



WATER DESIGN-BUILD COUNCIL
AN ASSOCIATION OF LEADING DESIGN BUILDERS

GUIDELINES FOR BEST PRACTICES

Optimizing Value Engineering

Value engineering, a concept intended to produce designs with maximum value, adds definable, measurable, and desired benefits to a project. Using a systematic approach—often through a facilitated workshop—value engineering (VE) focuses on addressing functionality by leaving alternative benefit and value options open. Although the most obvious benefit is reducing the cost of construction, value can also be measured in schedule improvement, improved functionality, greater reliability, reduced operating costs, and reduced risk. This material provides an overview and presents best practices for getting the most from the value engineering approach.

Value Engineering Versus Constructability Review

Constructability reviews focus on the actions to provide input to the design process on construction methods and materials that improve efficiency during construction. In contrast, VE encompasses a much broader scope that considers the design (in relationship to?) construction, operations, financial, and other life-cycle elements of the program or project. A constructability review is a useful process; and, it can be considered a subset of the VE process.

Defining the role of VE with a DB or CMAR project

VE can be applied to any Design-Build delivery method (in its multiple variations), and construction management at risk (CMAR). Each of these delivery models uses a team of professionals responsible for engineering, estimating, procurement, construction operations and maintenance staff. The broad skills of the design-build team provide the collective experience necessary to critically evaluate the interrelationships between design, cost, schedule and constructability. The performance of a value engineering study is primarily focused on the study of the interrelationships and impacts these project elements have on one another.

Who Should Facilitate a Value-Engineering Workshop?

The VE process is usually conducted through workshops, which may be either internally or externally facilitated.

Although internally-facilitated workshops offer the advantage of familiarity with the project, they may also limit ideas or carry preconceived limitations. In contrast, while an external facilitator can offer a fresh perspective and promote out-of-the-box thinking, they may also lack the background necessary to focus the workshop on viable VE alternatives for the project at hand. In either situation, the facilitator's primary role is to keep participants focused and progressing toward identifying, developing and documenting VE alternatives.

For workshops facilitated by either an internal or external facilitator, the essential skill sets of the facilitator are the same. The facilitator must be well versed in the principals of value analysis with knowledge in how to lead and direct the VE team through a critical analysis of each project feature. The facilitator also needs a background in engineering and construction; and it is also highly beneficial if the facilitator has prior experience in developing the type of project being addressed.

Who Should Participate in the Value-Engineering Process?

Representatives from design, procurement, construction, operations and maintenance, administrative and financial, management, and—when appropriate—legal—all of whom bring their different perspectives to the VE process. For example, an alternative that has good technical merit from the design side may create unacceptable risk or exposure from a legal perspective. Or, an alternative that has low initial cost to

procure and construct may be cost-prohibitive to operate and maintain. These considerations are best highlighted when a broad spectrum of participants provide constructive input and help develop the VE options. The process also gives participants an opportunity to work together and develop a partnering relationship that exists throughout the project.

When Should Value Engineering Be Performed?

Value engineering provides the greatest benefit when the process is begun early in the design stage, while project criteria are still being developed. At this point, the cost of implementing VE alternatives will have less impact on construction costs or schedule.

Benefits of Value Engineering

Implementing a VE program produces significant benefits. Creating a VE team with representatives from all aspects of the project makes it possible to identify and consider

many potential alternatives, and eventually to focus on the specific alternatives that provide the greatest benefits. Formal documentation of the alternatives and their benefits is ultimately prepared to provide a comparative basis for evaluation and approval.

Incentivizing Value Engineering

After the design-builder submits a VE proposal and the owner approves it, the resulting cost shaving are often shared between the owner and design-builder. This sharing occurs after the allowable costs for implementing the VE proposal are reimbursed to the design-builder (or whoever submits the proposal). The result is a win-win outcome for the owner and the project team—and a powerful incentive for incorporating VE into future projects.



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