

Peninsula Corridor Joint Powers Board



*25kV ac ELECTRIFICATION
PROJECT*

**ASSESSMENT OF
ELECTRICALLY POWERED
ROLLING STOCK EQUIPMENT**

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EXECUTIVE SUMMARY

The Peninsula Corridor Joint Powers Board has determined to electrify the rail line utilized by its commuter rail operations between San Francisco and Gilroy. This report addresses electrically powered rolling stock equipment, explores the availability of technologies and assesses their technical and economic performance, as compared to the existing diesel-electric powered fleet.

The PCJPB operates a fleet of 23 diesel-electric locomotives and 93 Gallery style passenger coaches. 27 of these cars are equipped with control cabs, allowing for push-pull operations without having to turn the train around at either end. The trains are assembled into sets of four, five, six and occasionally seven cars.

The assessment includes a review of typical passenger operations utilizing electric rolling stock equipment, namely Amtrak, Northern Indiana, SEPTA and NJTC. In each case the type of equipment, maintenance and operating costs and procedures were reviewed in order to provide a basis for comparison.

The PCJPB services can be provided by either electric locomotives hauling passenger coaches or self propelled electric passenger cars (EMUs). Whichever technology type is ultimately selected, it must be designed and constructed in accordance with all current standards and regulations, primarily all relevant Parts of 49 CFR, Passenger Equipment Safety Standards. Assuming that any passenger car utilized by PCJPB would a multilevel design, there are no currently available EMUs in compliance with U.S. regulations.

Six electric locomotive designs were identified and evaluated, as follows: (1) the AEM-7 ADtranz model used by Amtrak, MARC, SEPTA and NJTC; (2) the ALP-44 ADtranz model operated by NJTC; (3) the Amtrak AEM-7 units as remanufactured by Alstom; (4) the ALP-46 units, currently under development by ADtranz for NJTC; (5) the High Horsepower units currently in production by Bombardier-Alstom for Amtrak and MARC; and (6) the E-60 units built by GE in 1981 for the Mexican Railway

With regard to EMUs, with the exception of Gallery style cars built in the 1970s and operated by Metra in the Chicago area, only single level designs are currently available in the U.S. They are the M-7 cars currently under development by Bombardier for the Long Island Railroad and the Nippon-Sharyo design built for Northern Indiana. The old Morrison-Knudsen organization also built the M-6 type EMU for Metro North in the late 1980s. Performance and economic data for these cars served for developing a base platform and prorated estimated data for multilevel EMUs.

Alternative procurement approaches that will enhance opportunities and minimize risks are also discussed.

In summary, it is concluded that the development of a new EMU vehicle will be more costly and will create potential technical risks. Therefore, a prudent and low risk approach would be to acquire new electric locomotives and use the existing Gallery passenger coaches to provide services under the electrified system.