

Preparing a Cost-Benefit Analysis

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Southeast Conference Mid-Session Summit:
Transportation Symposium

February 8, 2024



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- 2) **Start planning 12 – 24 months before applications are due!**
- 3) **Start planning 12 – 24 months before applications are due!!**
- 4) *Start planning 12 – 24 months before applications are due!!!*
- 5) You get the idea

Cost-Benefit Analysis Has Two Components

- Component 1: Costs
- Component 2: Benefits

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Typically, Granting Agencies Like Projects ...

... for which Benefits are greater than Costs

Should communities hire consultants?

- There is no requirement that a consultant be used...
 - ... but Granting Agencies do want/require reliable and justifiable estimates of both costs and benefits.
 - ... and it is in your best interest to include all foreseeable costs and all foreseeable benefits.

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 - ... but Granting Agencies do want/require reliable and justifiable estimates of both costs and benefits.
 - ... and it is in your best interest to include all foreseeable costs and all foreseeable benefits.
- If your staff includes professionally trained cost estimators, engineers, environmental scientists, and economists with advance degrees, then you may not need to hire consultants.

Types of Costs

- Project Design and Engineering that yields an estimate of total capital cost,
- ... project operating cost, and annual maintenance costs

Types of Benefits

Project Engineering and Cost Estimation

ESTIMATE CLASS	Primary Characteristic	Secondary Characteristic			
	LEVEL OF PROJECT DEFINITION Expressed as % of complete definition	END USAGE Typical purpose of estimate	METHODOLOGY Typical estimating method	EXPECTED ACCURACY RANGE Typical variation in low and high ranges [a]	PREPARATION EFFORT Typical degree of effort relative to least cost index of 1 [b]
Class 5	0% to 2%	Concept Screening	Capacity Factored, Parametric Models, Judgment, or Analogy	L: -20% to -50% H: +30% to +100%	1
Class 4	1% to 15%	Study or Feasibility	Equipment Factored or Parametric Models	L: -15% to -30% H: +20% to +50%	2 to 4
Class 3	10% to 40%	Budget, Authorization, or Control	Semi-Detailed Unit Costs with Assembly Level Line Items	L: -10% to -20% H: +10% to +30%	3 to 10
Class 2	30% to 70%	Control or Bid/Tender	Detailed Unit Cost with Forced Detailed Take-Off	L: -5% to -15% H: +5% to +20%	4 to 20
Class 1	50% to 100%	Check Estimate or Bid/Tender	Detailed Unit Cost with Detailed Take-Off	L: -3% to -10% H: +3% to +15%	5 to 100

- Notes:
- [a] The state of process technology and availability of applicable reference cost data affect the range markedly. The +/- value represents typical percentage variation of actual costs from the cost estimate after application of contingency (typically at a 50% level of confidence) for given scope.
 - [b] If the range index value of "1" represents 0.005% of project costs, then an index value of 100 represents 0.5%. Estimate preparation effort is highly dependent upon the size of the project and the quality of estimating data and tools.

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- Other environmental costs
 - Ecosystem damages
 - Changes in erosion levels
 - Wetlands losses
 - Damages to Flora and Fauna
- Increases in carbon emissions or other pollutants

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Types of Benefits

- Reductions in operating costs and maintenance
- Cost savings for users
- Time savings for users
- Larger numbers of users
- Reductions in carbon emissions or other pollutants
- Reductions in risk
 - From injury
 - From environmental events
- Ecosystem Services Benefits

Resources at U.S. Dept. of Transportation

- Bipartisan Infrastructure Law (BIL) Grant Programs:
<https://www.transportation.gov/bipartisan-infrastructure-law/bipartisan-infrastructure-law-grant-programs>
 - Lists 105 different grant programs under the BIL, most with direct links to application information.
- Rebuilding American Infrastructure with Sustainability & Equity (RAISE) Grant Program: \$1.5 billion annually for FY 2023 – 2026
<https://www.transportation.gov/RAISEgrants>

Deadline

- FY 2024 Deadline: February 28, 2024 at 11:59 pm Eastern
- FY 2025 Deadline: January 13, 2025 at 11:59 pm Eastern
- FY 2026 Deadline: January 13, 2026 at 11:59 pm Eastern

Thank You!

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A GREAT RESOURCE

US DOT Spreadsheet Template for Benefit-Cost Analysis

<https://www.transportation.gov/mission/office-secretary/office-policy/transportation-policy/benefit-cost-analysis-spreadsheet-template>