

Technical Report Documentation Page

1. Report No. FHWA/CA/OR-2005/14	2. Government Accession No.	3. Recipient's Catalog No.	
4. Title and Subtitle Robust Investment Decisions for Highway Capacity Expansions		5. Report Date 05/2005	
7. Author/s Fernando Ordonez		6. Performing Organization Code	
9. Performing Organization Name and Address California Department of Transportation New Technology & Research, MS #83 P. O. Box 942873 Sacramento, CA 94273-0001		8. Performing Organization Report No. 03-06-2005-4	
12. Sponsoring Organization Name and Address U.S. Department of Transportation Research and Special Programs Administration 400 7 th Street, SW Washington, DC 20590-0001		10. Work Unit No. (TRAVIS) 11. Contract or Grant No. 65A0047	
15. Supplementary Notes		13. Type of Report and Period Covered Research; 01/01/03 – 08/31/04	
16. Abstract In this report we present a methodology to decide capacity expansions for a transportation network that finds a robust solution with respect to the uncertainty in demands and travel times. We show that solving for a robust solution is a computationally tractable problem under conditions that are reasonable for a transportation system. For example, the robust problem is tractable for a multicommodity flow problem with a single source and sink per commodity and uncertain demand and travel time represented by bounded convex sets. Preliminary computational results show that the robust solution can reduce the worst case cost by more than 20%, while incurring on a 5% loss in optimality when compared to the optimal solution of a representative scenario.		14. Sponsoring Agency Code	
17. Key Words	18. Distribution Statement No Restrictions. This document is available through the National Technical Information Service, Springfield, VA 22161		
19. Security Classification (of this report) Unclassified	20. Security Classification (of this page)	21. No. Of Pages 36	22. Price

