



TriMet Streetcar Prototype Final Report

Background

This report documents the FTA-funded effort led by TriMet, the City of Portland (City), and Portland Streetcar, Inc. (PSI) to domestically manufacture a streetcar for operation in the Portland Streetcar system.

Objectives

The purpose of the grant was to increase the capability of domestic manufacturers in the business of supplying streetcars.

Findings and Conclusions

FTA's funding and support for this effort has had a significant impact on the availability of domestically-manufactured streetcars for the growing U.S. market, increased the number of domestic suppliers of streetcar components, and extended the opportunities for Buy America-compliant suppliers.

The report documents the initial process of producing the streetcar, the extension of the grant to support domestic manufacture of the propulsion system by Rockwell Automation, and operation in revenue service. Also included are a discussion of the market for streetcars in the U.S. and a history of streetcar manufacturing in the U.S.

Oregon Iron Works (OIW) was selected through a competitive process to develop a prototype vehicle produced by a domestic manufacturer. The vehicle was completed in 2009. At that time, TriMet, the City, and PSI (as United Streetcar) proposed that the prototype be used to develop a domestic manufacturer for a propulsion system. United Streetcar and Rockwell Automation provided an upgrade for the propulsion system that is now in revenue service in the Portland Streetcar system. The vehicle was completed in 2012 and operated in revenue service for nine months.

Among the lessons learned from this effort are that manufacturing streetcars requires numerous disciplines, design quality is essential for proper development, system integration is fundamental to success, prior experience is invaluable, Buy America and domestic manufacturing policies of FTA are effective, and the cost of supporting

FTA's support for the domestic manufacture of streetcars has been partially responsible for the following results:

- United Streetcar has produced 18 streetcar vehicles for Portland (7), Tucson (8), and Washington, DC (3).
- The federal government has increased its support for streetcars, partially funding 12 systems in the U.S. In addition, 6 proposals are qualified for project development under the FTA Small Starts program.
- A total of 12 manufacturers are offering streetcars in the U.S., with all of them offering Buy America-compliant manufacturing.
- Rockwell Automation has produced a domestic propulsion system that is in operation. Two other propulsion manufacturers have developed Buy America-compliant systems since 2009.
- The number of domestic suppliers for streetcar components has grown significantly.

Benefits

The partnership exhibited among the federal government, TriMet, the City of Portland, PSI, OIW, United Streetcar, and Rockwell Automation has had a significant impact on the availability of streetcars for the growing U.S. market. This effort has extended the opportunities for Buy America-compliant and domestic suppliers. As of 2014, a domestic market for streetcars has been established, in the range of 20–30 vehicles per year. In total, 5 modern systems are operating today, with 10 more under construction. There is estimated to be a demand over the next 5 years for as many as 148 additional vehicles.

Project Information

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This report was prepared by TriMet, the City of Portland, and Portland Streetcar, Inc. For more information, contact Terrell Williams, FTA Senior Engineer, at (202) 366-0232, Terrell.Williams@dot.gov. All research reports can be found at www.fta.dot.gov/research.