

(Institute for Transportation & Development Policy)

<https://brtguide.itdp.org/branch/master/guide/infrastructure-management-and-costing/infrastructure-costing>

21.4.2 BRT Cost Calculator

Based on cost data from existing developing-nation BRT systems and inputs from BRT experts, a BRT cost calculator has been developed to give cities an initial estimation of infrastructure costs. Actual costing will depend much on local conditions and circumstances. However, the BRT cost calculator is useful in alerting project developers to the costing items that should be considered in planning a system. The BRT cost calculator is based on 2011 costs in U.S. dollars, so construction cost escalation, exchange rate variation, and other financial factors should be taken into account when utilizing this tool. The actual cost calculator can be accessed on the ITDP website and Appendix B at the end of this guide.

In order to demonstrate infrastructure costing, we provide an example of a preliminary budget prepared for a hypothetical BRT system. Using the infrastructure-maintenance section of the cost calculator, costing is estimated for a hypothetical Phase I project of fifty kilometers of trunk infrastructure.

The methodology utilized assesses the anticipated maintenance costs associated with each infrastructure element over a thirty-year period, and then yields an average annual maintenance cost for the system.

Typically, maintenance for the first year after completion of the construction contract is undertaken by the contractor as part of its defects-liability period. Thereafter, the local municipality (or BRT entity) will need to maintain the infrastructure for the duration of the project.

The objective of the cost calculator is to provide designers and decision makers with an idea of maintenance costs that can be expected once a system is built. The calculator can assist with the choice of materials for construction, as it takes into account life-cycle costs.

Table 21.1 summarizes the subtotals from each of the maintenance costing categories. The total infrastructure maintenance budget projected for this hypothetical project for a thirty-year period comes to approximately US\$180 million, which equates to approximately US\$6 million per annum (or 1.4 percent of total construction costs) and US\$120 thousand per kilometer of trunk services. Note that these costs are based on interviews conducted with professionals involved in infrastructure maintenance in the Cape Town, South Africa, municipal area. The percentages utilized are best estimates of the potential maintenance costs of the different infrastructural components of a BRT system. Actual costs may vary widely from region to region.

Table 21.1 Summary of System Infrastructure Maintenance Costs (Phase I Project of 50 kilometers)

BRT Infrastructure Elements	Total Maintenance Costs (US\$) for 30 year Period	Average Annual Maintenance Costs (US\$)	Average Annual Maintenance Costs (US\$)/Busway km	Total Maintenance Costs (US\$) for 30 year Period/Total Construction Cost	Average Annual Maintenance Costs (US\$)/Total Construction Cost
Trunk busway infrastructure	\$112,700,115	\$3,756,671	\$75,133	62%	2.07%
Trunk stations	\$32,115,567	\$1,070,519	\$21,410	40%	1.33%
Integration	\$10,208,626	\$340,288	\$6,806	22%	0.73%
Feeder/kerbside services	\$14,850,025	\$495,001	\$9,900	30%	1.00%
Terminals, depots, and other	\$11,280,106	\$376,004	\$7,520	15%	0.51%
TOTAL	\$181,154,439	\$6,038,481	\$120,770	42%	1.40%