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

While life-cycle cost analysis can be a valuable tool for comparing the lifetime costs of construction projects, modifying accepted LCCA methods by applying a material-specific discount rate is not an accepted practice in economics.

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

Attempting to forecast future prices accurately over the long term, especially for non-renewable resources, is a notoriously difficult task, and trying to use past prices as a gauge for future prices overlooks the fact that market prices already take into count future supply and demand considerations. It also fails to capture potential costs increases or savings that accompany new technologies and/or regulations.

- “Future inflation is highly uncertain... Economic analyses are often most readily accomplished using real or constant-dollar values.” — OMB
- Historical price information cannot account for price changes caused by regulatory or legislative initiatives. New EPA rules governing fly ash, for example, would alter the price or production of concrete.
- Similarly, the uptake of new technologies, such as the use of reclaimed asphalt pavement (RAP) and recycled asphalt shingles (RAS), are not accounted for in the historic price data.

Mandating the use of a material-specific discount rate in life-cycle cost analysis when comparing alternative designs for publicly funded projects could skew LCCAs for construction materials, including asphalt, concrete, steel, wood, and plastics, ultimately costing tax payers more money.

- Material costs are a relatively small part of the cost of a road-construction project; asphalt binder; portland cement combined made up less than 9 percent of the costs of federal-aid highway construction projects in 2004, according to FHWA.
- With the CSH model material costs are inflated at differing rates, but larger contributors to project costs — labor, fuel, lubricants, etc. — are assumed to inflate in line with general consumer inflation even though historically many of these items have differed significantly from the Consumer Price Index.
- Periodic review of LCCA procedures is wise; however, such reviews must be in line with accepted economic practices and must include consultation with industry experts.

The report from the Concrete Sustainability Hub model makes multiple assumptions about asphalt construction projects that are out of line with real-world experiences, which, combined with the flawed LCCA methodology, artificially inflates their projections of life-time costs of road projects.
- CSH assigns 34 percent of project costs to liquid binder; FHWA assigns only 7.8 percent.
- CSH assumes asphalt roadways need repaving every 10 years, a more frequent repaving cycle than what state DOTs actually experience.
- CSH ignores entirely the use of reclaimed asphalt pavement and recycled asphalt shingles and how these technologies reduce costs by reducing the need for virgin liquid asphalt binder.