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# Deputy Directive

*Number:* DD-107

*Refer to  
Director's Policy:* DP-06  
Caltrans Partners  
DP-07  
Project Delivery

*Effective Date:* 06-30-10

*Supersedes:* NEW

*TITLE* Use of Life-Cycle Cost Analyses in Project Decision Making

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*POLICY*

The California Department of Transportation (Department) ensures investments in California's transportation system are cost effective and efficient from the initial capital expenditure to the later maintenance and operations expenditures. The Department uses Life-Cycle Cost Analyses (LCCA) to ensure that the costs over the life of a facility are considered when making project decisions.

*DEFINITION/BACKGROUND*

The Department and its transportation partners must consider numerous factors when developing alternatives to address improvement needs of California's transportation system. During the development of all projects, alternatives are considered to the extent necessary to minimize costs and adverse environmental impacts while maximizing employee safety and public benefits.

Additionally, project decisions can also impact the life-cycle costs of a facility or corridor. These costs should also be considered when improvements are being developed and proposed.

LCCA is an effective and useful tool used to determine the best value for spending limited resources. LCCA takes into account various current and future financial obligations and impacts of a particular design, including initial costs, future maintenance, rehabilitation and known upgrade costs, as well as user costs (motorists and the movement of goods). It includes an analysis of the investment needed to maintain an established level of service (LOS) in future years for the life of the facility. LCCA is an important consideration at every phase in the development of a project – from inception through final design and construction.

Effective LCCA is a key component of the Department's developing asset management program. Asset management is a decision-making framework that is guided by performance goals, covers an extended time horizon, draws from economic as well as engineering areas, and considers a broad range of assets. This framework will help determine the best way to use limited resources by using complete and accurate data and making decisions based on performance goals. It also recognizes the long term effects of short term solutions. It provides a framework that documents the decision-making process as investment decisions are made – whether they are capital, maintenance or operational investments.

Federal Highway Administration (FHWA) Asset Management Position Paper dated November 12, 2008 states “Asset management is concerned with the entire life cycle of transportation decisions, including planning, programming, construction, maintenance and operations. It emphasizes integration across these functions, reinforcing the fact that actions taken across this lifecycle are interrelated. It also recognizes that investments in transportation assets must be made considering a broad set of objectives, including physical preservation, congestion relief, safety, security, economic productivity, and environmental stewardship.”

California Transportation Commission (CTC) State Transportation Improvement Program (STIP) Guidelines include the Commission's expectation that evaluations of performance and cost-effectiveness for all STIP projects will be for a 20-year period or on a lifecycle basis.

Following a recommendation in the 1993 California Transportation Plan (CTP), the Commission on Transportation Investments (CTI) was established to review the transportation investment and selection process. The Commission recommended that the Department develop and utilize a benefit/cost (B/C) analysis model in project selection and review process. In response, the CTC added a requirement for B/C assessment in the STIP Guidelines. The Department developed the Cal-B/C Model and has routinely used Cal-B/C to assess all Interregional Transportation Improvement Programs projects as well as Traffic Congestion Relief Program, Proposition 1B Corridor Mobility Improvement Act, American Recovery and Reinvestment Act of 2009 and other projects.

Title 23, United States Code (U.S.C.), Subsection 106(f) entitled "Lifecycle Cost Analysis" defines LCCA as "a process for evaluating the total economic worth of a usable project segment by analyzing initial costs and discounted future costs, such as maintenance, reconstruction, rehabilitation, restoring, and resurfacing costs, over the life of the project segment." It also requires that LCCA be used as part of value engineering analyses for bridge projects.

## *RESPONSIBILITIES*

### Chief Deputy Director:

- Establishes policy for the use of LCCA.
- Empowers Deputy Directors and District Directors to develop and implement required plan, procedures, guidelines, tools and training relative to LCCA.
- Ensures District Directors implement this policy at the project level.

### Deputy Director, Finance:

- Establishes and updates appropriate statewide interest rates for inflation, rate of return, etc. for consistency among offices and divisions.

### Deputy Directors, Planning and Modal Programs and Project Delivery:

- Ensure development of strategies to facilitate development of LCCA at the appropriate stages of project development.
- Require training of staff in the development and application of LCCA.
- Ensure that manuals, guidelines, and procedures reflect this policy and are consistent across divisions.
- Ensure development of strategies for retention and transmission of project lifecycle cost documentation from planning through maintenance, including identification of future project needs.
- Ensure that planning and capital costs are maintained and documented for use in performing LCCA.

### Deputy Director, Maintenance and Operations:

- Ensures that manuals, guidelines and procedures reflect this policy.
- Ensures that maintenance and operational costs are maintained and documented for use in performing LCCA.
- Ensures that LOS of highway facilities is kept current.

### Chiefs, Division of Transportation Planning, Rail, Aeronautics, Mass Transportation, Pavement, Design, Project Management, Engineering Services, Traffic Operations, Environmental Analysis, Right of Way and Land Surveys, Construction, and Maintenance:

- Ensure use of LCCA in project initiation and approval documents.
- Develop strategies to facilitate development of quality LCCA for project initiation and approval documents.
- Develop and implement training in the development and application of LCCA.
- Ensure that manuals, guidelines, and procedures reflect this policy.
- Recommend strategies for retention of project documentation and transmission to subsequent project stages.
- Collect and maintain data on LOS of highway facilities.

District Directors:

- Ensure development of quality LCCA from planning through project Ready to List.
- Ensure that projects are designed and constructed considering the lifecycle costs of the available alternatives.
- Ensure dissemination of guidelines and tools for preparing quality Purpose and Need Statements.
- Ensure staff training in the development and application of LCCA.
- Ensure retention of project documentation and transmission to subsequent project stages.
- Collect and maintain data on LOS of highway facilities.

Deputy District Directors, Planning, Project Management, Design, Environmental Planning, Right of Way, Traffic Operations, Construction, and Maintenance:

- Develop quality LCCA from planning through project Ready to List.
- Train staff in preparation of quality LCCA.
- Develop and implement strategies for quality LCCA in project documents.
- Ensure that functional areas and stakeholders participate in the evaluation and refinement of LCCA in Project Development Teams.
- Develop and implement strategies to ensure the continuity and quality of LCCA throughout each project's lifecycle.
- Implement procedures to assure retention of project documentation and transmission to subsequent project stages.
- Ensure that project scope changes and design changes at any stage are evaluated in an updated LCCA.
- Evaluate completed projects to ensure that the results of LCCA are considered in project documents.

Employees:

- Ensure the continuity and quality of LCCA throughout each project's lifecycle.
- Participate actively in multi-functional Project Development Teams to evaluate and refine LCCA.
- Follow procedures to retain project documentation and transmit to subsequent project stages.
- Follow procedures to transmit LCCA from planning stages through project completion.

*APPLICABILITY*

All Department employees involved in the planning and delivery of transportation improvement projects.

*Original Signed by,*

*June 30, 2010*

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MALCOLM DOUGHERTY  
Interim Chief Deputy Director

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Date Signed