

Urban Rail in 21st Century America

GREGORY L. THOMPSON, *Florida State University*
TOM MATOFF, *LTK Engineering Services*

Several forms of urban rail transit serve American cities on the eve of the 21st century. Traditional rail rapid transit and commuter rail lines long established in many metropolitan areas have been joined in the last 40 years by new regional rapid transit, light rail, and commuter rail systems. More than 20 U.S. cities now have some form of urban rail service, with more in the planning or design phases. Rail transit systems (especially rapid transit and commuter railroads) are the main means of traveling to or from the downtown areas in most large cities. They account for more than half of all peak-hour entrants into downtown New York, Chicago, Philadelphia, and Toronto (1).

Although bus transit service is ubiquitous in American cities, rail transit accounts for a disproportionately large share of total American transit usage. The 1995 National Passenger Data Survey shows that traditional and regional rapid transit lines accounted for 23 percent of transit boardings in the United States in 1995; commuter rail accounted for another 9 percent. If the length of the trip is factored into transit use, the importance of rail transit increases because people who use rail transit travel longer distances on average than those who use buses. Traditional and regional rapid transit accounted for about 25 percent of transit passenger miles, and commuter rail accounted for another 20 percent (2).

HISTORICAL DEVELOPMENT

The traditional rail systems evolved from two 19th century corporate antecedents. In the first antecedent, entrepreneurs formed local corporations to provide local passenger transportation, sometimes in conjunction with the sale of electric power or as a tool to permit or encourage real estate development. By the early 20th century, such transit corporations operated electric street railway service in almost every American city, probably accounting for most urban passenger travel, excluding walking. In many places, these networks included suburban or interurban car lines that incorporated significant lengths of private rights-of-way. In a few of the largest cities, transit corporations also built and operated specialized local, traffic-free passenger railroads, called rapid transit, on elevated structures above city streets or in subways below street grade. These systems had the capacity to carry the volumes of trips generated by the growing cities and were removed from the increasing street-level traffic congestion.

A second antecedent was the development of railroad corporations whose primary business was intercity freight and passenger service. In a handful of cities, a few of the railroad corporations expanded their track capacity and terminals to provide frequent local

passenger trains, called commuter trains, because their primary purpose was to carry suburban workers to urban central business districts.

With the rise of the automobile in the early 20th century and the establishment of publicly provided highway infrastructure, rail transit profitability declined, although patronage declined much less on rapid transit and commuter rail lines than on street railways. Transit corporations, many under the control of national holding companies financed by automobile interests, progressively replaced most street railway service with buses, which were cheaper in some cases.

Rail rapid transit remained, shored up increasingly by subsidies from local governments. Commuter rail service also remained, cross-subsidized by rail freight revenue. With the availability of federal subsidies beginning in the early 1960s, several urban regions in the East began organizing regional transit authorities to provide subsidies to private railroad corporations for the continued operation of well-used commuter trains.

Throughout the country, municipalities or new transit authorities also assumed the operation of most private transit corporations, typically operating only buses, but in some of the larger cities, rapid transit and streetcars as well. Eventually, the new regional transit agencies also took over commuter rail management from the private railroad corporations, although commuter trains typically continued to share tracks and terminals with intercity freight and passenger trains.

CURRENT STATUS AND TRENDS

To these traditional urban rail systems have been added the “new starts.” Since the early 1970s, largely supported by federal grants, many urban regions have built new urban rail systems that often blur the distinction between traditional street railways, rapid transit, and commuter rail. Regional rapid transit systems, as in San Francisco and Washington, D.C., resemble traditional rapid transit in urban cores through which the new systems operate in subways with close station spacing. Outside of the downtown areas, however, they may resemble commuter rail lines extending for long distances into the suburbs, often following intercity railroad alignments with long station spacing. New light rail systems use updated versions of street railway technology but typically operate in trains rather than as individual vehicles. Most of the new light rail services operate through central cities on city streets from which the bulk of automobile travel has been removed, but outside of the center cities the new light rail services typically extend into the suburbs on private rights-of-way, commuter rail fashion, with long station spacings. Park-and-ride is an integral part of urban rail in North America today. The growth in importance of this component reflects the geographical expansion of society and the adaptation of rail systems to this trend.

At the end of the 20th century, the older, first-generation rail transit properties have seen significant renewal of their infrastructure. The remaining streetcar systems have been upgraded to light rail standards, and the original rapid transit systems have undergone route reconfigurations, extensions, and additions of new lines along with the rebuilding of the older, original segments to enable them to provide another century of service.

FUTURE OUTLOOK

American rail transit traditionally has focused on the central business district of America’s larger cities. Most growth of transit traffic in recent years has occurred on the commuter and other regional rail systems offering reliable, high-speed service to the largest central

business districts, which could not maintain their intensity of use if they had to rely solely on single occupant auto or surface bus transportation. Escalating auto congestion in the suburbs makes commuter rail more attractive to those relatively few people who work near commuter rail stations (3,4).

The commuter rail markets could continue to grow, provided that issues involving freight traffic can be resolved and effective distribution in the city center can be provided. Commuter rail trains typically use freight railroad tracks, and growing freight traffic is congesting lines; to make commuter rail reliable and acceptable to the host railroads, capital investment of some significance may be required.

Population growth, unrestricted land use policies, cheap gasoline, and low-cost automobile travel seem likely to continue to encourage sprawling development in the near future. New and extended light rail and commuter rail systems with their lower costs, expanding into low-density growth areas, will likely continue to outpace new heavy rail rapid transit construction. Some of the more heavily used light rail lines—the “new starts” of the 20th century—may be upgraded over time, with longer trains and platforms, double tracking to permit shorter headways, and additional grade separations and downtown subways, gradually making them into rapid transit-like systems. Existing rapid transit systems should largely remain viable, and the ongoing investment in fleet replacement and infrastructure rehabilitation may be expected to continue.

Whether the recent trend of the reemergence of the downtown area as an important center for entertainment, commercial and, now, residential development, proves to have significant impact, the population and job growth in the suburbs and edge cities will continue to dominate regional demographics. If rail transit is to expand significantly into the next century, it will have to adapt itself to trends in decentralization. Some systems are attempting to do so, with some success.

For example, management has restructured the service of Caltrain, the traditional commuter line linking San Francisco and San Jose, to make it possible for people living in its service areas to reach destinations other than downtown San Francisco and not just during rush hours. Ridership has grown to levels that existed in the mid-1950s, but most of the growth is in nontraditional markets such as reverse commuters riding from San Francisco to jobs in Silicon Valley, and in intrasuburban riding to suburban jobs and other nonemployment-related destinations (5). Similar results were reported in the Greater New York region by Metro-North at the 1999 Transportation Research Board Annual Meeting (presentation by Robert MacLagger, Director, Operations Planning). Interestingly and significantly, Metro-North has dropped the term “commuter” from its corporate name (it is now just Metro-North Railroad), to show that its perception of its own mission has now expanded beyond the commuter-only role.

The newest light rail line to open (November 1997) in San Diego operates through an elongated edge city environment, connecting two regional malls, numerous office buildings, several hotels, apartment and town home complexes, and a stadium. There is a substantial and growing transit ridership to all of these destinations at all times of the day (6). New commuter rail systems in Southern California and South Florida, while focused on traditional central business districts carry substantial amounts of traffic between suburban points (7,8).

Some agencies have attempted to use rail transit as an effective means for reorganizing overall regional transit services because they can replace duplicative trunk bus routes to the central city with rail trunks, leaving freed-up bus miles to be restructured to offer suburb-to-suburb or neighborhood-to-neighborhood transit accessibility at all times of the day. This strategy has been tried in Boston, Chicago, San Diego, San Francisco, Portland, and Sacramento and appears to have had some success in attracting new transit patrons. Rail has been the key to an overall network strategy that benefits both downtown and non-downtown trip-making (9-11). New lines linking the traditional radial routes from the 19th and 20th centuries, some already under construction or in the early planning, will likely be an important addition to 21st century route maps. Nontraditional and flexible local distribution systems will also enable rail transit to continue to adapt to dispersed development and trip patterns.

Cost is another factor affecting the future of rail transit. The high cost of building and operating new rail services is becoming a political issue, not only in the United States, but in Europe as well (2,12). More cost-effective proposals, including, perhaps, a “lightening” of design criteria and a “lighter” approach to operations may be necessary. Organizational reform could also contribute to an improvement in this area. Regional integration of services on the European model is increasingly urgent (and usually goes unrealized), and specialized development and operations entities under a unifying umbrella may make for a better result than simple merger under some circumstances. San Diego provides a good example of how to achieve this, with good results overall in both the capital and operating areas.

How rail transit investments relate to urban form has attracted widespread attention since the passage of the Clean Air Act Amendments of 1990 and the Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991, a debate that likely will continue into the next millennium. For the first time in American history, ISTEA established a federal policy holding that local development decisions should in part create land use patterns that increase the attractiveness of walking, biking, and transit alternatives to the automobile to decrease vehicle miles traveled (13). Transit-oriented development—pockets of higher density, mixed-use, and pedestrian-friendly development focused on rail transit stations—is the concept, which most recently has been articulated as the Smart Growth Initiative of the American Planning Association and which the *New York Times* reports is a likely issue for the 2000 presidential campaign (14).

The Smart Growth Initiative may encourage the further development of rail transit and increase its effectiveness. In America, rail transit has yet to conclusively demonstrate an ability to serve as a magnet for new development or as a means for restructuring a decentralized region (13,15,16). Given America’s ability to locate almost at will (and supported by automobile-based transportation policies), developers tend not to locate next to a rail station unless it is located in a “hot” real estate market, which might be attractive in any case. Although transit-oriented development will not spring up automatically around transit stations, it does occur if rail transit is extended to areas of high demand. Rail transit will have a more promising future if integrated with transit-oriented development in positive real estate markets. The growth of edge cities provides an opportunity for rail transit, especially where such centers can be designed in a transit-friendly manner.

The long-term implications of rail system development for urban areas are hard to predict. Later in the 21st century, it is quite possible that land development may begin to

create patterns more conducive to a rail environment. Population pressures combined with growing popular concern about the impacts of sprawl could favor higher density construction near primary and secondary urban centers. If congestion costs rise and automobile travel becomes more expensive and more difficult, economic forces could favor higher density development, with a consequent growth in the demand for higher capacity transit in the form of rail systems.

IMPLICATIONS FOR THE MILLENNIUM

The implications for these points are clear. Rail transit projects will play important roles in urban America if at least some of the following conditions prevail:

- They are cost effective, both in terms of construction and operation.
- They are relatively fast and are separated from or enjoy effective priority over automobile traffic.
- They are complemented by local distribution systems and intercept highway networks with park-and-ride facilities.
- They are used as part of an overall strategy of fully integrated bus and rail services, as is common in Europe.
- They focus on and reinforce major activity centers.
- They have stations in strong real estate markets in which transit-oriented development is encouraged by market forces and supported by proactive land-use policies.

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