Capital District Transportation Committee
Merit Evaluation Procedure and the Bridge Preservation Set-Aside

Summary

CDTC's Project Information Procedure is explained in detail in the TIP document in Appendix H. There are five quantitative calculations used to produce project benefits. Three of those: travel time, operating/energy and /energy/user cost, are considered to be extremely minimal for bridge repair projects. Since differences between projects would be even lower in magnitude, these categories will not be evaluated in this bridge-only solicitation. Safety benefits could be calculated if needed for any specific project, but safety improvements will be incidental to the repair of the bridge.

Therefore, the quantitative benefits will almost exclusively be facility life benefits. The calculation for facility life benefits is summarized below. For a more detailed explanation of this calculation, please see Appendix H in the 2013-18 TIP document.

Facility Life Benefits

Intuitively, repairing or replacing a facility or service integral to the regional system is important because of the value of that facility or service to the transportation system. In other words, bridges are not replaced because they are in poor condition; they are replaced because it is important to keep those links open. As a result, the facility life benefits of an infrastructure project are defined as:

Facility Life Benefits = (Total Facility Value) x (Pct. Extended Life)

where:

Total Facility Value = Travel Time Savings + Energy and User Cost Savings

Travel time savings and regional user cost savings attributable to the facility are calculated using the CDTC STEP Model. The model is run once with the facility in place; then a second time with the facility removed. The difference in regional system measures between the two runs is the quantifiable impact of the use of alternative routes due to the closing of the facility. It is, therefore, assumed to represent the total value of the facility or service. (This could also be referred to as "avoided detour costs".) For bridges, the facility is removed for modeling purposes by eliminating the bridge link entirely from the highway network. Percent extended facility life is determined using the data in Table H-6, shown below.

TABLE H-6
RELATIONSHIP BETWEEN THE EXTENDED LIFE OF A BRIDGE AND ITS RATING

Bridge Rating	% Extended Life
7	0%
6	22.2%
5	44.4%
4	66.6%
3	88.9%
2.5	100.0%
2.0	100.0%
1.0	100.0%

Source: CDTC

Benefit/Cost Ratio

Quantifiable benefits are reported in $K/year. To calculate benefit/cost ratios, the cost of each project is also reported in $K/year. To obtain the cost/year for each project, CDTC starts with an estimated design life of the project. If there are multiple repairs being performed in a project, a weighted average of the respective design lives would be calculated. The design life of various facilities is in Table H-9 in the 2013-18 TIP. Using the design life of the project, a 6% Capital Recovery Factor is taken from Table H-8 in the 2013-18 TIP. Annualized costs (cost/year) are a product of the total project cost and the 6% Capital Recovery Factors. A total benefit/cost ratio is the sum of the quantifiable project benefits divided by this annualized cost of the project as in the below formula for bridge preservation projects.

Benefit/Cost Ratio = Total Quantitative Benefits ÷ Annualized Cost

where:

Total Quantitative Benefits = Facility Life Benefits (from page 1) + Possible Safety Benefits

and

Annualized Cost = (Project Cost) x (6% Cost Recovery Factor for Project Design Life)

Note that this quantitative analysis does not take into account other aspects of the evaluation, such as priority networks, filtering, and qualitative analysis.