
Developed by the AASHTO Subcommittee on Design, and Technical Committee on Project Management, these guidelines have been developed to assist state departments of transportation in addressing the challenges of rising costs and diminished resources by developing successful value engineering programs to improve design excellence and achieve efficient cost and quality control, while allowing maximum flexibility to each state.

Value Engineering (VE) is a function-oriented technique and a proven effective management tool for achieving improved design, construction, and cost-effectiveness in various transportation program elements. VE combines creative and analytical skills to improve the value of products and services by examining their function.

The 38-page guidelines include seven chapters, which detail all facets of establishing and maintaining an effective value engineering program, as well as incorporating value engineering principles and practices into all phases of project development, construction, traffic operation, and maintenance.
The Guidelines for Value Engineering, 4th Edition, is available to purchase as a downloadable PDF publication. Copies may be purchased online by visiting the AASHTO Bookstore at https://bookstore.transportation.org, and searching by the item code VE-4.


For more information about AASHTO publications, visit the AASHTO Bookstore online at https://bookstore.transportation.org or download the current AASHTO Publications Catalog.

The American Association of State Highway and Transportation Officials (AASHTO) is a nonprofit, nonpartisan association that represents state departments of transportation (DOTs) in the 50 states, the District of Columbia, and Puerto Rico. Through the work of its technical committees, whose members are comprised of state DOT representatives—the nation’s preeminent transportation experts—AASHTO develops and publishes technical standards and guidelines used by transportation agencies worldwide in the design, construction, maintenance, operation, and administration of highways, bridges, and other transportation facilities.

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Value Engineering (VE) is a function-oriented technique and a proven effective management tool for achieving improved design, construction, and cost-effectiveness in various transportation program elements. VE combines creative and analytical skills to improve the value of products and services by examining their function. These guidelines have been developed to assist state DOTs in addressing the challenges of rising costs and diminished resources by developing successful VE programs to improve design excellence and achieve efficient cost and quality control, while allowing maximum flexibility to each state.

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• AASHTO Technical Committee on Project Management

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ORDERING INFORMATION
To order a copy of the Guidelines for Value Engineering, 4th Edition, visit the AASHTO Bookstore online at https://bookstore.transportation.org, and search by the item code VE-4-UL. This page includes a link to the publication’s executive summary and table of contents.

The direct link to the publication on the AASHTO Bookstore: https://bookstore.transportation.org/item_details.aspx?ID=3738

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Benefits of a Value Engineering Program

The American Association of State Highway and Transportation Officials (AASHTO) recognizes the need for the prudent use of resources and revenues while providing a quality transportation program. Value Engineering (VE) is a function-oriented technique that has proven to be an effective management tool for achieving improved design, construction, and cost-effectiveness in various transportation program elements. Data collected by the Federal Highway Administration (FHWA) indicates that the return on investment can approach or exceed 100:1.

Summary of Past VE Savings of Federal-Aid Highway Program

<table>
<thead>
<tr>
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<th>FY 2015</th>
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<tr>
<td>Return on Investment</td>
<td>129:1</td>
<td>200:1</td>
<td>118:1</td>
<td>96:1</td>
<td>80:1</td>
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States that have active VE programs have realized additional benefits beyond design improvements and cost savings including:

- An opportunity for stakeholders to participate in the process
- Improvement of standards and policies
- Responsiveness to stakeholder priorities and improved communication amongst stakeholders participating in studies
- Accelerated incorporation of new materials and construction techniques
- Employee satisfaction from participation in agency decisions
- Increased skills obtained from team participation
- Improved constructability
- Reduced environmental impacts
- Reduced schedule
- Reduced risk
- Improved operations
Position Statement

To improve design excellence and achieve efficient cost and quality control, it is AASHTO’s position that:

Each member state should establish an ongoing VE program.

- The challenges of rising costs and diminished resources are addressed through the application of VE principles and practices in project development, construction, traffic operation, maintenance, and other appropriate areas.
- Guidelines are provided to member organizations to promote and assist in broad acceptance and use of VE with the provision of flexibility to adapt to individual needs.

This document provides guidelines for establishing and administering VE programs. It is the intent of these guidelines to assist state DOTs in developing a successful VE program, to promote the acceptance and use of VE while allowing maximum flexibility to each state.

Critical Success Factors

Executive Support

A firm commitment of resources and support by executive management is the most important element for assuring the success of a VE program. Value engineering is a process that must be believed in and supported to realize benefits.

All levels of management must understand and support value engineering through fostering a climate that encourages participation on studies and welcomes and accepts ideas from VE studies. An organization that is open to change and innovation will welcome VE and have a successful program.

Program Management

A state VE program requires development of a policy directive describing where, when, how, and to what specific areas of work the VE effort should be directed. There should be clear objectives, timelines, follow-up actions, review, and feedback.

For optimum results in the project development phase, VE should be performed:

- Early in the planning–design process to maximize potential product or service improvement and cost savings.
- On high-cost and/or complex projects.

VE programs within the state organization should be actively managed, closely monitored, evaluated, and modified to assure the program’s effectiveness.
Workshop Execution

Each workshop should follow either the Federal Highway Administration (FHWA) or SAVE International VE job plan. The VE team leader must be trained in both the value methodology and team facilitation with strong leadership and communication skills. Multi-disciplinary teams unrelated to the project with positive attitudes and a willingness to investigate new ideas have the most success.

Emerging Trends

There are several emerging techniques in the transportation field that share the goal of improving projects. Integrating value engineering with emerging techniques and new technology will generate opportunities to use the creative power of VE to add value through project improvement.

Cost Savings from the Construction Industry

In addition to performing VE during the project development phase, VE principles can also be applied during the project construction phase through Value Engineering Change Proposals (VECPs or VEPs). A VECP/VEP program encourages contractors to develop construction VE proposals which allow the state to benefit from a contractor’s design and construction ingenuity, experience, and ability to work with new techniques. These are also referred to as Cost Reduction Incentive Proposals (CRIPS) or Cost Savings Initiatives (CSI) in some states. Some important elements of a successful, ongoing VECP/VEP program are:

- Processing of proposals must be kept simple and done so as not to delay the contractor’s construction schedule.
- Cost savings are shared (normally equally) between the contractor and the implementing agency.
- Change proposals become the property of the state and the concept may be used on future projects.
- Change proposals should not compromise any essential design criteria or preliminary engineering commitments.
- Change proposals cannot be the basis for a contract claim. The implementing agency has the option to reject, with good justification, contractors’ proposals.
- It is essential that all VE team recommendations and contractor proposals be fairly reviewed and expeditiously evaluated for implementation.

Please note that the Code of Federal Regulations does not allow federal participation for VECPs to accelerate construction.