

STATE OF COLORADO

DEPARTMENT OF TRANSPORTATION

4201 E. Arkansas Avenue
Denver, Colorado 80222
303-757-9266



December 21, 2004

To Whom It May Concern:

RE: Urban Maglev Transportation Development Program: Colorado Maglev Project (CMP): Report # FTA-CO-26-7002-2004

This project was undertaken to develop system specifications for a maglev transit system that is suitable for the I-70 corridor from the Denver International Airport to the Eagle County Airport, as well as evaluate the number of advanced technology subsystems needed.

In addition to the final reports, the following documents have been completed independently and delivered to FTA:

“Urban Maglev Technology Development Program: Task 15 Propulsion System Static Testing and Reliability Analysis” – October 2003

- This report documents the findings of the static testing of the SERAPHIM system. Based on findings in this study and earlier studies by Sandia National Laboratory, FTA determined that the performance of this system would be no better than other linear propulsion systems, and because of its complexity additional development activities were not warranted. At the request of FTA, Sandia Resources were redirected to other activities.

“Urban Maglev Technology Development Program, Colorado Maglev Project, Comparison of Linear Synchronous and Induction Motors” – June 2004

- The report documents the findings of Sandia National Laboratory that determined the linear induction motor (LIM) was most suitable for the Colorado system. More economical track, a broader efficient operating speed range, and ease of adjusting capacity of a LIM-based system were the primary reasons.

“Urban Maglev Technology Development Program: Task 6 Commercialization Computer Model” – April 2004

- This Excel, macro driven model provides an excellent tool to analyze public-private partnership scenarios and to market and negotiate transit system private financing. The model focuses on information needs of private financial

organizations rather than needs of public institutions. At the request of FTA during the scoping of the CMP, use of this tool to analyze various commercialization scenarios was not undertaken. Because there was final agreement regarding the system cost estimate, CDOT did not pursue the incorporation of any model results in the final CMP report.

Cost Estimate. Although the cost estimate was never meant to be a primary objective of the CMP study, it became a particularly troublesome issue between CDOT and the CMP Research team that significantly delayed the completion of the project. When adjusted for the fact that the PEIS analysis did not include the portion of the system between the Denver International Airport and Golden, the CMP estimated for capital cost was \$4.2B, while the consultant performing the PEIS for CDOT estimated a total capital cost of \$5.6B. Although there are differences in individual cost items, the total capital cost estimate of each team before contingency and other factors are applied are within ½ percent of each other. Other factors included by the PEIS team to account for engineering, design, environmental studies, construction management, traffic control, right of way, and environmental mitigation could account for the entire difference. CDOT believes these other factors are necessary to reflect the true estimated total cost of any transportation system and they were applied in a consistent manner to the costs for each alternative being evaluated in the PEIS. The final resolution of this issue was for the CMP team to have an acknowledgement statement in the final report that these costs were not included.

The annual operating cost estimates, however, were significantly different. The CMP team's estimate was \$47M while the PEIS team's estimate was \$180M. Both parties insist that their estimates are correct. CDOT believes the CMP estimate to be low because it is based on a highly optimistic estimate of the system reliability. Without any system yet in full service, the reliability levels cannot be validated. Historical experience with deployment of new technologies, such as the Las Vegas monorail system and the DIA baggage system, demonstrate the prudence of a more conservative cost estimate. The CMP estimate does not include liability insurance costs or replacement costs for vehicles. Their estimate also optimistically assumes that the system can be operated without drivers or other security personnel on each train set, which CDOT does not support for travel in the mountainous region.

Even though CDOT believes that the CMP estimate is too low, it decided to allow publication of the final report realizing that it represented the “views of the authors” as stated in the disclaimer statement for the report.

Deployment. After the first phase of PEIS for the I-70 corridor, preferred alternatives were identified. Although all the alternatives will continue to be

evaluated, CDOT issued a statement identifying the “preferred” alternatives to give the public reasonable expectations of what is possible. One of the criteria for an alternative to be identified as “preferred” was that it had to cost less than \$4B. This criterion prevented the Advance Guideway System alternative (Maglev technology is included in this alternative) from being placed on this list.

The findings of the Colorado Maglev Project are available to guide others who may wish to pursue a maglev system in this corridor or other similar corridors. The commercialization model may prove to be particularly effective in securing private funds for such a project. Colorado law allows for consideration of public/private partnership proposals for transportation projects.

Sincerely,

Richard Griffin,
Research Coordination Engineer