

Rewrite of Appendix V: pages 89-90

ETAAC Report Discussion Draft of 12-21-08

C.2 Personal Rapid Transit:

Personal Rapid Transit (PRT) is a system of small (2-4 passenger) electric powered vehicles operating automatically in a network on elevated guideway. Outwardly, PRT resembles small versions of automated people movers sometimes seen at airports. However, PRT has a more efficient service architecture that allows riders on-demand and non-stop trips through use of off-line stations. In this respect, PRT is designed to be a public transit system that is more personalized and avoids many of the undesirable features of rail and bus line haul architectures.

In a PRT system, an individual rider (or small group agreeing to share the trip), pre-selects a destination. Riders have exclusive use of the vehicle during the trip as it takes them non-stop to the chosen destination. This provides a level of privacy, safety, and speed that ordinary mass transit does not, and avoids the need for scheduled service. Owing to the lighter vehicle weight, extremely efficient electric motors, and steady travel speed, PRT promises substantial energy efficiency gains. PRT energy efficiency is estimated to be from 100 to 500 mpg equivalent depending upon the system. Further, PRT has the potential to be a near zero GHG emitting surface transportation system when powered by renewable electric energy sources such as solar and wind.

A first generation, U.S. government funded automated PRT system has been operating in Morgantown, WV for over 30 years. This system can operate in PRT mode (individual trips) or in GRT mode (group travel) as the vehicles can carry up to 20 passengers. Morgantown demonstrates that PRT is technically feasible and that its service architecture is more convenient (and safer) than buses and light rail. Second generation PRT systems are currently being introduced in Europe. A commercial system is under construction at Heathrow Airport in London. In Sweden, a full demonstration facility has been built in Uppsala. Costs are lower than for light-rail and estimated to be \$10-\$15 million per mile one-way mile. In the United States, government support for PRT development has been nonexistent for 25-years, consequently, potential customers, such as cities and regional transportation agencies, have not been willing to assume the risk of deploying PRT.

Timeframe: The PRT system at Heathrow is currently on time and on budget with service to begin in April 2009. The Swedish facility in Uppsala is currently undergoing tests and safety certification by the Swedish Rail authorities. The prospects for American PRT systems are unclear owing to unknown funding prospects and testing schedules. Many privately funded PRT systems in the U.S. have designs sufficiently advanced that they are ready to enter the full-scale testing phase. A recent PRT study by the State of New Jersey gives various scenarios on how the State could move forward with PRT development. Construction times for PRT should be shorter than for light rail owing to

less existing street and traffic disruption. PRT also benefits from most of the system being prefabricated off-site.

GHG Reduction Potential: The long-range prospect is for PRT to operate on zero GHG power sources. As such it promises to be a major factor in GHG reduction, not only in the U.S. but, globally as countries such as China and India exacerbate the problems with the rapidly expanding purchase of cars. Ultimately, the GHG reduction would depend on how much PRT could substitute for existing CO₂ emitting surface transportation. Estimates for PRT market share run from 20% to 80%.

Ease of Implementation: Unclear in the United States, mostly because of lack of federal support and risk aversion on the part city governments and transportation agencies. Has potential to overcome land use problems with light rail and adding express lanes.

Co-Benefits / Mitigation Requirements: Unlike other surface transportation technology, PRT has the potential to mitigate both GHG emissions and congestion. By strategically integrating PRT into transit-oriented development (TOD), auto vehicle miles traveled (VMT) can be significantly reduced with positive impacts on congestion reduction, lower oil imports, reduced parking needs, expanded land use options, and improved transportation for non-drivers. PRT-induced TOD will also serve as a tax-base driver. Further, because the emerging personal rapid transit industry has the potential to bring new high-tech jobs, manufacturing and academic opportunities to the state, PRT holds the potential to strengthen California's global competitive advantage.

Responsible Parties: Public-private partnerships. Local transportation planning organizations partnered with private financing and supplemental public funds; but as PRT expands, responsibility would flow to regional, statewide, and even nationwide public-private partnerships.

Problem: Historic lack of federal R&D funding for PRT plus the extreme conservatism by cities to deploy completely new forms of transportation. Regional and local transit authorities require evidence of operational PRT systems as a condition for consideration. As a result, capital investment in PRT systems fails to materialize because no markets exist.

Possible Solution: A PRT pilot demonstration at the state level could break the impasse between city reluctance and capital investment by funding PRT demonstration facilities. The state has resources of sufficient magnitude for such an initiative, whereas individual cities are more constrained. In addition, work at the state level could apply to all cities. Fully demonstrated PRT systems could then attract private and government capital necessary for initial projects in various cities. Fresno stands as an example of a city waiting for completion of such demonstration facilities. Fresno has earmarked \$36 million to move forward with PRT. Orange County has \$1 billion that is PRT eligible. Other cities are waiting in the wings for PRT to reach the degree of "proof" necessary for them to gather all the local level co-operation needed to build PRT.