
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<td>Provide transit access to a variety of jobs/employment centers</td>
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<th>Opportunities for new uses</th>
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<td>Vacant or underutilized land near the station</td>
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<td>Support new development consistent with plans and policies</td>
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<th>Form a coherent vision for how light rail fits into the community</th>
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<td>Community vision or neighborhood plan</td>
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<th>Get the land uses right</th>
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<td>Make retail strategy market driven, not transit driven</td>
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<td>Develop mixed-income housing at diverse price points</td>
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<td>Segregate uses where appropriate</td>
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<th>Build a place, not a project; ensure good urban design</th>
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<tr>
<td>Create landmarks and beacons</td>
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<tr>
<td>Taper density and height from stations to neighborhoods</td>
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<table>
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<th>Rhine</th>
<th>Holgate</th>
<th>Harold</th>
<th>Bybee</th>
<th>Tacoma</th>
<th>Milwaukee</th>
<th>Harrison</th>
<th>Monroe</th>
<th>Washington</th>
<th>Love</th>
<th>Bluebird</th>
<th>Park</th>
</tr>
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<td>Do not locate park and ride or utility structures in front of station</td>
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<tr>
<td>Integrate structured parking into main land use</td>
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<td>Develop shared parking policies when feasible</td>
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<table>
<thead>
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<th>Create supportive public policies</th>
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<th>Harold</th>
<th>Bybee</th>
<th>Tacoma</th>
<th>Milwaukee</th>
<th>Harrison</th>
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<th>Washington</th>
<th>Love</th>
<th>Bluebird</th>
<th>Park</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pursue joint development</td>
<td></td>
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<tr>
<td>Focus public investments to support market/real estate dynamics</td>
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<tr>
<td>Make sure zoning and codes will help achieve the vision</td>
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</table>
MAKING STATIONS MORE SUSTAINABLE

Many of the ideal characteristics in this section are currently required, in some form or another through TriMet’s Design Criteria and/or various sections of the City of Portland’s Development Code. The intent is not to conflict with these standards but rather to identify these characteristics as important to consider.

Landscaping for amenity and environment

Stations areas are safely landscaped.

An attractive landscape serves as an amenity to the station area and the neighborhood, increasing the level of pedestrian comfort. Providing shelter for pedestrians and riders can be accomplished through strategic tree placement, which provides cover as well as a host of other environmental benefits. Station design should ensure that sight lines are maintained by following the principles of Crime Prevention through Environmental Design (CPTED). The goal of CPTED is to enhance the urban environment through design that reduces opportunities for crime and nuisance activity.

Consider the relationship between buildings and structures and vegetation.

Adjacent buildings and structures may affect solar access and wind on vegetation; therefore, plants should be selected accordingly. Similarly, consider the effect of landscaping on adjacent buildings: trees in particular may provide energy savings for adjacent buildings by providing more shade in the summer.

Vegetation helps reduce the urban heat island effect.

The elevated temperatures of urban areas (relative to rural areas) impact communities by increasing peak energy demand, air conditioning costs, air pollution levels, and heat-related illnesses and mortality. This condition is expected to be exacerbated by global climate change. Vegetation can minimize or mitigate the impact of the heat island effect through evapotranspiration and direct shading.

Successful landscape practices rest on a foundation of soil health.

Uncompacted soils rich in organic material provide for healthier plant growth and improved soil ecology. The increased absorbency of a healthy soil ecosystem also helps to manage stormwater runoff.

Integrate stormwater management

Plan for stormwater management early in the design process to maximize benefits.

Integrating stormwater facilities into station areas can reduce stormwater total volumes, reduce peak flow, and/or improve water quality, depending on the results desired. The design must consider the infrastructure and watershed health needs of the area—Is combined sewer overflow alleviation or the reduction of pollution the greatest concern for the area? In addition to

Create supportive public policies

Pursue joint development.

Joint development is private development that is conducted in conjunction with a transit agency’s property or interests. This approach encourages development by spreading the risk of development between public and private parties.

Focus public investments to support market/real estate dynamics.

Targeted, public sector infrastructure investments can serve as a significant incentive to develop around transit. Public provision of streetscape improvements, utilities, and other infrastructure components can effectively subsidize an expensive and risky infill project.

Make sure zoning and codes will help achieve the vision.

Zoning and codes should be the framework for a station area vision during the implementation process. Ensuring that the zoning and codes are aligned with the vision is integral for a station area plan to be implemented as planned.

SUSTAINABLE LANDSCAPING AT A TRANSIT STATION IN VANCOUVER, BRITISH COLUMBIA
Public interventions that can help achieve the ideal characteristics

Portland exemplifies the range of experiences possible with regard to development around rail transit. The Portland Streetcar has been phenomenally successful in stimulating development in the Pearl District and all along the alignment. Light rail has had mixed results, with some notable failures, as a development stimulator, due to a variety of factors. Where there is success, public intervention has always been a key factor. There are specific public actions that can make a real difference in the development success of a station area. They can create the right conditions to leverage private action. Still, it is important to remember that public interventions are just one of many conditions needed to create a successful station area. Portland’s Pearl District is an example. Public investment and a positive regulatory framework were necessary for the district to succeed, but by themselves these public actions were not sufficient. The success of the Pearl District was the result of a public/private partnership in the form of a development agreement hinged on three main tenets: access, parks and affordability.

Public interventions typically fall into four categories:

Regulatory
A local jurisdiction’s zoning code, building code, and development standards regulate private development. The regulations address allowed uses, structure height, setback, building bulk, external features, construction type, and many other development conditions. From the general public’s perspective, these regulations help achieve development that is consistent with community preferences. For the owners, development regulations have financial implications. For example, whereas the community may prefer ground floor transparency (i.e., windows), and blank wall limitations to encourage walking and transit use, the owner may prefer cheaper, smaller windows or no windows at all.

Regulatory intervention can help to facilitate desired development in several ways. Zoning and development regulations can be changed to improve financial feasibility, such as using FAR (floor to area ratio) to allow for more square footage or units. They can also be tailored to fit the needs of a peculiar site or a specific geographic area through a plan district or other zoning tool so that a developer is not subject to a “one-size-fits-all” regulation that limits flexibility and may discourage development. Building codes can be changed to allow for more efficient materials or building techniques that can reduce development and maintenance costs. Development standards can incorporate “form-based” requirements such as “build to lines” or maximum building setbacks, minimum ground floor transparency (i.e., windows), and blank wall limitations to encourage walking and transit use.

Leadership
A type of public intervention that is broadly applicable to the project is leadership. Every station needs champions. The champion can be a business leader, public official or neighborhood advocate. It can be an agency or a partnership of one or more of these interests. What matters is that there is advocacy, direction, and accountability. Leadership is too often overlooked. It is easy to spend money. It is much harder to develop and implement a development strategy. Good development is the result of many factors—markets, demographics, smart property owners. For overall success, sometimes it takes someone whose job it is to try to integrate these factors. This kind of public intervention leadership can go even further than money or regulations.

Use materials with a low embodied energy
Every product has an “embodied energy”—the amount of energy it took to manufacture and transport the product. Minimize use of products with high embodied energy in favor of those that are less energy intensive to produce or are sourced locally. Products made with recycled and reclaimed materials typically have a lower embodied energy. Using materials that are regionally available—such as local aggregate—also has a lower embodied energy due to reduced transportation costs and emissions.

Use energy wisely
Use lighting systems that are more energy-efficient.
Certain types of lighting systems, such as LED lighting, are more energy-efficient. Smaller-scale lighting is better sized to the pedestrian and may provide energy savings. Another strategy to reduce the amount of energy from unsustainable sources is to incorporate solar photovoltaic panels into lighting fixtures.

Use Green Construction Practices
Reuse or recycle construction waste.
Recycling construction waste redirects materials from landfills and puts them back into the manufacturing process. If possible, reuse materials for use on-site, which decreases demand for new materials and resources. Steel, concrete, bricks, and aluminum are examples of materials can that can be recycled or repurposed.

Protect soil, air, and water resources during construction.
Develop a site protection plan to prevent pollution and reduce site disturbance. Rope off areas to minimize soil compaction in areas designated for landscaping or infiltration facilities. Place excavated material downstream and away from designated infiltration areas. To prevent water pollution, catch basins can be used as temporary sediment traps during construction. Diesel exhaust is a significant contribution to urban air pollution; using ultra-low sulfur diesel fuel in construction equipment will minimize the contribution to degraded air quality.

Project design changes
The concept design for the Portland to Milwaukie Light Rail Project includes the track, stations, park and ride facilities, and other improvements such as the pedestrian overpasses at Clinton and Rhine. A change in the project design, when feasible, may influence the benefits to the community and the development potential of the adjacent property.

Leadership
A type of public intervention that is broadly applicable to the project is leadership. Every station needs champions. The champion can be a business leader, public official or neighborhood advocate. It can be an agency or a partnership of one or more of these interests. What matters is that there is advocacy, direction, and accountability.
**STATION AREA PROJECTIONS**

### Population and employment projections

The projected population and employment changes from 2005 to 2030 were calculated for a one-half mile area surrounding each station. These projections are based on Metro’s regional and population employment forecast. They were cited in the Milwaukie Light Rail Project SDEIS from May 2008. The projected growth in households and jobs is in accordance with the plan designations within a half-mile of each station area.

<table>
<thead>
<tr>
<th>STATION</th>
<th>PROJECTION</th>
<th>Year 2005</th>
<th>Year 2030</th>
<th>% Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLINTON</td>
<td>HOUSEHOLDS</td>
<td>2,020</td>
<td>2,681</td>
<td>33%</td>
</tr>
<tr>
<td></td>
<td>JOBS</td>
<td>6,276</td>
<td>8,292</td>
<td>32%</td>
</tr>
<tr>
<td>RHINE</td>
<td>HOUSEHOLDS</td>
<td>1,941</td>
<td>2,019</td>
<td>4%</td>
</tr>
<tr>
<td></td>
<td>JOBS</td>
<td>8,593</td>
<td>10,061</td>
<td>23%</td>
</tr>
<tr>
<td>HOLGATE</td>
<td>HOUSEHOLDS</td>
<td>1,375</td>
<td>1,345</td>
<td>-2%</td>
</tr>
<tr>
<td></td>
<td>JOBS</td>
<td>6,085</td>
<td>6,825</td>
<td>12%</td>
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<tr>
<td>HAROLD</td>
<td>HOUSEHOLDS</td>
<td>1,703</td>
<td>1,785</td>
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<td></td>
<td>JOBS</td>
<td>3,072</td>
<td>3,685</td>
<td>20%</td>
</tr>
<tr>
<td>BYBEE</td>
<td>HOUSEHOLDS</td>
<td>1,911</td>
<td>1,962</td>
<td>3%</td>
</tr>
<tr>
<td></td>
<td>JOBS</td>
<td>1,315</td>
<td>1,668</td>
<td>27%</td>
</tr>
<tr>
<td>TACOMA</td>
<td>HOUSEHOLDS</td>
<td>1,629</td>
<td>1,764</td>
<td>8%</td>
</tr>
<tr>
<td></td>
<td>JOBS</td>
<td>1,777</td>
<td>2,396</td>
<td>35%</td>
</tr>
<tr>
<td>MILWAUKIE</td>
<td>HOUSEHOLDS</td>
<td>908</td>
<td>1,400</td>
<td>54%</td>
</tr>
<tr>
<td></td>
<td>JOBS</td>
<td>3,190</td>
<td>3,923</td>
<td>23%</td>
</tr>
<tr>
<td>HARRISON</td>
<td>HOUSEHOLDS</td>
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<td>2,092</td>
<td>63%</td>
</tr>
<tr>
<td></td>
<td>JOBS</td>
<td>3,239</td>
<td>4,234</td>
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</tr>
<tr>
<td>MONROE</td>
<td>HOUSEHOLDS</td>
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<td>2,065</td>
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<td>JOBS</td>
<td>2,775</td>
<td>3,732</td>
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<td>LAKE</td>
<td>HOUSEHOLDS</td>
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<td>1,987</td>
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<td></td>
<td>JOBS</td>
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<td>HOUSEHOLDS</td>
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<td>1,607</td>
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<td></td>
<td>JOBS</td>
<td>1,023</td>
<td>1,578</td>
<td>54%</td>
</tr>
<tr>
<td>PARK</td>
<td>HOUSEHOLDS</td>
<td>1,796</td>
<td>1,873</td>
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<tr>
<td></td>
<td>JOBS</td>
<td>830</td>
<td>1,368</td>
<td>65%</td>
</tr>
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</table>

### Development potential projections

An analysis was performed in order to quantify the development potential immediately surrounding each station area. This process involved several steps, the first of which was to select tax parcels within a quarter-mile radius of the station platform and determine their potential for redevelopment. The parcel’s redevelopment potential was determined using an Improvement to Land (IL) analysis. Any parcel that was currently vacant or had an IL value of less than one was identified as a candidate for redevelopment for the purposes of this exercise.

These parcels were then analyzed with the City of Portland and City of Milwaukie’s zoning codes and development standards. This analysis determined the potential acreage of residential and commercial redevelopment for each station area. The City of Portland zoning code indicates the number of units per acre or square feet. The City of Milwaukie zoning code is not structured in the same way as the City of Portland zoning code; as such, potential redevelopable residential parcels are presented in acreage rather than a number of units here. It is important to note that potential residential parcels in Milwaukie could be developed to higher densities given the base zones. For example, while the Park station area has a higher acreage available for potential residential development, Downtown Milwaukie has zoning in place that would allow for higher densities and would therefore provide more residential units.

The projections presented are a conservative estimate of the redevelopment potential of each light rail station area. They present the minimum development density. Both residential and commercial density could be further increased through the utilization of conditional uses, density bonuses, the as-of-right development of duplexes on corner lots and accessory dwelling units in R5 zones, and other zoning conditions.

Several assumptions are important to note. As stated above, zoning and development code minimums were used throughout the analysis. For all Milwaukie station areas, the residential acreage includes all associated parking. Within the Milwaukie Downtown zones, FAR levels were used in conjunction with height limits to determine development densities. Commercial and industrial zones in both the City of Portland and the City of Milwaukie have limitations on the potential commercial uses. The commercial acreage was calculated assuming these limitations had been met.

### Portland stations

<table>
<thead>
<tr>
<th>STATION</th>
<th>TOTAL ACRES VACANT OR REDEVELOPABLE (within ¼ mile)</th>
<th>POTENTIAL RESIDENTIAL ACREAGE (existing zoning)</th>
<th>POTENTIAL COMMERCIAL ACREAGE (existing zoning)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLINTON</td>
<td>26.7</td>
<td>106</td>
<td>21.0</td>
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<tr>
<td>RHINE</td>
<td>20.0</td>
<td>72</td>
<td>14.0</td>
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<tr>
<td>HOLGATE</td>
<td>16.7</td>
<td>89</td>
<td>11.9</td>
</tr>
<tr>
<td>HAROLD</td>
<td>11.2</td>
<td>145</td>
<td>11.2</td>
</tr>
<tr>
<td>BYBEE</td>
<td>1.2</td>
<td>23</td>
<td>0.0</td>
</tr>
<tr>
<td>TACOMA</td>
<td>22.9</td>
<td>172</td>
<td>10.7</td>
</tr>
</tbody>
</table>

### Milwaukie stations

<table>
<thead>
<tr>
<th>STATION</th>
<th>TOTAL ACRES VACANT OR REDEVELOPABLE (within ¼ mile)</th>
<th>POTENTIAL RESIDENTIAL ACREAGE (existing zoning)</th>
<th>POTENTIAL COMMERCIAL ACREAGE (existing zoning)</th>
</tr>
</thead>
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<tr>
<td>MILWAUKIE</td>
<td>13.97</td>
<td>0.0</td>
<td>13.97</td>
</tr>
<tr>
<td>DOWNTOWN MILWAUKIE</td>
<td>19.97</td>
<td>25.95</td>
<td>9.6</td>
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<tr>
<td>LAKE</td>
<td>23.4</td>
<td>29.4</td>
<td>14.0</td>
</tr>
<tr>
<td>BLUEBIRD</td>
<td>24.9</td>
<td>29.2</td>
<td>8.8</td>
</tr>
<tr>
<td>PARK</td>
<td>30.8</td>
<td>23.2</td>
<td>14.3</td>
</tr>
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STAKEHOLDER MEETINGS

Community interests summary

The citizens of Portland and Milwaukie played a major role in informing the project team during the station planning and assessment process. Public involvement was aimed at engaging all stakeholders—residents, business and property owners, developers, and real estate professionals—in developing a vision for the future station areas. The main forum for public input on the station areas was through public open houses and workshops. Community members attending the public meetings submitted their ideas, comments, and perspectives on a wide range of station area planning items such as: infrastructure improvements, development potential, crime and safety concerns, desired amenities for the station and surrounding area, and bicycle and pedestrian connections and facilities. The recorded public input from the community meetings is documented in the Appendix of this report.

Some of the suggestions made by the public were already proposed as part of the project. Other input received from the community meetings was used to develop some of the Potential Public Actions for each of the stations. The community recommendations that are consistent with the Public Action Recommendations are noted in the Appendix.

Other Community Interest Tools Used: The other tools used were newsletters, website, flyers, newspaper advertisements, communications with neighborhood associations, and an expert review panel (Developers Work Session).

Portland community meetings

Station Planning Workshops

October 6, 2007 at Cleveland High School – Station Planning Workshop for Clinton, Rhine, and Holgate stations.

October 11, 2007 at Sellwood Middle School – Station Planning Workshop for Harold, Bybee, and Tacoma stations.

These workshops started with an informative presentation about guiding principles and best practices for station area development and why station areas matter to the overall success of a light rail project. After the presentation, participants broke into small groups to discuss station areas. The discussions focused on the proposed station area best practices that were presented, how well each station area meets the best practices, and where there are opportunities for changes in the station area to better meet the best practices. The small groups recorded their comments on maps. (A complete set of recorded statements can be found in the Appendix). Some of the comments noted include:

Clinton Station Area
- Reconfigure intersection at 11th/12th/Gideon/Clinton
- Improve connection to Clinton bikeway
- Keep industrial uses (maintains jobs in neighborhood)
- Shared-use path along rail between Clinton and Division.

Rhine Station Area
- Buffer homes with vegetation
- Make SE 17th “green”
- Give the pedestrian crossing better visibility for higher use.

Holgate Station Area
- Consider SE 16th as potential bike boulevard
- Consider instituting restricted or permitted parking areas to protect residential parking
- No station
- Be sensitive to the homes along SE 16th.

Harold Station Area
- Provide pedestrian improvements along McLoughlin
- Location too close to Holgate
- Improve intersection from Harold across McLoughlin
- High density residential and ground floor commercial
- Zoned in anticipation of light rail station.

Bybee Station Area
- Add bike station
- Station should be well defined for entry/exit points (“no place to hide”)
- Add life to station: coffee shop, news shop.

Tacoma Station Area
- Not a good site for park and ride
- Potential park along Johnson Creek
- Need lights along Springwater Trail.

After the meetings, the comments were transferred into electronic format and a set of maps was produced for each station to be used at upcoming Open Houses.
Bybee Station Area
• Integrate bus service with the LRT station (6)
• Design LRT station area to be safe, visible, and accessible, paying special attention to its remote location (5)
• Institute parking management strategies in the station area to protect existing residential, industrial, and commercial parking (5).

Tacoma Station Area
• Provide a safe and direct connection to the Springwater Trail (8)
• Provide safe bicycle and pedestrian connections from the LRT station to surrounding residential and commercial areas and transit (7).

Overall, the following topics were identified as some of the most important issues to citizens: safe, effective, and pleasant pedestrian and bicycle environment, connections, and amenities; development potential and appropriate zoning for (re)development; parking management strategies to make sure parking doesn’t spill into neighborhoods; and crime and safety concerns.

Station Planning Open Houses

November 26, 2007 at Sellwood Middle School – Open House for Harold, Bybee, and Tacoma stations.

November 27, 2007 at OMSI – Open House for Clinton, Rhine, and Holgate stations.

The purpose of the Open Houses was to report back to the community about what the project team learned at the October station planning workshops and gather further input about priorities for station areas. Participants were asked to review a set of maps for each station. Open House facilitators asked for additional comments on two of the maps, which had already had comments on them that were collected at the station planning workshops. Participants were asked to review maps called “What We Heard” to see if anything should be added to the documented input from the workshops and to verify the “Vision Statements” created for each station. After reviewing maps titled, “What Happens Next,” participants were asked to prioritize the recorded public comments. The following received the most votes for each station:

Clinton Station Area
• Improve intersection of Milwaukie and Powell (US 26) to better accommodate pedestrians and bicyclists (6)
• Construct a shared-use path along light rail transit (LRT) line between SE Clinton and SE Division to link the Clinton bikeway and the Springwater Trail (6)
• Institute parking management strategies in the station area to protect existing residential, industrial, and commercial parking (6)
• Preserve Industrial (IG1) and Employment (EG1) zones to keep jobs in the area (6)

Rhine Station Area
• Redesign SE 17th to include an improved streetscape and pedestrian environment (4)
• Provide pedestrian and bicycle connection over Powell (US 26) along LRT line (4)
• Buffer homes on SE 16th with vegetation (4).

Holgate Station Area
• Design the LRT station so that it is safe and attractive for users at all hours (3)
• Provide a pedestrian-friendly green area along SE 17th (3).

Harold Station Area
• Do not include Harold as a Milwaukie LRT station—station location is too close to Holgate Station (5)
• Include Harold as a Milwaukie LRT station (5).
Milwaukie Community Meetings

The Portland to Milwaukie Light Rail Project Team hosted public workshops to obtain public input on potential light rail station locations in the Oak Grove and Milwaukie communities. Each meeting began with a presentation about the conditions, opportunities, and challenges around the proposed stations. The purpose of both of the workshops was to identify the community’s preferred station locations among those being considered, to review best practices for station development, and to identify opportunities and constraints for the suggested locations.

Public workshop for Bluebird and Park stations
March 12, 2008 at Rose Villa Manor community center

This meeting focused more on dialogue rather than identifying specific comments on maps as was done at the Portland meetings. The following is a sample of the themes that were recorded from the dialogues of the meeting (a full set of recorded comments for the stations can be found in the Appendix).

Park Station Opportunities
- Mixed-use development opportunities associated with the park and ride facility.
- Gets traffic out of downtown Milwaukie.

Park Station Concerns
- Concerns about crime and safety associated with the station and park and ride.
- Concerns about impacts to the Trolley Trail, surrounding neighborhood, and mature trees.

Bluebird Station Opportunities
- Trail connections and bicycle parking opportunities.
- Redevelopment potential for the surrounding community.

Bluebird Station Concerns
- Questions about access to the location for vehicles and pedestrians (safety).
- Concerns about crime and safety at an elevated station.

Public Workshop for Milwaukie/Southgate, Harrison, Monroe, Washington, Lake, and Bluebird stations
March 19, 2008 at Milwaukie High School

At the March 19, 2008 meeting, participants were asked to put a dot by the station locations they preferred the most. The station chosen by the most participants was the Milwaukie/Southgate station. The Washington station was the second most popular station because of its proximity to downtown, schools, and churches. Participants felt the Harrison and Monroe stations were too close to schools, and they were concerned about child safety. Participants had mixed feelings about the Park and Bluebird stations, mainly because of security and safety issues.

Participants were also asked to put comments on aerials maps as they discussed the Milwaukie station locations. (Appendix A has a complete set of comments for each station.) Some of the comments recorded for each station include:

Milwaukie Station Area
- Park and ride is better here than at Lake
- No station
- Station would support industrial workers’ connections with buses.

Harrison Station Area
- Good for density east of station
- Bad idea—too much going on at that location; and too close to Waldorf school.

Monroe Station Area
- Makes more sense
- Gives even balance
- Brings too much traffic
- Lumber yard wants to sell—it could be a TOD under current zoning.

Washington Station Area
- Most central location
- Serves most people
- Opportunity at lumber yard for residential and retail
- High school—good school access.

Lake Station Area
- Good if terminal site
- Feeds special events and Washington and McLoughlin
- Maybe not enough parking even with structure.

Bluebird Station Area
- Access to station important to Island Station Community
- Properties are ready for redevelopment
- Kellogg Creek restoration project should coordinate to provide greenway crossing.
City of Portland Work Session Findings

A work session was held on April 30, 2008, to review suggestions about the configuration and location of various stations within the Portland city limits. Representatives from the Portland Bureau of Planning, Portland Office of Transportation, the Portland Development Commission, TriMet, and Metro attended the meeting. The meeting was facilitated by David Knowles and was supported by the consultant team from David Evans and Associates, Inc. and SERA architects.

Recommended Next Steps

The participants in the work session increased their understanding of the opportunities and constraints at the Portland stations. However, the group did not fully resolve whether there should be any further investigation to changes in station locations or configuration. The discussion below summarizes preliminary conclusions for each station and describes the next steps required to achieve consensus:

Harold Station

This station should be shown as a future station. It would not be built as part of the current project. When built, it must include substantial improvements in the pedestrian crossings and a pedestrian bridge to connect the neighborhoods to the east with the station.

Bybee Station

This station should be built in its LPA location. TriMet and the city should explore use of this site for a small bicycle service center or another use that can activate this relatively quiet and isolated location.

Tacoma Station

Preliminary engineering (PE) should begin with the assumption of the platform in its LPA location. PE site design concepts should consider future redevelopment of sites immediately adjacent to the station extending west to the Willamette River. The circulation network in this area is served by access points on SE 11th and SE 12th, and changes in the broader circulation could affect the accessibility of the LRT station facility. The concept plan should include locations for new streets and pedestrian connections, building envelopes and types of uses, and the quantity of development possible for each use. A concept plan for the Northwest Natural Gas site should be considered in the next project phase.

Rhine Station

The participants noted that SE Lafayette provided a better east-west pedestrian connection than Rhine because it connects to the pedestrian bridge across the rail yards. TriMet, Metro, and the city could quickly examine the merits and trade-offs of changing the platform to a center platform located at the corner of SE 17th Avenue and SE Lafayette or, alternatively, a split platform centered on SE Lafayette.

Holgate Station

The group discussed the potential for stations locations both south and north of Holgate. The objective of these alternative locations was to provide improved access to other neighborhoods and reduce the number of stations. At the conclusion of the meeting, the group generally preferred retaining the station in the LPA location. The option to consolidate stations reduces development potential and likely ridership. Since SE Holgate provides a pedestrian and bicycle connection to the east of Brooklyn Yards, this station could capture more riders than one located at Center Street without a connection across the railroad yard. The Holgate station area has some development potential on the west side of SE 17th, more than a Center Street location, which has industrial uses on the east side and single-family residential on the west. Neither designation is likely to change, and the existing uses are in place for the long term. In addition, removal of either the Rhine or Holgate Station will reduce access to light rail from the neighborhoods east of the Brooklyn Yard.

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Recommended Next Steps

The participants in the work session increased their understanding of the opportunities and constraints at the Portland stations. However, the group did not fully resolve whether there should be any further investigation to changes in station locations or configuration. The discussion below summarizes preliminary conclusions for each station and describes the next steps required to achieve consensus:

Harbor Drive Station

This station should be deleted based upon its high cost and marginal ridership benefits. The option to build this station later as part of a development should be preserved if at all feasible to do so. TriMet should study the feasibility of repositioning the Lincoln Street Station to provide more access to the Harbor Station service area.

Clinton Station

The group discussed the potential for a station located west of SE 11th Avenue on the Northwest Natural Gas site as well as the LPA location east of SE 12th Avenue. The LPA location east of SE 12th should be considered the preferred location. In terms of access, development potential, and service to existing residents, the alternative location—the Northwest Natural Gas property—is not demonstrably better than the LPA location. In addition, the site has several constraints. It is zoned IG, and there is no agreement within the city to propose a change in that designation; it is within an industrial neighborhood and is isolated from nearby neighborhoods; and it likely would require extensive cleanup of contaminated soils. By contrast, the LPA location is closer to the Hosford -SE Abernethy neighborhood and offers better connectivity to the south across Powell Boulevard.

The LPA location has the greatest potential to support new development of all the Portland stations located outside the central city. The properties to the south, including the publicly owned Fire Bureau site, present the opportunity for an employment, retail, or possibly residential development that would take advantage of the access provided by the Clinton Station. The station provides good access to buses on SE Powell and SE 11th/12th and connects well to the neighborhood to the north and east of the station.

In order to fully understand the opportunity at this location and to determine whether any changes to project design would facilitate development at the LPA location, TriMet, Metro, and the City of Portland should develop a concept development plan for the area immediately adjacent to the station extending west to the Willamette River. The circulation network in this area is served by access points on SE 11th and SE 12th, and changes in the broader circulation could affect the accessibility of the LRT station facility. The concept plan should include locations for new streets and pedestrian connections, building envelopes and types of uses, and the quantity of development possible for each use. A concept plan for the Northwest Natural Gas site should be considered in the next project phase.

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Holgate Station

The group discussed the potential for stations locations both south and north of Holgate. The objective of these alternative locations was to provide improved access to other neighborhoods and reduce the number of stations. At the conclusion of the meeting, the group generally preferred retaining the station in the LPA location. The option to consolidate stations reduces development potential and likely ridership. Since SE Holgate provides a pedestrian and bicycle connection to the east of Brooklyn Yards, this station could capture more riders than one located at Center Street without a connection across the railroad yard. The Holgate station area has some development potential on the west side of SE 17th, more than a Center Street location, which has industrial uses on the east side and single-family residential on the west. Neither designation is likely to change, and the existing uses are in place for the long term. In addition, removal of either the Rhine or Holgate Station will reduce access to light rail from the neighborhoods east of the Brooklyn Yard.
Developers Expert Panel Summary

One of the best ways to test the readiness of LRT stations for development is to ask the experts, that is, developers who understand what it takes to create a successful and profitable real estate development adjacent to a station. This was the purpose of a panel discussion convened on April 16, 2008, to discuss the development potential of the LRT stations within the City of Portland.

The Developer Expert Panel was:

- Carter MacNichol, Sheils Obletz Johnsen
- Tom Kemper, Kemperco Development
- Pete Egipsuehler, Beam Development
- Chris Zahas, Leland Consulting Group

The panel consisted of four real estate developers and one real estate economist. Each of the developers had completed residential developments in infill locations with good transit service. The panel discussion was facilitated by David Knowles, David Evans and Associates, Inc.

General Conclusions

- The panel felt strongly that multiple, multimodal connections in station areas are crucial for stimulating development and activating dead space. From the beginning of the design process, attention should be focused on access issues (pedestrian, bike, vehicular) and the real and perceived connection of the stations to the adjacent development. If investment is made in connections, then development will naturally fill in over time.
- These connections are particularly important because most of the stations have accessibility problems and are “islands” that are isolated from local, service-oriented commercial businesses and, at some stations, from single-family residences.
- McLoughlin and Powell create an “ocean” effect—they divide and create dead space.
- The City of Portland must ensure that the zoning in place at stations matches the potential. That means mixed use, higher density zones appropriate for TOD.
- Residential development should not be the exclusive focus of development efforts. More employment-focused development is needed.
- Good, site-specific design is crucial for larger parcels abutting busy streets and the LRT line.

- Stations that are not well connected to adjacent neighborhoods or with access impediments should have extra amenities to help create more of a sense of place.
- From a developer’s perspective, close-in development has to be high density to turn a profit because land is expensive.
- Don’t force development. The Beaverton Round demonstrates that forced development will fail.

Clinton

- The Clinton Station has the greatest potential of any of the stations for significant redevelopment.
- It is close to the central city and is likely to attract development over the long term. There is some evidence that there is organic infill happening now.
- Biggest issue for Northwest Natural Gas site is connections. It is not obvious that moving the station to that location would increase opportunities. It would be necessary to rearrange the whole area by the station, which is now more manufacturing-based.
- Powell is a major barrier, and therefore it is very important to enhance connections.
- Visibility from Powell could be a plus and could make the area between the station and Powell attractive for destination retail.
- The SE 11th/SE 12th/railroad intersection is complicated and busy and may impede development.

Rhine

- SE 17th is very challenging for development. The narrow parcels that will remain after the construction of light rail are not good for development.
- It is probably physically possible to develop a townhouse-type development, but this would face on a busy street with industrial across the street.
- The adjacent neighborhood is not interested in rezoning for high density.
- Moving bikes to SE 16th is something that should be explored.

Holgate

- Some development will naturally happen, because there are some opportunities in the form of vacant land and low density commercial development. These opportunities are on the east side of the station.
- Some modest residential infill development is possible to the northwest of the station.
- Commercial development that offers services to industrial workers could be attractive.

Harold

- From a development perspective, Harold has some good things. The area near the station has been rezoned for higher density residential, and it is located adjacent to attractive single-family neighborhoods.
- Taking advantage of the location will require a pedestrian bridge to the east over the Union Pacific rail line.
- In its present condition, it is an island station separated by railroad track and McLoughlin from residential neighborhoods.
- Harold could possibly be a bike station.

Bybee

- The only possible redevelopment site is the golf course and the club house.
- Security will be a major issue at this station due to the lack of adjacent development and “eyes on the station.”

Tacona

- This is a good location for development but a bad site. The park and ride facility will be isolated from everything around it by McLoughlin and the Union Pacific rail line. The Springwater Trail is a good bike connection, but it also is a major physical barrier.
- The park and ride facility could be developed with retail on the ground floor and residential on top of the parking. This sort of development would provide views towards the neighborhood to the east and the park to the north. There is not necessarily a market for such an idea, it is just that it would be physically possible.
- The site has major access problems that diminish its attractiveness for commercial development.
- Substantial attention should be paid to the pedestrian connections to the east and west in order to facilitate access to the station.
- A joint development with the Pendleton Woolen Mills site to the south, located in the City of Milwaukie, could be explored. Such a development would require a rezoning from industrial to a mixed use designation.

The City of Portland must ensure that the zoning in place at stations matches the potential. That means mixed use, higher density zones appropriate for TOD.

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- Commercial development that offers services to industrial workers could be attractive.
The stations are generally well located to serve existing residential development. From Clinton Street to Park Avenue, this light rail line is passing through or is adjacent to established residential neighborhoods, most of which are dominated by single-family homes. Light rail will increase access to and from these neighborhoods and improve travel options for residents by connecting these communities to the region’s light rail system.

It’s about the pedestrian. Transit riders are pedestrians up the point they board the bus or light rail. Station areas must be environments that facilitate pedestrian access to stations. Some of the station areas lack adequate sidewalks within a five-minute walking distance. All of them need improvements in arterial crossings. Targeted investment in sidewalks and pedestrian crossings is required to achieve maximum benefits to neighborhoods and ridership for the system. Most of these investments will be the responsibility of local governments.

The opportunity for major new development at stations is limited. The stations with the greatest development potential are Clinton Street Station in Portland and the stations in downtown Milwaukie between the Monroe and Washington stations. A more detailed study of the development potential, platform location, pedestrian access, and street connectivity should be undertaken early in the preliminary engineering phase. At most other stations, the opportunities are very small infill opportunities.

Some additional study of platform locations for the Portland stations is recommended. There are two stations where an assessment found that moving the platform may be desirable. A brief design effort is needed to determine whether what is desirable from a station planning perspective is also feasible from an engineering and cost perspective.

Downtown Milwaukie would be well served by all stations except Harrison, because of its distance from the heart of downtown.