Legislative Initiatives

Federal and state lawmakers are being called upon to force the use of a flawed economic methodology. Instead of mandates, more study is needed.


H.R. 3671 — Consolidated Appropriations Act, 2012 — Requires OMB, with industry experts, review LCCA potential use and procedures.

S. 1813 — Moving Ahead for Progress in the 21st Century Act (MAP-21) — Authorizes GAO to examine LCCA best practices and discount rates. Anticipated products include a literature review, survey of state DOTs, and best practices report.

Not an Accepted Practice in Economics

In an effort by one industry to gain a competitive advantage in the highway construction marketplace, an untried, inaccurate method of calculating the discount rate has been proposed that may be used to unfairly rig the life-cycle cost analysis process.

◊ No known government or academic source endorses the use of a material-specific discount rate.

◊ Not mentioned in the literature except in the paper “The Effects of Inflation and Its Volatility on the Choice of Construction Alternatives,” written by the Concrete Sustainability Hub at the Massachusetts Institute of Technology and funded by the Portland Cement Association.

“For future inflation is highly uncertain... Economic analyses are often most readily accomplished using real or constant-dollar values.” — OMB

Material-Specific Discount Rate:
Inappropriate for Life-Cycle Cost Analysis

For More Information
To download a copy of NAPA Special Report 203, visit www.asphaltpavement.org/SR203

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**What is LCCA?**

- Life-cycle cost analysis (LCCA) calculates the total lifetime costs of a project, including initial construction, rehabilitation, and maintenance.
- LCCA is used in considering different alternatives after a project design has been selected.
- LCCA stipulates that each alternative have the same level of service, traffic volume, and analysis period, and that it include at least one rehabilitation cycle.

**Methods of Conducting LCCAs**

1. Conduct in today’s dollars and deflate for opportunity value of time.
2. Conduct in future dollars (where available, such as in a rent or lease agreement) and deflate for both opportunity value and inflation.
3. Inflate today’s dollars to reflect “expected future changes in relative prices … where there is a reasonable basis.” (OMB Circular A-94) and deflate for both opportunity value and inflation.

Concrete Sustainability Hub at MIT Proposal: Use method 3 but employ a computational shortcut that combines theoretically distinct estimations of inflation and discount rates (suggested by the report authors only as a computational workaround).

**Concrete Sustainability Hub Forecasting Model Flawed**

- CSH assigns 34.4% of costs to liquid binder; FHWA assigns only 7.8%.
- CSH assumes asphalt repaving every ten years. However, only 7 of 38 state DOTs reported initial life cycles of less than 15 years.
- CSH assumes no recycling of asphalt. However, asphalt is the most recycled material in America.
- CSH only examines materials (concrete and asphalt), but ignores potential differential inflation rates for labor, equipment, and other costs.
- CSH ignores money-saving technological advances in asphalt paving, such as RAP (reclaimed asphalt pavement), RAS (recycled asphalt shingles), and warm-mix asphalt.

**Difficulties in Predicting Long-Term Commodity Prices**

- No theoretical or empirical evidence to support the CSH methodology, which assumes that “…the past distribution of inflation rates is used to generate a variety of different random possible outcomes.”
- The fundamental flaw in using past prices for a non-renewable commodity to predict future prices is that market prices already take into account future supply and demand conditions. For example, Congressional Research Service states: “…expectations concerning future market conditions are quickly embodied in oil prices.”

Material-Specific Discount Rate: Inappropriate for Life-Cycle Cost Analysis

**LCCA Guides and Manuals: No Mention of Material-Specific Discount Rates**


**Other Key References**

- Forecasting the Price of Oil. Board of Governors, Federal Reserve, 2011.
- World Oil Demand and its Effect on Oil Prices. CRS, 2005.