## Documenting

## Life-Cycle Cost Analysis for Pavements


### Performing Life Cycle Cost Analysis

The *Life-Cycle Cost Analysis (LCCA) Procedures Manual* provides information and procedures needed for when and how to complete a life-cycle cost analysis for pavements*.* The most recent version of *LCCA Procedures Manual* and *RealCost* software program shall be used to ensure proper reference to current LCCA policies, data, procedures, and guidance.

### Documenting Life Cycle Costs

This addendum provides a format for how to document the life-cycle cost analysis results into project initiation documents (PIDs) and project approval documents. Attach the LCCA form to the project document and list each pavement alternatives analyzed. Alternative 1 should be identified as follows:

* For PIDs, Alternative 1 is the pavement alternative selected for programming.
* For project approval documents, Alternative 1 the preferred pavement alternative selected.

Typically, two or three pavement alternatives will be analyzed at both the project initiation and project approval phase. More may be required in some instances. The cost data shown on the LCCA form should be consistent with the input and output data from the Department’s current version of *RealCost* software.

The following information should be included on the LCCA form:

Alternative Description:

Describe the pavement alternative being analyzed. Include the pavement structure (thicknesses and types of the various layers of the pavement) and any other features unique to this alternative.

Pavement Design Life:

Label the pavement design life of the pavement alternative. For more information on pavement design life, see *Highway Design Manual* [*Topic 612*](https://dot.ca.gov/-/media/dot-media/programs/design/documents/chp0610.pdf).

Initial Construction Cost:

Initial construction costs are estimated using guidelines from the *LCCA Procedures Manual*.

Future Maintenance and Rehabilitation Cost:

Future maintenance and rehabilitation costs are derived from the tables and figures found in the *LCCA Procedures Manual* and *RealCost* software. They include costs for routine, preventive, and corrective maintenance, whose purpose is to preserve or extend the service life of the pavement. It is obtained by subtracting the total agency cost, calculated by the *RealCost* software, by the initial construction cost.

Total Agency Cost:

Total agency cost is the sum of initial construction, future support, and future maintenance and rehabilitation costs. These costs are calculated and reported by the *RealCost* software using data from the *Life Cycle Cost Analysis Procedures Manual.*

Total User Cost:

User cost includes travel time costs, vehicle operating costs, and crash costs incurred by the traveling public. Such user costs typically arise when work zones are imposed for field work which restricts the normal capacity of the facility and reduces traffic flow. These costs are calculated and reported by the *RealCost* software using data from the *Life Cycle Cost Analysis Procedures Manual.*

Total Life-Cycle Costs:

This is the sum of total agency costs and user costs. The Department considers agency and user costs equivalent, but they are to be documented separately on the LCCA form.

Reason that Alternative 1 is not the lowest life cycle cost (if applicable):

If Alternative 1 is not the lowest life cycle cost for all alternatives, state the reason why. Note that except for pavement design life requirements found in *Highway Design Manual* [*Topic 612*](https://dot.ca.gov/-/media/dot-media/programs/design/documents/chp0610.pdf), there is no requirement that the lowest life cycle cost alternative must be Alternative 1.

### Transmittal of Life-Cycle Costs Information

A pdf copy of the approved project initiation document, project report, or project scope summary report with the life-cycle costs included shall be emailed to lcca@dot.ca.gov.

## Life Cycle Cost Analysis Form

|  |  |
| --- | --- |
|  | **Alternative 1** (Pavement alternative selected for programming *or* Preferred Alternative): *Briefly describe the pavement strategy and other unique features* |
|  |  |
|  |  |
|  |  | Pavement Design Life: |     | Years |  |  |
|  |  | Initial Construction Cost: | $       |  |
|  |  |  |  |  |
|  |  | Future Maintenance & Rehabilitation Cost:\*\* | $       |  |
|  |  | TOTAL Agency Cost: |  | $       |
|  |  | Total User Cost: |  | $       |
|  |  | **Total Life‑Cycle Cost:** |  | $       |
|  |  |
|  | **Alternative 2:**[[1]](#footnote-1)🟉*Briefly describe the pavement strategy and differences in scope from Alternative 1.* |
|  |       |
|  |  |
|  |  | Pavement Design Life: |     | Years |  |  |
|  |  | Initial Construction Cost: | $       |  |
|  |  |  |  |  |
|  |  | Future Maintenance & Rehabilitation Cost:\*\* | $       |  |
|  |  | TOTAL Agency Cost: |  | $       |
|  |  | Total User Cost: |  | $       |
|  |  | **Total Life‑Cycle Cost:** |  | $       |
|  |  |
|  | *Is the lowest life cycle cost option selected as the recommended alternative? If not, why?:* |
|  |       |
|  |  |

1. **🟉**  Repeat as often as needed, with appropriate numbering, to cover all pavement alternatives investigated.

**\*\***  Includes future maintenance, construction, and project support costs. [↑](#footnote-ref-1)