



Improved MAX vehicles added to fleet

As part of the Portland-Milwaukie Light Rail (PMLR) Transit Project—MAX Orange Line— TriMet is purchasing 18 new light rail vehicles (LRVs) from Siemens Transportation Systems, Inc. to add to its current fleet of 127 LRVs. These new Type 5 vehicles will look similar to the Type 4 vehicles that were introduced to the system in August 2009. The new Type 5 LRVs will have these additional features:

- More seats with reconfigured seats to improve legroom and sight lines
- Added companion seating between the doors for seniors and companions of people using mobility device
- Improved ADA ramps for better accessibility
- Improved air conditioning system for passenger comfort
- More durable and energy-efficient LED interior lighting
- Improved interior and exterior security cameras (digital instead of analog)
- Better ergonomic cabs for operators
- Improved equipment access for more efficient maintenance

Modern design and amenities

Type 4 and 5 LRVs are based on the Siemens' S70 (Avanto) model. This model is currently used in Houston, TX; San Diego, Calif.; Minneapolis, MN, and Paris, France, among other cities. These LRVs are seven feet longer than older generation Type 1, 2 and 3 LRVs, but will still fit within existing MAX stations, including those in downtown Portland.

Type 5 LRVs will have digital cameras, resulting in higher resolution recordings throughout the train. Like the Type 4 vehicles, there will be rear-view cameras that include sensors to switch from color to black and white in low-light situations, offering increased visibility at night.

The new LRVs also will include many of the same features as TriMet's current MAX vehicles:

- Four doors per side, two of those equipped with retractable ramps for accessibility, as well as low-floors over 70 percent of the interior for easy boarding
- Air conditioning



A conceptual rendering of a new Type 5 light rail vehicle (LRV). The Type 5 includes several improvements designed to increase rider comfort.

- Interior and exterior security system and an open interior design for improved sight lines
- Exterior and interior automated station announcements and rider information on electronic readerboards and audio recordings

Made in the U.S.A.

Siemens manufactures and buys the majority of components and assembles the Type 5 LRVs in the U.S. Only a handful of specialized components—such as the efficient air conditioning systems made in the Czech Republic—are used when comparable parts are not available in the U.S. or cannot be delivered in time. Each new Type 5 LRV costs about \$3.7 million.

Siemens will deliver each new LRV separately, as soon as it's ready. Before they can go into service, TriMet will put the first two vehicles through a rigorous a 4,000-mile "burn-in" testing period and safety certification before they can go into service. The other 16 vehicles will go through a 1,000-mile burn-in testing period and safety certification.

Technical specifications

- Six-axle, low-floor light rail vehicle with two articulations (places where it can bend)
- Bi-directional operation achieved by coupling Type 4 or Type 5 vehicles together
- Constructed of low-alloy, high-tensile (LAHT) steel and composite materials
- Folding train couplers with covers to conceal them when not in use
- Train-to-wayside communication, automatic train stop and event recorder
- State-of-the-art electric propulsion system with microprocessor-controlled inverters that power four motors up to 520 kilowatts or 697 horsepower
- Electro-hydraulic friction (disc) brakes on all axles and electro-magnetic track brakes
- Maximum operating speed of 55 mph and maximum acceleration of 3 mph per second
- Maximum deceleration of 3 mph per second, up to 5 mph per second for emergencies

Type 4 features

- Length of one vehicle = 95.6 feet
- Train length (two vehicles = 191 feet)
- Width = 8.7 feet
- Height = 12 feet
- Weight = 101,300 pounds
- Seats = 68 per vehicle, 136 per train
- Designated mobility device spaces = 4 per vehicle, 8 per train
- Bike hooks = 4 per vehicle, 8 per train
- Rider capacity = 172 per vehicle, 344 per train

Type 5 features

- Length of one vehicle = 95.6 feet
- Train length (two vehicles = 191 feet)
- Width = 8.7 feet
- Height = 12 feet
- Weight = 105,000 pounds
- Seats = 72 per vehicle, 144 per train
- Designated mobility device spaces = 4 per vehicle, 8 per train
- Bike hooks = 4 per vehicle, 8 per train
- Rider capacity = 186 per vehicle, 372 per train

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Portland-Milwaukie Light Rail Transit Project is a partnership among:



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