

Light Rail Development in Los Angeles

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The generic comparison of transit modes, absent site-specific considerations, is too abstract to be meaningful. The consideration and comparison of rapid transit modes is necessarily and appropriately directed by a myriad of real-world factors always unique to the specific case at hand. They include various geographic and demographic realities, "colors of money," amount of funding available, and political opportunities and constraints, to name just a few. Although these considerations are frustrating to "purists," they are nonetheless facts of life and have tremendous weight in any decision about what can and should be implemented. They also tend to blur the cost and benefit distinctions among transit modes.

Experience in Los Angeles provides many examples. There are a number of transit funding sources available, each with limitations on types of eligible projects, amounts available, and procedural requirements. This applies to local, state, and federal funding and requires a mixing and matching of transit modes to available funding sources if the objective is to accomplish as many overall improvements as possible. In some cases transit planning is influenced by the existence of available rights-of-way, be they railroad, freeway, or other relatively available routes. There are always political factors that provide strong impetus--positive or negative. Some proposals are strong technically but weak, or even opposed, politically, and vice versa. Some transit planning is driven by public mandate as is the case in Los Angeles with the development of a countywide locally funded rail transit system.

This paper is not a generic comparison of modes; presented instead is a review of experience in Los Angeles with three specific proposed rail corridors that range in status from the conceptual to the "ready to build." It is believed that they are illustrative of the trade-offs and realities inherent in rapid transit planning.

LOS ANGELES COUNTY RAIL SYSTEM PLAN

In 1980 Los Angeles County voters approved a local 1/2 percent sales tax for various transit purposes, including the construction of a countywide rail transit system (Figure 1). The 13 corridors in the 150-mi ultimate system are in varying states of definition and refinement. A system plan has been developed. It was driven by differing intensities of transit need, limited resources, and a desire for expeditious system development. It envisions a mixed light and heavy rail system that also includes the

use of current and proposed busways. At this point it has been established that about 100 mi of the ultimate 150-mi system could be built as light rail. Experience with three of the light rail corridors, specifically the San Fernando Valley, Century Freeway, and Los Angeles-Long Beach corridors, is described.

SAN FERNANDO VALLEY CORRIDOR

The San Fernando Valley corridor, which runs 16 miles east-west across the valley, is still conceptual at this point. The planning on it to date has looked at the trade-offs of light rail and heavy rail using various alignments. It was found, as part of an overall system evaluation, that light rail (i.e., a less than fully grade-separated service) would pick up about two-thirds the ridership at one-third the cost compared to heavy rail. Specifically, the best-performing light rail alternative was projected to attract 53,000 daily trips at an approximate cost of \$175 million (current dollars), whereas the best heavy rail alternative showed ridership of 87,000 a day at a cost of approximately \$560 million.

The opportunity for light rail in the valley is largely due to the existence of an available railroad right-of-way, the use of which for transit appears at this point to be acceptable to the community. It is assumed that there will be need for some grade separation of the light rail line at major arterials, and still more may be necessary, but the light rail concept is, nevertheless, viewed as having great advantages in terms of cost-effectiveness. This particular evaluation comes about as close to anything to a "generic comparison." This is no doubt the result of the analysis being only conceptual at this point.

CENTURY FREEWAY CORRIDORS

Preliminary engineering has begun on a light rail route in the median of the 17-mi Century Freeway that is now in construction using Federal-Aid Interstate funds. Here the evaluation centered around the best use of a fully grade-separated transit right-of-way that would be made available as part of the freeway construction. Should it be built for bus use or rail? Interestingly, either alternative also included the provision of preferential lanes for carpools, at least during peak periods. The trade-off was building rail now, versus bus now, versus bus now and rail later through conversion. In this



FIGURE 1 Transit development in Los Angeles County.

case, the type of rail (light or heavy) was not an issue given the availability of the right-of-way.

Many of the "real-world" factors cited earlier were present in this decision. The Century Freeway corridor was part of the countywide rail network voted on in 1980, which meant that at some point the route was to be part of the rail system. An agreement to settle litigation on the freeway project included a unique provision that allowed light rail construction with a credit on Federal Interstate participation equal to the cost of building a busway; this meant that the costs for building light rail at the outset were limited to the incremental equipping expenses (track, power, signals, communications, and so forth) and were therefore rather low. Specifically, the additional light rail cost was estimated at \$57 million (current dollars) on the freeway proper and \$112 million if a desirable freeway extension and yard were added.

The result of the evaluation of the bus and rail alternatives was that the additional local capital cost for rail could be rather quickly offset by rail

operating cost advantages, in comparison with the bus alternative, attributable to fairly high ridership demand. The combined operating cost savings (bus and rail) for the light rail alternative over the all-bus alternative ranged from \$5.2 million to \$9.3 million (current dollars) on the basis of a "low-high" range of ridership forecasts.

On closer evaluation, the practical likelihood of future conversion of a bus facility was questioned. This was because of the logistics (i.e., disrupting bus and carpool service for a multiyear period in order to convert), anticipated political opposition (caused by the existing users forced off the bus-carpool facility and competitors for the money to be spent on conversion), and the future cost of converting the busway compared to building it at the outset (about three times as expensive).

These factors, along with the unanimous support for the rail option from cities and businesses along the route, led to the commission's decision to ask California Department of Transportation (Caltrans) and the Federal Highway Administration to construct light rail in the median of the Century Freeway and

to commit themselves to the incremental costs associated with it.

LOS ANGELES-LONG BEACH CORRIDOR

The Los Angeles-Long Beach light rail project is the most advanced light rail project in the county and therefore has taught the people involved the most about the strengths and frailties of light rail.

The line runs 23 mi from downtown Los Angeles to downtown Long Beach largely along an existing railroad right-of-way that was the last line of the old Pacific Electric interurban system abandoned in 1961. As with other candidate light rail projects, its genesis comes from the availability of right-of-way, the opportunity for relatively quick and relatively low-cost construction, and the availability of local funds for its construction.

In general, experience with this project has been that sometimes things just cannot be as simple as people would like them to be. The preliminary assessment of the project in 1982 identified a "bare bones," single-track line with no grade separations that was projected to carry about 21,000 daily riders at a capital cost of \$194 million (1982 dollars). In going through the refinement of the project, which was recently completed, it was found that some design features of the project simply had to be changed for the line to be functional. The "hand"-calculated ridership forecasts from 1982 grew to more than 50,000 when produced by the adopted travel forecasting model. The resulting service frequency requirements rendered a single-track operation too unreliable and the proposed crossing of three active freight lines serving the ports of Los Angeles and Long Beach infeasible. Constructing and operating a light rail line alongside an active freight line proved more complicated, and therefore expensive,

than anticipated. Further, the development of the ultimate countywide system, mentioned earlier, places more demand on this route as a trunk line for the system. In short, the realities of the project have required that it be substantially upgraded. This has brought about an increase in its cost but, on the positive side, an increase in the quality of service it will provide and in the contribution it can make to the overall transportation system.

SUMMARY

In general, light rail transit has unquestionable attributes. Unfortunately, the opportunities to achieve all of them are rare. There is a basic dilemma, it seems, that is faced in trying to develop a light rail project. Such a project enjoys a wonderful image of simplicity, affordability, unobtrusiveness, and nostalgia. At the same time, it is expected to provide all the quality of service benefits of its counterpart the expensive, disruptive, and inflexible heavy rail line. Finding a balanced way out of this dilemma is the challenge that faces anyone trying to apply this mode.

No matter what is proposed to provide public transit improvements, the grass will always look greener for another alternative. Heavy rail lines are criticized for being too expensive--"do it with light rail or buses." Light rail lines are dismissed as "Toonerville Trolleys" until such time as they are made heavy rail look-alikes. All rail projects are boondoggles--"you should do it with buses"--as if there were something fundamentally different about providing exclusive bus right-of-way as opposed to rail.

Through all of this, keeping cost-effectiveness as the major factor in decision making is very difficult indeed.