



AIRPORT MAX RED LINE

Background

Portland International Airport (PDX) has seen steady growth for many decades, becoming the nation's fastest growing airport in the late 1990s. Air passenger traffic at PDX more than doubled from six million in 1990 to more than 14 million in 2008, with 2020 projections for 22 million trips.

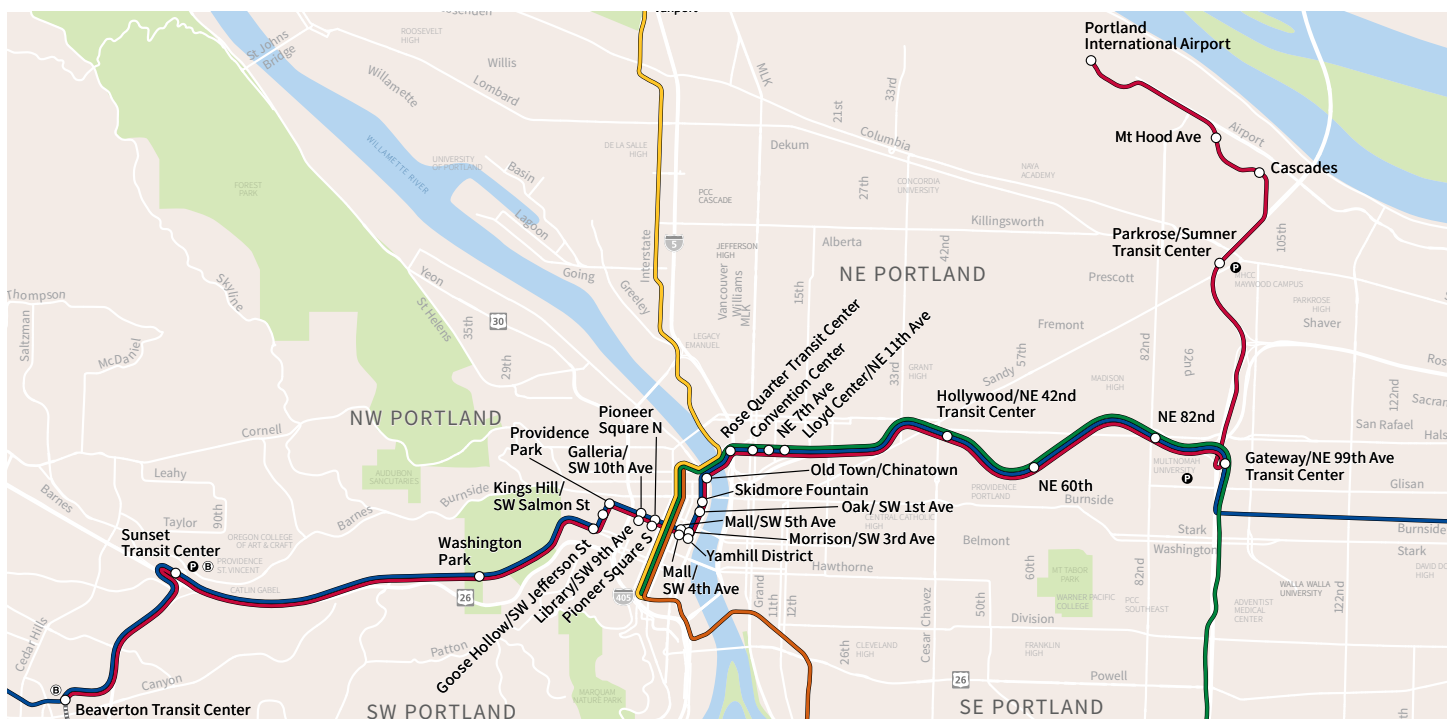
Additional access was needed to address growing traffic congestion at and around the airport. At the time, transit carried a limited number of airport trips with local bus service to and from Downtown Portland.

Light rail to PDX had been part of regional and airport master planning since the mid 1980s. When it was designed and built, a portion of Interstate 205 (I-205)

included a future transitway in the median, with a tunnel beneath the northbound lanes to access the median. A preliminary light rail alignment to the airport terminal was established in the late 1980s, but regional plans projected construction closer to 2010.

A unique public/private partnership

In 1997, Bechtel Enterprises approached the region with a proposal to design and build a MAX extension to the airport under an innovative public/private partnership. Bechtel would contribute about a quarter of the project's funding and contract to build the light rail extension. In return, Bechtel would receive development rights to a 120-acre mixed-use commercial site near the entrance to the airport, owned by the Port of Portland.



MAX Red Line light rail service connects Portland International Airport, E/NE Portland, Portland City Center and Beaverton.

This cost-sharing venture, the first of its kind, meant no federal appropriations, state general funds or additional property taxes were needed to build the line.

Fast-tracking

Resolving issues among three local public agencies entering into a unique agreement with a private partner required open communication, a significant amount of due diligence and a number of interlocking agreements to protect the public's investment. In all, the agencies and Bechtel executed 85 agreements, with nearly 20 formal approval steps by various elected and appointed bodies ranging from local jurisdictions to the Federal Aviation Administration. The project established and maintained an accelerated decision-making model, completing all approvals within nine months.

Construction started in 1999 on the first train-to-plane light rail connection on the West Coast. From initial proposal to opening day, the 5.5-mile project was complete in just five years. The line opened on September 10, 2001. Ridership on the MAX Red Line topped three million in the first 10 months of operation. Ridership surpassed and has remained more than eight million trips annually since fiscal year 2007.

Design highlights

Shared alignment

Airport MAX was designed to share tracks with the existing MAX Blue Line between Downtown Portland and Gateway Transit Center. For riders in this corridor, the addition of the Red Line increased train headways to 5 to 7 minutes during the most frequent service hours. With growing MAX ridership, Red Line service was extended west to Beaverton Transit Center in September 2003.

Gateway—A unique solution

Gateway Transit Center was chosen as the junction point with MAX Blue Line, offering good connections with bus service. However, the existing configuration

at Gateway posed several challenges. The tracks beyond Gateway were pointed south, while the airport lay to the north. If trains were reversed at Gateway, an additional platform as well as complex track crossings and signaling would be required. It would also require an extended stop at the station while the operator moved from one end of the train to the other. In addition, it was believed passengers might find trains reversing direction to be disconcerting.

The option finally selected provides a configuration unique on North American light rail systems. It uses the center and outbound tracks at Gateway, which required no modification to the original three-track configuration. Leaving the station, it heads south and loops over part of the I-84/I-205 interchange before descending into the transitway adjacent to I-205, heading north. It then passes under two bridges, one carrying a freeway ramp, the other the MAX Blue Line tracks from Portland—completing a 180-degree loop.

Parkrose/Sumner

The Parkrose/Sumner platform is located in the median across the freeway from the transit center and Park & Ride. At this location, the I-205 freeway is below grade. As a design goal, TriMet wanted to avoid maintenance and vandalism issues associated with elevators. By raising the trackway at the station, a bridge could carry passengers from the median



MAX service to PDX terminal

platform to the transit center and Park & Ride—providing level access without the need for elevators. As an additional safety measure, passengers access the station by crossing the outbound track at the outbound end of the platform, at the point where the train always stops.

Airport terminal

To maximize ridership, the airport line had to offer the highest level of convenience for passengers. Locating a suitable airport station site was difficult. At the time, PDX was in the midst of a multi-year expansion that would likely disrupt any route chosen for light rail into the terminal. Earlier plans had sought to

It can enter the two-track terminal station without the need for crossover tracks. The terminal platform is wedge-shaped, with its widest end at the terminal doors and narrowing to fit the geometry of the track switch at the end of the platform.

Today, MAX service to the terminal is one of the reasons *Travel & Leisure* readers ranked PDX the number one airport in the United States from 2013 to 2015.

Technical highlights

Public art

Incorporating public art into the design of stations and facilities has become a hallmark of the Portland region's light rail system. Public art programs, funded at 1.5 percent of eligible project costs, are guided by volunteer art advisory committees.

One example can be enjoyed by people at the Parkrose/Sumner MAX Station and on the I-205 freeway—the striking “Fishbird” pedestrian bridge that connects the station platform to the adjacent transit center. The bridge echos the idea of flight as embodied by the airport while referencing the inhabitants of the nearby Columbia River.

Station area development

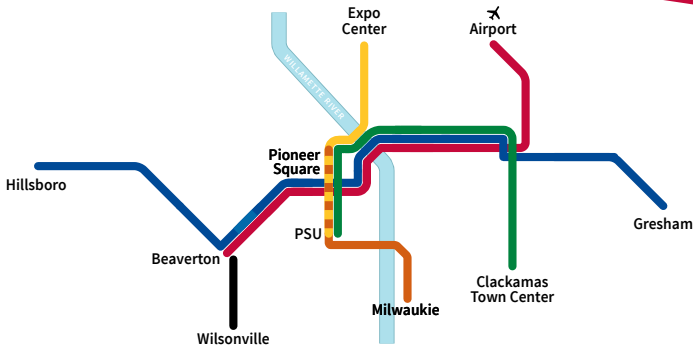
Bechtel's effort to develop the 120-parcel near the airport and served by two Red Line stations did not occur as planned. The cooling economy brought on by the September 11, 2001, terrorist attack, which occurred one day after the line opened, delayed the financing of an intensely developed jobs and hospitality center as originally proposed. Bechtel ultimately sold its interest in the property to national developer Trammell Crow, which repositioned the development as a retail center called Cascade Station. IKEA, several other retailers and hotels have since opened on the site.



“Fishbird” pedestrian bridge

postpone light rail construction until expansion was complete, many years in the future—or to end the line behind the parking structure, away from expansion activity, but inconveniently located for transit riders. The station was finally sited at the south end of the terminal, adjacent to baggage claim and offering one of the most convenient airport stations anywhere.

The trackway approaching this site was designated “temporary,” to be relocated if necessary for future terminal expansion. This temporary segment was built as single track to fit into the available right-of-way.



Snapshots

Timeline

1997 Bechtel approaches City of Portland, TriMet and Port of Portland with a proposal to build airport light rail

1998 “Yes” decision by Public Review Committee

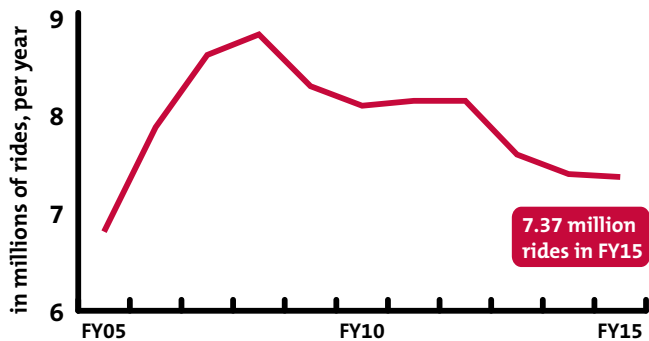
June 1999 Major construction began

Fall 1999 Cascade Station development construction began

September 10, 2001 MAX Red Line opened

Ridership

Daily ridership Each weekday, an average of 3,200 people get on or off at PDX.



Facilities

Length 5.5 miles (Gateway to airport)

New stations 4

Surface Park & Rides 1 with 193 spaces

Frequency

Approximately every 15 minutes during peak hours; approximately every 35 minutes during early morning and nighttime service.

Travel times

Downtown Portland (Pioneer Square) to Gateway
24 minutes

Gateway Transit Center to airport terminal
14 minutes

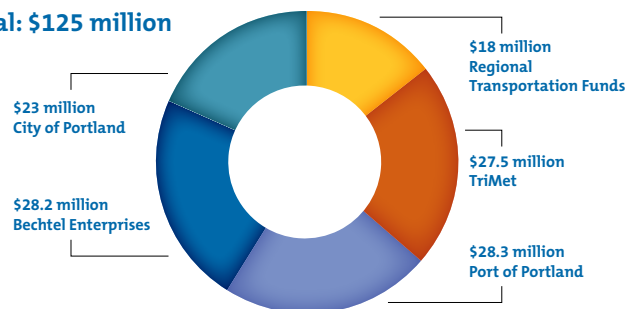
Downtown to airport terminal 38 minutes

Bus connections

Includes 42 connections with TriMet bus lines along the Eastside alignment, 24 connections on the Westside alignment and numerous connections downtown. Also connects to the C-TRAN bus to Vancouver, Washington.

Funding

Total: \$125 million



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