Portland-Milwaukie Light Rail Transit Project

[Map showing the route of the Portland-Milwaukie Light Rail Transit Project, including stops at Lincoln St/SW 3rd Ave, OMSI/SE Water Ave, Clinton/SE 12th Ave, South Waterfront/SW Moody Ave, SE 17th Ave & Rhine St, SE 17th Ave & Holgate Blvd, SE Bybee Blvd, SE Tacoma St/Johnson Creek, Milwaukie/Main St, and SE Park Ave.]

Legend:
- PMLR route
- PMLR station
- Park & Ride
- Existing MAX lines
- County line

NORTH

TRIOMET
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Growing Places demonstrates how collaboration between jurisdictions, agencies and communities helped the region reach beyond the construction of a light rail alignment to help achieve many goals. This report highlights the partnerships responsible for enhancing the region’s livability through purposeful strategies regarding redevelopment, sustainability, active transportation, public art, and more, during planning and construction of the Portland-Milwaukie Light Rail Transit Project.
The southern end of the project brings MAX light rail service to Milwaukee and North Clackamas County and includes a Park & Ride, a Bike & Ride, and improvements to the Trolley Trail.
This is an exciting time for our region as we open the MAX Orange Line this September! This sixth light rail extension not only brings new transit options for people traveling between Downtown Portland and North Clackamas County, it expands the MAX system to 60 miles and 97 stations. In other words, the MAX Orange Line provides additional travel opportunities to communities across our region by making new connections possible.

As this report highlights, the regional partners who planned and constructed the MAX Orange Line have accomplished much more than building a MAX extension. From the earliest planning stages, the Portland-Milwaukie Light Rail Transit Project team has worked hard to meet the aspirations of communities along the light rail route. With our partners, the team advanced regional goals to entwine sustainability, economic growth and easier, safer access into transit.

TriMet is so fortunate and proud to be in a region that consistently turns its collective vision for a better future into reality. Growing Places provides great examples of how our enduring partnerships make that happen.

NEIL MCFARLANE, GENERAL MANAGER, TRIMET

When construction of the Portland-Milwaukie Light Rail Transit Project began in 2011, our region had already completed five light rail extensions. This experience provided valuable lessons in creating successful partnerships, maximizing community involvement and demonstrating how a light rail project creates so much more than simply improving transit options.

Focusing on many of the resulting improvements, this report demonstrates how those lessons were applied to the Portland-Milwaukie project. These include more than $65 million in facilities for bicyclists and pedestrians, a multitude of innovative sustainability initiatives, $40 million in roadway improvements to keep freight moving, and exciting new transit-oriented redevelopments.

You’ll also find details about the thousands of jobs created by the project and the extraordinary involvement of firms owned by women and people of color.

Helping our region realize a common vision is very gratifying work. After you read about these many improvements, I hope you have many opportunities to appreciate and enjoy them in person.

DANIEL W. BLOCHER, P.E.
EXECUTIVE DIRECTOR, TRIMET CAPITAL PROJECTS
The Lincoln St/SW 3rd Ave Station brings together partnerships and innovations that are hallmarks of the entire project. Situated at the south end of Downtown Portland’s Halprin District, the Lincoln St/SW 3rd Ave Station is the project’s northernmost station. It links to the southern terminus of existing light rail on SW 5th and 6th avenues, allowing riders to continue on to other TriMet bus and light rail connections. This station will support the expansion and mixed-use development efforts of Portland State University (PSU) while serving university students, downtown workers and residents living in the area.

**REDEVELOPMENT**

PSU has plans to redevelop two significant properties near the Lincoln St/SW 3rd Ave Station. On the University Place property, the university envisions a mix of uses that could include a conference center, housing and retail. PSU is also partnering with the Portland Development Commission and TriMet to enliven the property located between SW 4th and 5th avenues on Lincoln Street with student-focused uses compatible with the adjacent art school.

**SUSTAINABILITY**

TriMet is taking sustainable transit further with a pilot installation of eco-track at the station platform. With a carpet of low-growing plants, this vegetated trackway is the first of its kind on an active rail system in the United States.
Lincoln St/SW 3rd Ave

The Harbor Structure carries TriMet MAX trains and buses above busy roads in South Waterfront. Its steel girders were fabricated in Tigard, Ore., and its concrete was sourced in Portland.

DISTINGUISHED DESIGN

Elements of this station celebrate the legacy of the Halprin District’s public spaces. A large information panel on the communications cabinet introduces the rider to the historic district while the shelter column mosaic pattern reinterprets the sequence abstractly. Artist Elizabeth Conner created the station’s public art, designing three metal sculptures that were inspired by the theatrical work of choreographer Anna Halprin and by renowned landscape architect Lawrence Halprin, the district’s chief designer.

The Harbor Structure, the project’s longest bridge, stretches between Naito Parkway just east of the Lincoln St/SW 3rd Ave Station and a point just west of the South Waterfront/SW Moody Ave Station. It carries light rail trains and buses over and under several roadways, which allows transit to travel through the South Waterfront District without delaying traffic or being delayed by traffic.

New bicycling facilities—a cycle track, a multi-use path, bike lanes and bike signals—allow bicyclists to ride more safely between PSU and the South Waterfront District.

KEY PARTNERSHIPS

City of Portland
Oregon Department of Transportation
Portland Development Commission
Portland State University
Portland’s Innovation Quadrant enhances the connections and collaboration between higher-education institutions, workforce development providers and private sector partners that are currently located in the Central City but physically separated by the Willamette River. On the west side, PSU’s University District and Oregon Health & Science University’s (OHSU) Marquam Hill and Schnitzer campuses form the quadrant’s general boundaries. On the river’s east side in the Central Eastside Industrial District, the quadrant contains the Oregon Museum of Science and Industry (OMSI), Portland Opera and Portland Community College (PCC).

Portland’s South Waterfront District is a fast-growing, mixed-use neighborhood on the west bank of the Willamette River in the Innovation Quadrant. Home to the South Waterfront/SW Moody Ave Station, it is at the forefront of modern multi-modal transportation. Partnerships between TriMet, the City of Portland, the Zidell Companies, OHSU and the Portland Development Commission are energizing the northern half of the district.

**SUSTAINABILITY**

For over 40 years, the northern portion of the South Waterfront District included a large, fallow brownfield created by past industrial uses on the land. To foster the district’s development potential, a $20-million hazardous materials cleanup project covered 2,700 feet of riverfront property. The remediation project also worked to cap contaminant sediments in the river bottom resulting from the industrial past. The Zidell Companies and TriMet collaborated to address complex issues of hazardous materials mitigation and to closely coordinate the side-by-side work of construction and remediation crews. The Zidell Companies and OHSU also donated land underneath the new bridge and partnered with TriMet to determine the best light rail route for South Waterfront. TriMet helped reduce remediation costs by capping low-level contaminated soil underneath the light rail alignment. As a result of these efforts, the Zidell Companies have 33 acres of property in the process of redevelopment.

**REDEVELOPMENT**

The most visible new complex in the South Waterfront District is the 480,000-square-foot...
Light rail, streetcar and bus access have already spurred major development in South Waterfront, including the OUS/OHSU Collaborative Life Sciences Building. The South Waterfront/SW Moody Ave MAX Station can be seen on the right, in front of Tilikum Crossing’s west tower.

Collaborative Life Sciences Building, a project of the Oregon University System (OUS) and OHSU on the new 19-acre Schnitzer Campus. The $295 million project, which opened in 2014, represents the first phase of one-fifth of OHSU’s total 2.5 million square feet of development planned for the Schnitzer Campus in the district. The new light rail extension will provide metropolitan-wide transit access for campus students, researchers and nearly 14,000 employees.

MANY TRAVEL OPTIONS
This station showcases Portland’s emphasis on quality design and multi-modal transportation by bringing additional bus and new light rail service to the neighborhood, strengthening connections to the Portland Aerial Tram, Portland Streetcar and enhancing bicycle and pedestrian access. SW Moody Avenue, the district’s north-south thoroughfare, was rebuilt with streetcar, vehicle, bicycle and pedestrian improvements in anticipation of light rail. MAX and Portland Streetcar now connect PSU, OHSU, OMSI and PCC with a five-minute transit ride.
Tilikum Crossing, *Bridge of the People*, one of the most visible and iconic features of the project, connects the western and eastern parts of the Innovation Quadrant. The cable-stayed bridge extends 1,720 feet across the Willamette River and is the first multi-modal bridge in the U.S. to carry light rail trains, streetcars, buses, bikes and pedestrians, but no private vehicles. The cable-stayed bridge type was carefully chosen to balance environmental and navigational needs, cost and aesthetics.

With Tilikum Crossing, the project provides an opportunity for Portland Streetcar’s Central Loop line to complete the southern end of its route by crossing over the bridge and connecting the loop’s two southern stops on either side of the river. The completed 3.7-mile Central Loop allows riders to connect to every sector of the region’s Central Business District in one ride.

The regional benefits of Tilikum Crossing are numerous—the bridge adds a second light rail connection between the Eastside and Downtown Portland while providing better access to the educational institutions, cultural organizations and private businesses of the Innovation Quadrant. TriMet bus lines 9-Powell Blvd and 17-Holgate/Broadway, in addition to a possible future bus rapid transit project, will use the bridge and connecting dedicated transitways, saving time for riders and removing buses from the busy Ross Island and Hawthorne bridges.
Cable-stayed bridges are efficient at spanning long distances while allowing for fewer piers in the water. Tilikum Crossing has only two piers in the Willamette River.

The attractive, low-profile design of two towers with two in-water piers, and two landside piers, enabled the deck to meet American with Disabilities Act accessibility requirements and include two 14-foot-wide multi-use paths for bicyclists and pedestrians. The bridge also has connections to greenways and regional multi-use paths.

**SUSTAINABILITY**

Tilikum Crossing captures stormwater and pipes it off the bridge into two different stormwater swales that filter the water before it flows into the storm system. Great care was taken during construction to protect migration species, such as salmon, and their habitat. The project also collaborated with the Portland Bureau of Parks & Recreation to develop 25,000 square feet of shallow water habitat off South Waterfront, removed toxic pier piles from the river and collaborated with Willamette Riverkeepers to restore habitat on Ross Island.

**TRANSLATING NATURE INTO ART**

As part of the project’s Public Art Program, artists Douglas Hollis and the late Anna Valentina Murch created Tilikum Crossing’s aesthetic lighting program of subtle color and motion effects. They directed 178 LED lights at the 40 bridge cables, the four tower pylons above and below the deck, and the two landside abutments. The lighting program will change colors based on the Willamette River’s speed, height and water temperature according to data streamed from a U.S. Geological Service river monitor near the Morrison Bridge.

**KEY PARTNERSHIPS**

- City of Portland
- City of Portland Bike Advisory Committee
- Willamette Riverkeepers
THE OMSI/SE WATER AVE STATION
This is the northernmost station of the project’s eight Eastside stations. Located in the growing Central Eastside Industrial District, and the eastern half of the Innovation Quadrant, the OMSI/SE Water Ave Station will serve as a gateway to and from Tilikum Crossing and will share design elements with the South Waterfront/SW Moody Ave Station across the river.

REDEVELOPMENT
The community and the City of Portland have been reviewing the OMSI, Clinton, Rhine and Holgate station areas as part of the update to the City’s Comprehensive Plan. The two-year process may lead to zoning changes related to opportunities provided by the MAX Orange Line. This effort focused on employment-based uses for the OMSI and Clinton station areas.

The project is also helping to stimulate development through partnerships in the OMSI district. OMSI’s master plan for its 22.5-acre property will expand the museum’s facilities and provide opportunities for private development that advance the Innovation Quadrant vision for a vibrant science and technology corridor that spans the Willamette River. Located near the southwest corner of the station, Portland Opera has plans to develop its property, which could include mixed-use and retail space as well as the addition of a new performance space.

Just north of the station, the Oregon Rail Heritage Center (ORHC) was relocated to this visible, easily accessed site with the help of the project, the City of Portland, ODOT, Union Pacific Railroad (UPRR) and Oregon Pacific Railroad. Its new museum showcases historic steam locomotives.

KEY PARTNERSHIPS
Central Eastside Industrial Council
City of Portland
OMSI
Oregon Rail Heritage Foundation
Portland Development Commission
Portland Opera

The reconstructed SE Water Avenue accommodates car and freight traffic as well as pedestrians and cyclists.
SHARED STREETS

Bike lanes and 12-foot wide sidewalks surrounding the station offer trail connections to nearby multi-use paths on the riverbank and to the Springwater Corridor Trail, a 21-mile regional biking and walking trail.

The station’s multi-modal design includes a separate path for bicyclists and pedestrians while accommodating light rail and buses, allowing for convenient access to OMSI, ORHC, and other area destinations and employers.

The project, OMSI and the City of Portland worked together to realign SE Water Avenue, situated immediately east of the station. The realignment creates a direct, safer connection to the street, which continues to the south. The avenue was also widened to provide room for bike lanes in each direction, while continuing to accommodate freight trucks and cars. Improved sidewalks, street lighting and new crosswalks create a safer pedestrian experience. The improved road enhances operational safety of the MAX Orange Line and helps unlock the potential for development on the OMSI and Portland Opera sites.
The Clinton/SE 12th Ave Station area is in an eclectic district made up of two neighborhoods divided by a diagonal section of freight rail, which creates an unconventional street network and uniquely shaped blocks. With recent, large-scale commercial and residential development just east of the station, transit-oriented development will provide the area’s residents, workers and visitors with important public transportation connections to this emerging area.

**REDEVELOPMENT**

This area features several light industrial manufacturing businesses and vacant parcels. TriMet is working closely with the City of Portland to find creative ways to develop narrow lots along SE Gideon Street, which runs just south of the station and the trackway. One of these lots is slated for development as a mixed-use building made of recycled shipping containers—13 units of creative office space in shipping containers four stories tall, with a café space on the ground floor facing the station entrance.

**QUIET ZONE**

Thanks to project safety improvements, three nearby intersections through which freight and light rail trains cross are now designated “quiet zone” crossings. A quiet zone is a section of a rail line with one or more consecutive public crossings where locomotive horns are not routinely sounded. Residents and businesses near the Clinton/SE 12th Ave Station have long desired a quiet zone, as freight train and passenger rail traffic were required to blow their horns four times at 96 decibels when they passed through the area’s crossings.
Safety improvements required for quiet zone designation include traffic signals and crossing gates, and the project made the required improvements to the crossings at SE 8th, 11th and 12th avenues. After reviewing the improvements, the Federal Railroad Administration designated these crossings as quiet zones.

SAFER, MORE DIRECT BICYCLE AND PEDESTRIAN ACCESS

The area from the Willamette River to Powell Boulevard south of the station received significant bicycle and pedestrian improvements. Prior to the project, bicycle and pedestrian connections between neighborhoods and destinations were often absent or in poor condition. Additionally, SE Clinton Street is a popular bicycle route, which terminates at 12th Avenue. In the past, cyclists trying to continue from there to destinations near and on the Willamette River faced a difficult crossing over railroad tracks and Milwaukie Avenue, followed by a myriad of possible routes with often challenging road conditions.
The project worked with partners, community members and advocates to design and build improvements that make connecting to the Clinton and OMSI station areas easier—including more than 2,000 feet of pedestrian and bike connections through the Central Eastside along the light rail route.

PUBLIC ART

The Clinton/SE 12th Ave Station area features two prominent public art pieces. Matthew Passmore designed a steel sculpture constructed of reused freight rail to mark the entrance to the station. Bent into curves that resemble transit maps, the concept was inspired by the neighborhood’s history, which has been dramatically shaped by rail infrastructure.

“Velosaurus,” by Horatio Hung-Yan Law, is a series of eight bas-relief concrete panels inset into the retaining walls underneath the SE 17th Avenue overpass of Powell Boulevard. The panels are embedded with bicycle parts arranged to look like the remains of imaginary dinosaurs.

**KEY PARTNERSHIPS**

City of Portland  
Oregon Department of Transportation  
Portland Development Commission  
Union Pacific Railroad
Southeast Portland’s 17th Avenue corridor is a busy commercial freight hub anchored by SE Powell Boulevard to the north and McLoughlin Boulevard to the south. The project’s two stations on SE 17th Avenue—at Rhine Street and at Holgate Boulevard—will be gateways to the historic Brooklyn neighborhood. This section of the project shows how both private and public partnerships have helped to create opportunities for transit-oriented development.

REDEVELOPMENT
TriMet worked with the City of Portland’s Bureau of Transportation and Brooklyn neighborhood residents to identify redevelopment opportunities, attracting a developer to one of the narrow remnant parcels stretching two blocks along the light rail route. The planned building includes:

- 36 units of multifamily apartments
- 14 parking spaces
- 52 bicycle parking spaces
- 2,000 square feet of commercial space

The three-story building was selected because of urban design elements that address the current neighborhood setting as well as the anticipated needs of future building occupants. This project is envisioned as the first development along this portion of the alignment, with other opportunities to follow.
In addition, Portland General Electric is investing $30 million in existing property it occupies along this improved street.

The community also desired the replacement of the antiquated Lafayette pedestrian bridge over busy UPRR tracks with a new crossing. The new Lafayette bridge includes elevators, a wider span and staircases, and better sightlines, making it easier and safer for both pedestrians and bicyclists to connect to homes, schools, businesses and parks on either side of the railroad.

**A GREEN GATEWAY**

The project made SE 17th Avenue greener by installing 78 new bioswales to capture stormwater runoff and by planting new landscaping the length of this segment of the light rail corridor.

New bike lanes on both sides of the street create a safer north-south connection between SE McLoughlin and Powell boulevards. Where possible, the lanes have a buffered treatment to separate them from vehicle traffic. Sidewalks are also being rebuilt 12 feet in width to create a higher-quality pedestrian environment.

**KEEPING FREIGHT MOVING**

Keeping traffic moving is important, and to that end the project has made $40 million in roadway improvements along the light rail route. A prime example of such investments is the SE Harold Street overcrossing, just north of the SE Bybee Blvd Station.

Brooklyn Yard is an important part of the local economy supporting train and truck freight movement along the West Coast.

**KEY PARTNERSHIPS**

- City of Portland
- Friends of Trees
- Union Pacific Railroad
As part of the project’s Public Art Program, 38 steel weathered boats appear to float in the landscape strips along SE 17th Avenue.

The main egress point for this yard crossed the project rail alignment at Harold Street. This created the potential to stop freight traffic when the light rail trains passed, creating lines of cargo trucks that would extend into a busy highway. Working closely with UPRR and representatives of local freight companies, the project designed a bridge to carry light rail trains over the street entrance to the yard, keeping both freight and train riders moving and out of each other’s way. This bridge eliminates the need for a signaled crossing along the light rail route, removing potential delays for both freight trucks and MAX riders. It also allowed the former access drive, which light rail tracks would have crossed, to be closed.

PUBLIC ART

Artist Bill Will designed an installation of 38 boat-like sculptures made of weathered steel that appear to float in the landscape strips along SE 17th Avenue between Powell and McLoughlin boulevards. The steel sculptures draw on the natural history of the area (“brook land”) while celebrating the project’s green street improvements in the corridor.
The SE Bybee Blvd Station is at the intersection of SE Bybee and McLoughlin boulevards, providing an important east-west link between neighborhoods, Reed College and nearby recreational amenities. Surrounded by Westmoreland Park, Eastmoreland Golf Course, Crystal Springs Rhododendron Garden, the Willamette River, Oaks Bottom Wildlife Refuge and the Springwater Corridor Trail, this station serves as an urban gateway to nature and recreation.

**KEEPING PEOPLE MOVING**

The station platform is in a center island configuration immediately north of the SE Bybee Boulevard bridge. The project worked with the surrounding community to ensure simple connections between buses on the bridge and the MAX station below. Stairs and elevators connect both eastbound and westbound riders to the station, and there is a bus pullout at the station entrance on both sides of the bridge. These pullouts allow vehicle and bike traffic to continue moving while riders board and leave buses.

**BRINGING LIFE BACK TO CRYSTAL SPRINGS CREEK**

The 2.3-mile Crystal Springs Creek offers important habitat for salmon, birds and other wildlife. Prior to the project, aging culverts restricted or hindered fish passage, raised water temperature and contributed to flooding. The project, UPRR, and the City of Portland worked together to replace the aging and inadequate fish culvert under the UPRR and light rail alignments, creating improved habitat for salmon, birds and other wildlife. The new culvert is designed to facilitate fish passage, avoid high water temperatures and minimize flooding.

The project also helped restore more than an acre of Crystal Springs Creek wetlands in nearby Westmoreland Park by collaborating with the City of...
Portland and U.S. Army Corps of Engineers. The “duck pond” in Westmoreland Park provided the ideal opportunity for directing project mitigation funds toward wetland restoration because of its proximity to the light rail project. The previously shallow, concrete-lined pond caused potentially lethal high-water temperatures for native fish; elevated nutrient and bacteria levels that starved the water of dissolved oxygen; and promoted extensive sediment build-up that degraded native fish habitat.

Thanks to these successful partnerships, the stream channel is more salmon friendly, emphasizes biodiversity, and supports native plant and fish communities.
The SE Tacoma St/Johnson Creek Station is near the intersection of SE Tacoma Street and McLoughlin Boulevard and provides a direct connection to the nearby Springwater Corridor Trail, a major multi-use trail for bicyclists and pedestrians that links many neighborhoods in the Portland metro area. Johnson Creek runs just north of the station platform and will be highlighted as a feature of the station. Station area improvements provide enhanced pedestrian and bicycle connections that connect to the station.

REDEVELOPMENT
The light rail station will serve Milwaukie’s North Industrial Area, a significant employment center. The City of Milwaukie adopted a Tacoma Station Area Plan and related code changes to provide flexibility and encourage an intensification of family-wage/high-wage jobs.

MAXIMIZING CONNECTIONS
The station capitalizes on its connection to the Springwater Corridor Trail by providing 106 bicycle spaces, including 22 covered spaces, 12 uncovered spaces and a secure, card-access Bike & Ride facility with racks for 72 bicycles.

This station also features one of the project’s two Park & Ride facilities, providing a surface lot for 320 vehicles. A new traffic signal has been installed at SE Johnson Creek Boulevard and 32nd Avenue to facilitate automobile travel around the station area. This intersection also has been widened to accommodate new turn lanes to minimize congestion.

The SE Tacoma St/Johnson Creek MAX Station (upper center) will not only connect to the regional Springwater Corridor Trail, but also serve Milwaukie’s growing North Industrial Area to the south of the station.
SE Tacoma St/Johnson Creek

The SE Tacoma St/Johnson Creek MAX Station will include 72 spaces in a secure, enclosed Bike & Ride facility.

SUSTAINABILITY

The project worked with the Johnson Creek Watershed Council to restore a section of the creek next to the SE Tacoma St/Johnson Creek Station. The restoration work placed root wads from trees removed by the project in the creek to provide shelter for fish. Restoration measures included a large bioswale to capture stormwater runoff from the station before it reaches the creek, and installation of native plants. A side channel of the creek was also excavated to create refuge for salmon during high winter flows.

As a tribute to nearby Johnson Creek, the project installed an interpretative boardwalk in collaboration with the Johnson Creek Watershed Council to highlight the creek’s ecology and natural history.

A substation near the SE Tacoma St/Johnson Creek Station features the first U.S. application of wayside supercapacitor technology that allows for energy created during braking to be stored and then re-used. In energy savings mode, the storage unit absorbs energy generated by braking rail vehicles and stores it until the system can safely feed it back to the power supply during vehicle acceleration, reducing energy use.

KEY PARTNERSHIPS

- City of Milwaukie
- City of Portland
- Johnson Creek Watershed Council
- Union Pacific Railroad
At the south end of downtown Milwaukie, the Milwaukie/Main St Station is bringing new energy to the city and new options for pedestrians, bicyclists and transit riders. The station location and connections to the surrounding blocks have been designed to support the city’s newly adopted Downtown Framework Plan and associated zoning code enhancements. The plan envisions the area around the station as a vital hub that will be a gathering place for activities while allowing people to safely move through the area.

**REDEVELOPMENT**
The station will provide a southern anchor for Milwaukie’s downtown and generate activity to support revitalization along the Main Street retail corridor. While serving as a destination in its own right, the station area complements activities and development to the north. A number of parcels throughout downtown offer opportunities for future redevelopment with a mix of retail uses, housing and employment.

**QUIET ZONES**
With help from the project, Milwaukie residents and businesses are realizing a longtime goal of creating quieter communities. The city and the project each made safety improvements to a total of six existing railroad crossings in Milwaukie to allow them to be designated quiet zones. As freight and light rail trains approach these crossings, the use of rail train horns at these intersections will no longer be routinely required.

**SAFER ACCESS FOR BICYCLISTS AND PEDESTRIANS**
With sustainability in mind, the project creates better bicycle and pedestrian routing and access to the station and along the light rail route as it crosses downtown. Station access is primarily via foot, bike and bus. At and near the station, 48 bike parking spaces have been installed. Extensive
reconstruction around the station significantly improves the streetscape by widening the sidewalk to 16 feet on the west side of 21st Avenue. The reconstruction also creates an extensive landscape and tree planting plan and adds quality street furnishings. New traffic signals on 21st Avenue at Adams and Washington streets have been installed to improve track crossing safety for motorists, bicyclists and pedestrians.

Kellogg Lake is located immediately south of the Milwaukie/Main St Station. Freight trains can cross over the lake on an existing rail trestle. Prior to the project, there was no direct or safe route for bicyclists or pedestrians to cross the lake without interacting with highway traffic.

With City of Milwaukie and Oregon Department of Transportation (ODOT) funding, the project was able to include a multi-use path below the new light rail bridge over the lake. The project designed the path to match the light rail bridge’s design while maintaining views of the lake and allowing room for both bicyclists and pedestrians.

The community will now have a multi-use path that allows bicyclists and pedestrians to safely cross over Kellogg Lake and avoid highway traffic. This improvement provides a more direct, safer connection between downtown Milwaukie and the new light rail station, as well as connections to Kronberg Park, the Trolley Trail and the neighborhoods south of Kellogg Lake.
The SE Park Ave Station is the project’s southernmost station, located at SE McLoughlin Boulevard and Park Avenue in North Clackamas County’s Oak Grove neighborhood. This station is designed as a multi-modal center with both Park & Ride and Bike & Ride facilities, and is situated as a green gateway to the nearby Trolley Trail.

The plaza next to the station platform provides a community gathering place and an opportunity to celebrate the natural resources of the community. A large, centrally located oak tree will provide an upright canopy that contrasts with the mostly native species planted throughout the rest of the station area. Gabion seat walls (made of rock inside galvanized wire “baskets”) will be placed in and around the plaza. A gazebo-like, painted steel sculpture by Susan Zoccola features a canopy of oversized metal oak leaves in tribute to Oak Grove.

THE TROLLEY TRAIL

Located just north of the SE Park Ave Station, the Trolley Trail is a six-mile regional bicycle and pedestrian artery that connects Milwaukie with Oak Grove, Gladstone and neighborhoods in-between. To accommodate the light rail route and the new

Several improvements were made to the regional Trolley Trail where it runs adjacent to the light rail project, including paving, lighting, landscaping and public art.
SE Park Ave Station, reconstruction shifted approximately one-half mile of the trail several feet to the west.

The project team worked closely with the North Clackamas County Park District to rebuild this segment of the trail with enhancements, focusing on improving privacy and screening for the neighborhood, maintaining open site lines to increase safety, and adding new plant species to improve aesthetics and diversity. While Trolley Trail reconstruction required the removal of trees, the trail now features nearly four times the number of trees than were originally removed. Many of the removed trees were reused as milled wood, as firewood for Clackamas County seniors and low income residents, in habitat restoration, and for six sculptures of public art along the trail.

**BRINGING NATURE BACK TO NEIGHBORHOODS**

The project worked with partners to create sustainable elements and improve habitat around the SE Park Ave station area. Funding from TriMet, Metro’s Nature in Neighborhoods program and ODOT’s Storm Retrofit Grant revived a riparian forest habitat southwest of the station. The Oak Grove community will also benefit from a new ecosystem-based stormwater treatment system that was installed to treat and manage stormwater flows from SE McLoughlin Boulevard and the Trolley Trail.

The SE Park Ave Park & Ride features numerous sustainable elements and will do much more than provide commuters a place to park cars. The three-story structure will have more than 400 parking spaces, plus electric vehicle charging stations and bike parking. To support the overall project emphasis on sustainability, 68 percent of the station area’s footprint and the Park & Ride is dedicated to new and improved habitat.

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**KEY PARTNERSHIPS**

- Clackamas County
- Metro
- North Clackamas County Park District
- Oak Lodge Sanitation District
- Oak Lodge Community Council
- Clackamas County Urban Green
A signature feature of the Park & Ride will be the building’s rooftop solar array. This array will provide enough energy to offset annual electricity usage for basic building functions, like the elevator and lighting, making the Park & Ride a “net zero” facility. A rooftop garden will also help manage stormwater runoff and improve air quality. All of the building’s stormwater runoff will be captured on site, including the stormwater runoff from 2.5 acres of impervious surfaces surrounding the Park & Ride.

With the Trolley Trail connection, the SE Park Ave Station is expected to be a hub for bike commuters and will have parking for 102 bikes, including 74 in a secured Bike & Ride facility, supporting this station’s status as a place accessible by several modes—foot, bike, car, bus and MAX train.

**REDEVELOPMENT**

Parcels along SE McLoughlin Boulevard near the station area may experience new opportunities, bringing a variety of commercial and residential redevelopment to the community.
General Project Benefits and Improvements

**ECONOMIC BENEFITS**
The project has helped foster the region’s long-term economic vitality and provides many other short-term benefits. As of March 2015:

- **13,658** direct, indirect, induced jobs have been created by the project
- **5,171** of those jobs employed on-site construction workers
- **2.4 million** family-wage labor hours
- **547** firms contracted with the project, nearly **80 percent** based in Oregon
- **131** of these firms — **24 percent** — were owned by women and people of color

**BIKE AND PEDESTRIAN IMPROVEMENTS**
The project worked with communities and advocates along the light rail route to make it easier to access station areas. Riders can connect to stations more directly and safely thanks to new sidewalks, crossings, lighting, bike lanes and multi-use paths. Improvements include:

- More than **$65 million** utilized for bicycle and pedestrian improvements throughout the project area
- Approximately **10.3** miles of new or replaced sidewalks
- Approximately **7.8** miles of new or replaced bicycle facility improvements
- **Two** 14-foot bike and pedestrian paths on Tilikum Crossing
- **446** bike parking spaces
- **Two** secure, enclosed Bike & Ride facilities with a total of **146** bike parking spaces
SUSTAINABILITY
The project employed an industry-leading approach to sustainable design; piloted new technologies and leveraged infrastructure to incorporate sustainable practices, environmental improvements and human-scale design. These improvements include:

- **286** bioswales to capture and filter **1.8** million square feet of stormwater
- **$4** million in environmental mitigation funds
- **16** solar installation sites
- **8** green roofs
- **The first** example of vegetated trackway—**eco-track**—in the United States

PUBLIC ART
Public art is an important component of the region’s transit system. The project worked with regional partners, the Public Art Advisory Committee and the communities along the alignment to select commissions that express the uniqueness of the individual station areas and the project as a whole. The Public Art Program includes:

- Approximately **$3** million in public art
- **26** artists
- **25** public art projects
- **88** art elements
BACK COVER: Tilikum Crossing includes aesthetic lighting, created as part of the project’s Public Art Program. The lighting effects change based on the Willamette River’s speed, height and water temperature.
TriMet appreciates and thanks the Portland-Milwaukie Light Rail Transit Project partners that make growing this special place possible:

**Federal Transit Administration**  
Clackamas County  
Metro  
City of Milwaukie  
Multnomah County  
City of Oregon City  
Oregon Department of Transportation  
City of Portland  
Portland Development Commission