

Attachment 2: Methods of Environmental Valuation (EPA Science Advisory Board)

Table 3: Methods considered by the committee for possible use in valuation

Method	Form of output/units	Related concept(s) of value from table 1
Measures of attitudes, preferences, and intentions		
Survey questions eliciting information about attitudes, preferences, and intentions	Attitude scales, preference or importance rankings, behavioral intentions toward depicted environments or conditions	Attitudes and judgments; community-based values
Individual narratives and focus groups	Qualitative summaries and assessments from transcripts	Attitudes and judgments; community-based values
Behavioral observation	Inferences from observations of behavior by individuals interacting with actual or computer-simulated environments	Attitudes and judgments; community-based values
Economic methods		
Market-based methods	Monetary measure of willingness-to-pay (WTP) for ecosystem services that contribute to the provision of marketed goods and services	Economic value
Travel cost	Monetary measure of WTP for ecosystem services that affect decisions to visit different locations	Economic value
Hedonic pricing	Monetary measure of marginal WTP or willingness-to-accept (WTA) as revealed by price for houses or wages paid for jobs with different environmental characteristics	Economic value
Averting behavior	Monetary or other measure of WTP as revealed by responses to opportunities to avoid or reduce damages, for example, through expenditures on protective goods or substitutes	Economic value
Survey questions eliciting stated preferences	Monetary or other measures of WTP or WTA as expressed in survey questions about hypothetical tradeoffs	Economic value
Civic valuation		
Referenda and initiatives	Rankings of alternative options, or monetary or other measure of tradeoffs a community is willing to make, as reflected in community choices	Community-based values; indicator of economic value under some conditions
Citizen valuation juries	Rankings of alternative options, or monetary or other measures of required payment or compensation, based on jury-determined assessments of public values	Community-based values; constructed values
Decision science approaches		
Decision science approaches	Attribute weights that reflect tradeoffs individuals are willing to make across attributes, including ecological attributes, for use in assigning scores to alternative policy options	Constructed values

Method	Form of output/units	Related concepts(s) of value from table 1
Ecosystem benefit indicators		
Ecosystem benefit indicators	Quantitative spatially-differentiated metrics or maps related to supply of or demand for ecosystem services	Indicators of economic value and/or community-based values
Biophysical ranking methods		
Conservation value method	Spatially-differentiated index of conservation values across a landscape	Bio-ecological value
Embodied energy analysis	Cost of the total (direct plus indirect) energy required to produce an ecological or economic good or service	Energy-based value
Ecological footprint	Area of an ecosystem (land and/or water) required to support a consumption pattern or population	Bio-ecological value
Cost as a proxy for value		
Replacement cost	Monetary estimate of the cost of replacing an ecosystem service using the next best available alternative	Lower bound on economic value only under limited conditions
Habitat equivalency analysis	Units of habitat (e.g., equivalent acres of habitat) or other compensating changes needed to replace ecosystem services lost through a natural resource injury	Biophysical value; not economic value except under some very limited conditions

Environmental Protection Agency, *Valuing the Protection of Ecological Systems and Services: A Report of the EPA Science Advisory Board* (EPA-SAB-09-012), 2009. Accessed at: <http://yosemite.epa.gov/sab/sabproduct.nsf/WebBOARD/ValProtEcolSys%26Serv?OpenDocument>

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