

Analysis of Capital Cost Elements for Light Rail Transit

Principal Investigators: Dr. Robert E. Paaswell, Dr. Todd Goldman, Mark Seaman, Dr. Ellen Thorson, Dr. Cameron Gordon, City University of New York

The apparent increase in light rail transit capital costs is a significant concern for Federal Transit Administration, as well as for its partner agencies at the state and local levels. While unit costs have shown no clear trend over the past decade, many individual agencies are experiencing unexpectedly high project costs and could use assistance in both bringing these costs under control and gaining tools to better anticipate ultimate project costs.

There are three distinct but interrelated ways in which costs may appear to rise over time, some of which are illustrated by the data from this study: cost overruns, unit cost escalation, and project escalation. Cost overruns in which final costs exceed initial forecasts within individual projects are ongoing problems that plague major public capital investments of all kinds. Unit cost escalation occurs when unit costs for comparable projects rise over time, due to changes in the costs of factor inputs (such as labor and materials) or the costs of construction or specialized services. According to data analyzed for this study, the past decade has seen relatively stable unit costs. However, price spikes can cause significant short-term problems and a future inflationary cycle is always a possibility. Project escalation occurs when changes in the scope or complexity of projects cause costs to rise over time. This is exemplified by recent trends towards smaller and more technically complex projects.

Our analysis shows that since the mid-1990s there has not been a statistically significant increase in prices in any individual light rail transit asset category. However, there remain significant differences in unit costs among projects and all three of the above factors come into play in explaining these disparities. Ongoing problems with cost containment have implications for the ability of the FTA and its partner agencies to keep up with demand for funding of light rail transit capital projects. Guidance or policy development in the following areas would help agencies to better contain costs over the long term:

Technical and Institutional Capacity. Agencies with in-house expertise are generally better able to contain project costs than those without. Training and technical assistance on state-of-practice cost estimation, procurement, project management, and lifecycle economic analysis techniques would help agencies develop the expertise they need to control costs.

Regulations. Existing administrative mandates limit the ability of transit agencies to adopt more innovative procurement and project management practices.

Competition. Preserving a competitive marketplace is essential to controlling the costs of LRT-related procurements. Federal policies should encourage a free and open marketplace by revisiting its requirements for contractors and by discouraging the use of proprietary technologies that limit market competition.

Lifecycle costs. Capital cost components should be judged by the net present value of the full range of operating and capital impacts that they create over time.

Standards. Standards, either relating to the process of procurement and project management or to the design of specific project components themselves, may play a significant role in helping contain project costs. They should also be evaluated using a lifecycle approach.



Sponsors: Federal Transit Administration
U.S. Department of Transportation

Completion Date: 2005

