



Chapter 8

Preferred BRWTF Multi-Barrier Alternative

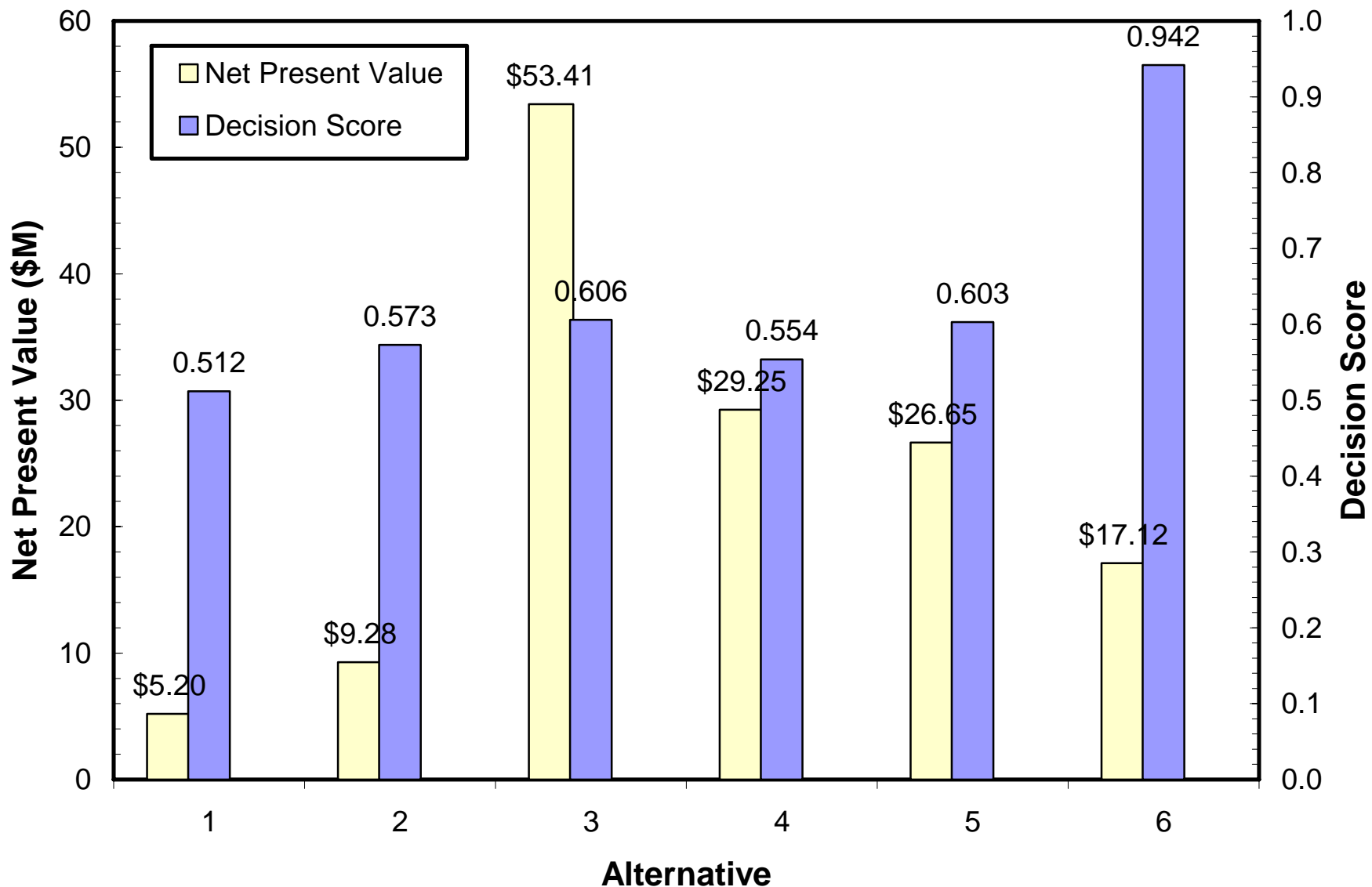
The non-economic performance score of each BRWTF multi-barrier water delivery alternative was determined using the Kepner-Tregoe[®] decision analysis procedure. Economic evaluation of each water delivery alternative was also performed, based on the net present value of each alternative, which includes capital costs, operation and maintenance costs, and project financing. This chapter presents these non-economic performance and economic evaluations together to provide a cost-performance comparison of BRWTF multi-barrier water delivery alternatives. Based on a balanced assessment of source water quality information, regulatory requirements, City drinking water quality goals, non-economic performance scoring, and net present cost economic evaluations a preferred BRWTF multi-barrier water delivery alternative is identified.

A. Cost-Performance Comparison

Non-economic performance scoring and economic evaluations of candidate multi-barrier BRWTF alternatives were described in Chapters 6 and 7, respectively. Because of the large variations in alternative performances and net present values, these values are shown side-by-side to help assess the relative benefits for each water delivery alternative, as shown in Figure 8-1.

B. Preferred BRWTF Water Delivery Alternative

Both performance and cost varies widely among the six BRWTF water delivery alternatives evaluated. *Considering source water quality information, relative risk of source water contamination, regulatory requirements, City drinking water quality goals, and operational flexibility B&V believes that Alternative 6, complete source water containment from Carter Lake to BRWTF with chlorine dioxide preoxidation, is the most desirable and preferred alternative.* Although Alternative 6 does not have the lowest net present value among those evaluated, it has a number of compelling benefits that are not provided by the other alternatives including:





- Of the BRWTF multi-barrier water delivery alternatives evaluated here, Alternative 6 alone follows the century old paradigm of drinking water treatment in that it treats the best available water source with the simplest and most robust combination of processes.
- Alternative 6 has the best non-economic performance by a wide margin. This alternative satisfied 22 of 28 criteria evaluated as well or better than the other alternatives.
- Alternative 6 is unique among those evaluated in that it alone addresses the near and long term potential for continued degradation of water quality in existing BRWTF sources due to continued residential development, extensive agricultural land use, and increasing recreational use. Although notable advances in treatment technology have been made in recent years, contaminant removal during drinking water treatment is still an imperfect science. Thus, as has traditionally been the case, preventing source water contamination provides a more robust barrier than subsequent treatment as the first line of defense in protecting public health.
- Other regional drinking water providers also desire to use a dedicated pipeline from Carter Lake for raw water delivery to their facilities. Combining raw water conveyance to BRWTF with that of other providers allows more efficient use of scarce regional water resources.
- Full containment of raw water conveyance from Carter Lake to BRWTF would provide additional flexibility in managing the City's water resources portfolio. Other water delivery alternatives require seasonal storage of raw water in Boulder Reservoir for use when BFC is not in service. Year-round storage in Carter Lake would remove the need to project annual seasonal storage required in Boulder reservoir, and thus avoid the undesirable consequences that result if seasonal Boulder Reservoir storage is substantially overestimated.
- Conveyance of raw water through a Carter Lake pipeline would be consistent with the City's historical policy of protecting source water quality by providing full containment from its other water sources.



- Full containment from Carter Lake to BRWTF would provide a much more uniform raw water quality, substantially simplifying treatment optimization and increasing treatment process reliability.
- Alternative 6 is the only BRWTF water delivery approach that provides at least one robust barrier for each contaminant category considered in this study.