



## I-205 / PORTLAND MALL MAX LIGHT RAIL PROJECT

# MAX: The next generation

As part of the I-205/Portland Mall MAX Light Rail Project, TriMet will purchase 22 new light rail vehicles (LRVs) from Siemens Transportation Systems, Inc. These new “Type 4” LRVs will be used on the entire MAX system starting in fall 2008.

The Type 4 vehicles will have more passenger seating, adding space for four more seats per vehicle plus more standing room. With two LRVs per MAX train, that totals eight more seats per train. In addition, one operator cab will be located in each car compared to the existing MAX vehicles that has an operator’s cab at each end.

### Safety upgrades and a smoother ride

The addition of a rearview camera system on the Type 4 vehicles will enhance the rear field of vision for operators. The cameras include sensors that switch from color mode to black and white in low-light situations, offering increased visibility at night.

With advances in electronic systems, TriMet anticipates that Type 4 LRVs will slow down and stop at stations more smoothly than existing MAX LRVs.

### Made in the U.S.A.

Siemens manufactures and buys the majority of components and assembles the new Type 4 LRVs in the U.S. Only a handful of specialized components—such as wheel “trucks” from Austria and 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 4 LRV costs about \$3.5 million.

### Timeline

- Design refinement June 2006–Sept. 2007
- Manufacturing Sept. 2007–Spring 2009
- Delivery of cars June 2008–January 2010

### Serving the entire MAX system

Siemens will deliver each new LRV separately, as soon as it’s ready. Before it can go into service, TriMet will put it through a rigorous 1,000-mile testing and “burn-in” period. TriMet estimates the first Type 4 LRV will be ready for service in fall 2008.



## Modern design and amenities

The new Type 4 LRVs, Siemens' S70 (Avanto), is the same model currently used in Houston, Texas; San Diego, California; Charlotte, North Carolina and Paris, France. The new trains will be seven feet longer, but will still fit within existing MAX stations, including those in downtown Portland.

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
- Interior and exterior surveillance system and an open interior design for maximum safety and visibility
- Exterior and interior automated station announcements and rider information on electronic readerboards and audio recordings

## Type 4 technical specifications

- Six-axle, low-floor light rail vehicle with two articulations (places where it can bend)
- Bi-directional operation achieved by always coupling two Type 4 vehicles together
- Constructed of low-alloy, high-tensile (LAHT) steel and composite materials
- Folding train couplers with covers to conceal them when a coupler is not in use
- Train-to-wayside communication, automatic train stop and event recorder
- State-of-the-art electric propulsion system with microprocessor-controlled inverts that power four motors up to 520 kilowatts or 696 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 6.5 mph per second for emergencies

## How they compare

Features	Existing Type 2 & 3 vehicles*	New Type 4 vehicles
LRV length	92 feet	95 feet
Train length (two linked LRVs)	184 feet	191 feet
Width	8.5 feet	8.7 feet
Height	13 feet	12 feet
Weight	105,000 pounds	99,500 pounds
Passenger seats	64 (128 per train)	68 (136 per train)
Designated wheelchair spaces	4 (8 per train)	4 (8 per train)
Bike racks	4 (8 per train)	4 (8 per train)
Other MAX LRVs it can link with	Type 1, 2 or 3**	Type 4 only
Rider capacity	166 (332 per train)	172 (344 per train)

\* Type 1 LRVs have similar dimensions and design to Type 2 and 3 LRVs.

\*\* Type 1 LRVs do not have low floors and are always paired with a Type 2 or Type 3 LRV to ensure every MAX train is accessible.

## For alternative formats

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The I-205/Portland Mall project is a partnership between:



TRIMET



METRO

