Performance Measures - WSDOT Value Engineering

The “basic” function(s) of WSDOT transportation projects is usually directly linked to one or more of the following elements:

- Operations (Mobility)
- Safety
- Access
- Maintainability
- Environment

The “basic” function(s) relate to the “Purpose” part of a project’s “Purpose and Need” statement.

The following performance attributes have continually proven to be essential measures of project performance for design and construction projects that are directly related to the “basic” function of the project. The seven attributes may not always appear to be relevant or essential based upon the current transportation solutions being considered, however, the Value Engineering (VE) process has proven to generate alternative solutions that can, and often do, impact these areas of a project.

For example, an HOV widening project may be designed to occur within existing right-of-way in a disturbed area. In this case, it may not appear that “Environmental Impacts” would be a major concern and may not be included. However, the VE Team may very well develop alternatives that will fall outside existing right-of-way which could precipitate environmental impacts that did not exist with the original design approach.

Standard Performance Attributes for WSDOT Transportation Projects	
Performance Attribute	***Definition***
Improve Mainline Operations	An assessment of traffic operations and safety on the mainline facility(s), including off-ramps, and collector-distributor roads. Operational considerations include level of service relative to the 20-year traffic projections as well as geometric considerations such as design speed, sight distance, lane widths and shoulder widths.
Improve Local Operations	An assessment of traffic operations and safety on the local roadway infrastructure, including on-ramps and frontage roads. Operational considerations include level of service relative to the 20-year traffic projections; geometric considerations such as design speed, sight distance, lane widths; bicycle and pedestrian operations and access.
Improve Maintainability	An assessment of the long-term maintainability of the transportation facility(s). Maintenance considerations include the overall durability, longevity and maintainability of pavements, structures and systems; ease of maintenance; accessibility and safety considerations for maintenance personnel.
Reduce Construction Impacts	An assessment of the <u>temporary</u> impacts to the public during construction related to traffic disruptions, detours and delays; impacts to businesses and residents relative to access, visual, noise, vibration, dust and construction traffic; environmental impacts.
Reduce Environmental Impacts	An assessment of the permanent impacts to the environment including ecological (i.e., flora, fauna, air quality, water quality, visual, noise); socioeconomic impacts (i.e., environmental justice, business, residents); impacts to cultural, recreational and historic resources.
Shorten Project Schedule	An assessment of the total project delivery from the time as measured from the time of the VE Study to completion of construction.
Reduce Risk	An assessment of the identified risks of the project.

In addition to these "standard" seven performance attributes, other additional attributes should be made available to address site specific issues. The use of these attributes should be based upon the discretion of the project team and/or stakeholders. A list of commonly used attributes that may be relevant is provided below. It should be noted that this list is not all inclusive and that the VE Process must be flexible enough to consider any potential aspect of performance.

Optional Performance Attributes for WSDOT Transportation Projects	
Performance Attribute	***Definition***
Phaseability	An assessment of how easily a transportation facility can be improved or expanded upon at some future date. This attribute considers the degree of "throw-away work" involved as well as future traffic and public impacts when the planned future improvements are made.
Land-Use Compatibility	An assessment of the overall compatibility of transportation facilities with existing and planned land uses. This attribute considers how a transportation facility will directly affect the quality and viability of the land-uses around it. *[NOTE: This attribute is often used for projects that involve significant right-of-way acquisition and that will have significant impacts to municipalities and/or private entities.]*
Cultural Impacts	An assessment of the permanent impacts to cultural, recreational and historic resources. *[NOTE: Sometimes it is desirable to split the standard attribute "Environmental Impacts" into multiple, free-standing attributes. This is in recognition that sometimes socioeconomic, cultural and natural resources are in conflict with one another.]*
Ecological Impacts	An assessment of the permanent impacts to the ecological resources including flora, fauna, air quality and water quality. *[NOTE: Sometimes it is desirable to split the standard attribute "Environmental Impacts" into multiple, free-standing attributes. This is in recognition that sometimes socioeconomic, cultural and natural resources are in conflict with one another.]*
Hydrological Impacts	An assessment of the project's impact to lakes, rivers and streams in its vicinity. The attribute also considers the performance of the transportation facility during flood events.

It is strongly recommended that no more than seven performance attributes be selected for any given project. Having more than seven attributes tends to become too cumbersome to the VE Study Process due the additional time required to consider so many attributes. Past experience has consistently shown that the performance for most projects can be adequately dimensioned with seven or fewer attributes.

The use of the following performance attributes (or any variation of these) should be strongly discouraged for the following reasons:

Public Acceptance	This attribute commonly appears but should be avoided due to the difficulty on trying to assess the broad notion of community or public acceptance by such a small group of individuals possessing a relatively narrow perspective (i.e., the Project Team). In reality, "public" or "community" acceptance is a byproduct of the "standard" performance attributes described previously. In other words, the public is more likely to accept a design solution that performs well in these areas (and/or costs less) and less likely to accept one that does not (and/or costs more). Therefore, the use of such an attribute is redundant.
Constructability	This attribute also commonly appears on VA Studies, however, it is really a byproduct of "Project Schedule," "Construction Impacts," and cost. A design solution that is more constructible than another will involve trade-offs between these three areas. Therefore, inclusion of an attribute such as "Constructability" is redundant and unnecessary.
Right-of-Way Impacts	This attribute is better described by attributes such as "Environmental Impacts," "Land-Use Compatibility" or possibly "Cultural Impacts" as well as cost. When this attribute is used, in effect, performance is really related to cost, which results in "double counting" by considering this as both an output (i.e., performance) and an input (i.e., cost).

The inclusion of well defined performance requirements has also proven to be an essential element in properly considering project performance. Participants frequently confuse performance requirements (essential performance) with performance attributes (discretionary performance beyond minimum requirements).