CIRCULAR A-94

GUIDELINES AND DISCOUNT RATES

FOR BENEFIT-COST ANALYSIS OF FEDERAL PROGRAMS

CIRCULAR NO. A-94
(Transmittal Memo No.64)

MEMORANDUM FOR HEADS OF EXECUTIVE DEPARTMENTS AND ESTABLISHMENTS

SUBJECT: Guidelines and Discount Rates for Benefit-Cost Analysis of Federal Programs

Table of Contents — Page

1. **Purpose** 1
2. **Rescission** 2
3. **Authority** 2
4. **Scope** 2
5. **General Principles** 3
   a. Net Present Value and Related Outcome Measures
   b. Cost-Effectiveness Analysis
   c. Elements of Benefit-Cost or Cost-Effectiveness Analysis
6. **Identifying and Measuring Benefits and Costs** 5
   a. Identifying Benefits and Costs
   b. Measuring Benefits and Costs
7. **Treatment of Inflation** 6
   a. Real or Nominal Values
   b. Recommended Inflation Assumption
8. **Discount Rate Policy** 7
   a. Real versus Nominal Discount Rates
   b. Public Investment and Regulatory Analyses
   c. Cost-Effectiveness, Lease-Purchase, Internal Government Investment, and Asset Sale Analyses
9. **Treatment of Uncertainty** 10
   a. Characterizing Uncertainty
   b. Expected Values
   c. Sensitivity Analysis
   d. Other Adjustments for Uncertainty
10. **Incidence and Distributional Effects** 11
   a. Alternative Classifications
   b. Economic Incidence
11. **Special Guidance for Public Investment Analysis** 12
   a. Analysis of Excess Burdens
   b. Exceptions
12. **Special Guidance for Regulatory Impact Analysis** 12
13. **Special Guidance for Lease-Purchase Analysis** 12
   a. Coverage
   b. Required Justification for Leases
   c. Analytical Requirements and Definitions
14. **Related Guidance** 16
15. **Implementation** 16
16. **Effective Date** 16
17. **Interpretation** 16

Appendix A: Definitions of Terms 17
Appendix B: Additional Guidance for Discounting 20
Appendix C: Discount Rates for Cost-Effectiveness, Lease-Purchase, and Related Analyses 22

1. Purpose. The goal of this Circular is to promote efficient resource allocation through well-informed decision-making by the Federal Government. It provides general guidance for conducting benefit-cost and cost-effectiveness

analyses. It also provides specific guidance on the discount rates to be used in evaluating Federal programs whose benefits and costs are distributed over time. The general guidance will serve as a checklist of whether an agency has considered and properly dealt with all the elements for sound benefit-cost and cost-effectiveness analyses.

2. Rescission. This Circular replaces and rescinds Office of Management and Budget (OMB) Circular No. A-94, "Discount Rates to Be Used in Evaluating Time-Distributed Costs and Benefits," dated March 27, 1972, and Circular No. A-104, "Evaluating Leases of Capital Assets," dated June 1, 1986, which has been rescinded. Lease-purchase analysis is only appropriate after a decision has been made to acquire the services of an asset. Guidance for lease- purchase analysis is provided in Section 8.c.(2) and Section 13.

3. Authority. This Circular is issued under the authority of 31 U.S.C. Section 1111 and the Budget and Accounting Act of 1921, as amended.

4. Scope. This Circular does not supersede agency practices which are prescribed by or pursuant to law, Executive Order, or other relevant circulars. The Circular's guidelines are suggested for use in the internal planning of Executive Branch agencies. The guidelines must be followed in all analyses submitted to OMB in support of legislative and budget-programs in compliance with OMB Circulars No. A-11, "Preparation and Submission of Annual Budget Estimates," and No. A-19, "Legislative Coordination and Clearance." These guidelines must also be followed in providing estimates submitted to OMB in compliance with Executive Order No. 12291, "Federal Regulation," and the President's April 29, 1992 memorandum requiring benefit-cost analysis for certain legislative proposals.

a. Aside from the exceptions listed below, the guidelines in this Circular apply to any analysis used to support Government decisions to initiate, renew, or expand programs or projects which would result in a series of measurable benefits or costs extending for three or more years into the future. The Circular applies specifically to:

   (1) Benefit-cost or cost-effectiveness analysis of Federal programs or policies.

   (2) Regulatory impact analysis.

   (3) Analysis of decisions whether to lease or purchase.

   (4) Asset valuation and sale analysis.

b. Specifically exempted from the scope of this Circular are decisions concerning:

   (1) Water resource projects (guidance for which is the approved Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies).

a transfer program may have benefits that are less than the program's real economic costs due to inefficiencies that can arise in the program's delivery of benefits and financing.

b. Measuring Benefits and Costs. The principle of *willingness-to-pay* provides an aggregate measure of what individuals are willing to forego to obtain a given benefit. Market prices provide an invaluable starting point for measuring willingness-to-pay, but prices sometimes do not adequately reflect the true value of a good to society. Externalities, monopoly power, and taxes or subsidies can distort market prices.

Taxes, for example, usually create an *excess burden* that represents a net loss to society. (The appropriate method for recognizing this excess burden in public investment analyses is discussed in Section 11.) In other cases, market prices do not exist for a relevant benefit or cost. When market prices are distorted or unavailable, other methods of valuing benefits may have to be employed. Measures derived from actual market behavior are preferred when they are available.

   (1) Inframarginal Benefits and Costs. Consumers would generally be willing to pay more than the market price rather than go entirely without a good they consume. The economist's concept of *consumer surplus* measures the extra value consumers derive from their consumption compared with the value measured at market prices. When it can be determined, consumer surplus provides the best measure of the total benefit to society from a government program or project. Consumer surplus can sometimes be calculated by using econometric methods to estimate consumer demand.

   (2) Indirect Measures of Benefits and Costs. Willingness-to-pay can sometimes be estimated indirectly through changes in land values, variations in wage rates, or other methods. Such methods are most reliable when they are based on actual market transactions. Measures should be consistent with basic economic principles and should be replicable.

   (3) Multiplier Effects. Generally, analyses should treat resources as if they were likely to be fully employed. Employment or output multipliers that purport to measure the secondary effects of government expenditures on employment and output should not be included in measured social benefits or costs.

7. Treatment of Inflation. Future inflation is highly uncertain. Analysts should avoid having to make an assumption about the general rate of inflation whenever possible.

a. Real or Nominal Values. Economic analyses are often most readily accomplished using *real* or *constant-dollar* values, i.e., by measuring benefits and costs in units of stable purchasing power. (Such estimates may reflect expected future changes in relative prices, however, where there is a reasonable basis for estimating such changes.) Where future benefits and costs are given in *nominal* terms, i.e., in terms of the future purchasing power of the dollar, the analysis should use these

values rather than convert them to constant dollars as, for example, in the case of lease-purchase analysis.

Nominal and real values must not be combined in the same analysis. Logical consistency requires that analysis be conducted either in constant dollars or in terms of nominal values. This may require converting some nominal values to real values, or vice versa.

b. Recommended Inflation Assumption. When a general inflation assumption is needed, the rate of increase in the Gross Domestic Product deflator from the Administration's economic assumptions for the period of the analysis is recommended. For projects or programs that extend beyond the six-year budget horizon, the inflation assumption can be extended by using the inflation rate for the sixth year of the budget forecast. The Administration's economic forecast is updated twice annually, at the time the budget is published in January or February and at the time of the Mid-Session Review of the Budget in July. Alternative inflation estimates, based on credible private sector forecasts, may be used for sensitivity analysis.

8. Discount Rate Policy. In order to compute net present value, it is necessary to discount future benefits and costs. This discounting reflects the time value of money. Benefits and costs are worth more if they are experienced sooner. All future benefits and costs, including nonmonetized benefits and costs, should be discounted. The higher the discount rate, the lower is the present value of future cash flows. For typical investments, with costs concentrated in early periods and benefits following in later periods, raising the discount rate tends to reduce the net present value. (Technical guidance on discounting and a table of *discount factors* are provided in Appendix B.)

a. Real versus Nominal Discount Rates. The proper discount rate to use depends on whether the benefits and costs are measured in real or nominal terms.

(1) A real discount rate that has been adjusted to eliminate the effect of expected inflation should be used to discount constant-dollar or real benefits and costs. A real discount rate can be approximated by subtracting expected inflation from a nominal interest rate.

(2) A nominal discount rate that reflects expected inflation should be used to discount nominal benefits and costs. Market interest rates are nominal interest rates in this sense.

b. Public Investment and Regulatory Analyses. The guidance in this section applies to benefit-cost analyses of public investments and regulatory programs that provide benefits and costs to the general public. Guidance related to cost-effectiveness analysis of internal planning decisions of the Federal Government is provided in Section 8.c.

In general, public investments and regulations displace both private investment and consumption. To account for this displacement and to promote efficient investment and regulatory policies, the following guidance should be observed.

(1) Base-Case Analysis. Constant-dollar benefit-cost analyses of proposed investments and regulations should report net present value and other outcomes determined using a real discount rate of 7 percent. This rate approximates the marginal pretax rate of return on an average investment in the private sector in recent years. Significant changes in this rate will be reflected in future updates of this Circular.

(2) Other Discount Rates. Analyses should show the sensitivity of the discounted net present value and other outcomes to variations in the discount rate. The importance of these alternative calculations will depend on the specific economic characteristics of the program under analysis. For example, in analyzing a regulatory proposal whose main cost is to reduce business investment, net present value should also be calculated using a higher discount rate than 7 percent.

Analyses may include among the reported outcomes the *internal rate of return* implied by the stream of benefits and costs. The internal rate of return is the discount rate that sets the net present value of the program or project to zero. While the internal rate of return does not generally provide an acceptable decision criterion, it does provide useful information, particularly when budgets are constrained or there is uncertainty about the appropriate discount rate.

(3) Using the *shadow price of capital* to value benefits and costs is the analytically preferred means of capturing the effects of government projects on resource allocation in the private sector. To use this method accurately, the analyst must be able to compute how the benefits and costs of a program or project affect the allocation of private consumption and investment. OMB concurrence is required if this method is used in place of the base case discount rate.

c. Cost-Effectiveness, Lease-Purchase, Internal Government Investment, and Asset Sales Analyses. The Treasury's borrowing rates should be used as discount rates in the following cases:

(1) Cost-Effectiveness Analysis. Analyses that involve constant-dollar costs should use the real Treasury borrowing rate on marketable securities of comparable maturity to the period of analysis. This rate is computed using the Administration's economic assumptions for the budget, which are published in January of each year. A table of discount rates based on the expected interest rates for the first year of the budget forecast is presented in Appendix C of this Circular. Appendix C is updated annually and is available upon request from OMB. Real Treasury rates are obtained by removing expected inflation over the period of analysis from nominal Treasury interest rates. (Analyses that involve nominal costs should use nominal Treasury rates for discounting, as described in the following paragraph.)

(2) Lease-Purchase Analysis. Analyses of nominal lease payments should use the nominal Treasury borrowing rate on marketable securities of comparable maturity to the period of analysis. Nominal Treasury

analyses for these assets should include sensitivity comparisons that discount the returns from such assets with the rate of interest earned by assets of similar riskiness in the private sector.

9. Treatment of Uncertainty. Estimates of benefits and costs are typically uncertain because of imprecision in both underlying data and modeling assumptions. Because such uncertainty is basic to many analyses, its effects should be analyzed and reported. Useful information in such a report would include the key sources of uncertainty; expected value estimates of outcomes; the sensitivity of results to important sources of uncertainty; and where possible, the probability distributions of benefits, costs, and net benefits.

a. Characterizing Uncertainty. Analyses should attempt to characterize the sources and nature of uncertainty. Ideally, probability distributions of potential benefits, costs, and net benefits should be presented. It should be recognized that many phenomena that are treated as deterministic or certain are, in fact, uncertain. In analyzing uncertain data, objective estimates of probabilities should be used whenever possible. Market data, such as private insurance payments or interest rate differentials, may be useful in identifying and estimating relevant risks. Stochastic simulation methods can be useful for analyzing such phenomena and developing insights into the relevant probability distributions. In any case, the basis for the probability distribution assumptions should be reported. Any limitations of the analysis because of uncertainty or biases surrounding data or assumptions should be discussed.

b. Expected Values. The expected values of the distributions of benefits, costs and net benefits can be obtained by weighting each outcome by its probability of occurrence, and then summing across all potential outcomes. If estimated benefits, costs and net benefits are characterized by point estimates rather than as probability distributions, the expected value (an unbiased estimate) is the appropriate estimate for use.

Estimates that differ from expected values (such as worst-case estimates) may be provided in addition to expected values, but the rationale for such estimates must be clearly presented. For any such estimate, the analysis should identify the nature and magnitude of any bias. For example, studies of past activities have documented tendencies for cost growth beyond initial expectations; analyses should consider whether past experience suggests that initial estimates of benefits or costs are optimistic.

c. Sensitivity Analysis. Major assumptions should be varied and net present value and other outcomes recomputed to determine how sensitive outcomes are to changes in the assumptions. The assumptions that deserve the most attention will depend on the dominant benefit and cost elements and the areas of greatest uncertainty of the program being analyzed. For example, in analyzing a retirement program, one would consider changes in the number of beneficiaries, future wage growth, inflation, and the discount rate. In general, sensitivity analysis should be considered for estimates of: (i) benefits and costs; (ii) the discount rate; (iii) the general inflation rate; and (iv) distributional assumptions. Models used in the

8-January-2008

BUDGET ASSUMPTIONS
Nominal Treasury Interest Rates for Different Maturities
(from the annual budget assumptions for the first year of the budget forecast)

Calendar Year	3-Year	5-Year	7-Year	10-Year	20-Year	30-Year
1979	9.7	9.2	9.1	9.0	#N/A	8.9
1980	10.9	10.6	10.6	10.6	#N/A	10.4
1981	13.4	12.8	12.6	12.2	#N/A	11.8
1982	12.8	13.1	13.2	13.3	#N/A	13.0
1983	9.5	9.8	10.0	10.2	#N/A	10.3
1984	9.8	10.0	10.1	10.3	#N/A	10.4
1985	10.3	10.7	10.8	11.0	#N/A	11.0
1986	8.6	8.8	8.8	8.9	#N/A	9.1
1987	6.3	6.5	6.6	6.7	#N/A	7.0
1988	7.3	7.7	7.8	8.0	#N/A	8.1
1989	7.8	8.1	8.2	8.3	#N/A	8.2
1990	7.4	7.5	7.6	7.7	#N/A	7.8
1991	7.2	7.4	7.4	7.5	#N/A	7.7
1992	6.1	6.5	6.7	7.0	#N/A	7.1
1993	5.6	6.0	6.3	6.7	#N/A	6.8
1994	5.0	5.3	5.5	5.7	#N/A	5.8
1995	7.3	7.6	7.7	7.9	#N/A	8.1
1996	5.4	5.5	5.5	5.6	#N/A	5.7
1997	5.8	5.9	6.0	6.1	#N/A	6.3
1998	5.6	5.7	5.8	5.9	#N/A	6.1
1999	4.7	4.8	4.9	4.9	#N/A	5.0
2000	5.9	6.0	6.0	6.1	#N/A	6.3
2001	5.4	5.4	5.4	5.4	#N/A	5.3
2002	4.1	4.5	4.8	5.1	#N/A	5.8
2003	3.1	3.6	3.9	4.2	#N/A	5.1
2004	3.0	3.7	4.2	4.6	5.4	5.5
2005	3.7	4.1	4.4	4.6	5.2	5.2
2006	4.7	4.8	4.9	5.0	5.3	5.2
2007	4.9	4.9	4.9	5.0	5.1	5.1
2008	4.1	4.3	4.4	4.6	4.9	4.9

Real Treasury Interest Rates

	3-Year	5-Year	7-Year	10-Year	20-Year	30-Year
1979	2.8	3.4	4.1	4.6	#N/A	5.4
1980	2.1	2.4	2.9	3.3	#N/A	3.7
1981	3.6	3.9	4.3	4.4	#N/A	4.8
1982	6.1	7.1	7.5	7.8	#N/A	7.9
1983	4.2	4.7	5.0	5.3	#N/A	5.6
1984	5.0	5.4	5.7	6.1	#N/A	6.4
1985	5.9	6.5	6.8	7.1	#N/A	7.4
1986	4.6	5.1	5.6	5.9	#N/A	6.7
1987	2.8	3.1	3.5	3.8	#N/A	4.4
1988	3.5	4.2	4.7	5.1	#N/A	5.6
1989	4.1	4.8	5.3	5.8	#N/A	6.1
1990	3.2	3.6	3.9	4.2	#N/A	4.6
1991	3.2	3.5	3.7	3.9	#N/A	4.2
1992	2.7	3.1	3.3	3.6	#N/A	3.8
1993	3.1	3.6	3.9	4.3	#N/A	4.5
1994	2.1	2.3	2.5	2.7	#N/A	2.8
1995	4.2	4.5	4.6	4.8	#N/A	4.9
1996	2.6	2.7	2.8	2.8	#N/A	3.0
1997	3.2	3.3	3.4	3.5	#N/A	3.6
1998	3.4	3.5	3.5	3.6	#N/A	3.8
1999	2.6	2.7	2.7	2.7	#N/A	2.9
2000	3.8	3.9	4.0	4.0	#N/A	4.2
2001	3.2	3.2	3.2	3.2	#N/A	3.2
2002	2.1	2.8	3.0	3.1	#N/A	3.9
2003	1.6	1.9	2.2	2.5	#N/A	3.2
2004	1.6	2.1	2.4	2.8	3.4	3.5
2005	1.7	2.0	2.3	2.5	3.0	3.1
2006	2.5	2.6	2.7	2.8	3.0	3.0
2007	2.5	2.6	2.7	2.8	3.0	3.0
2008	2.1	2.3	2.4	2.6	2.8	2.8

United States Department of
Health & Human Services

HHS Facilities Program Manual

Volume I

May 19, 2006

Office for Facilities Management and Policy

Office of the Assistant Secretary for Administration and Management

ated funds may not be used to make permanent improvements to non-Federal property in the absence of statutory authority.

b. Repair & Improvements (except for IHS) – Funds identified for Repair & Improvements (R&I) in an OPDIV's B&F appropriation or budget may be used for all improvements and repairs as defined in 2-1-00A.2. and 2-1-00A.4. above, as well as associated equipment defined in 2-1-00A.7.

Improvements (Renovations or Alterations) - Improvement projects not Construction or Minor Renovations, as defined above, shall be funded from the B&F appropriations from funds identified in an OPDIV's budget lump sum R&I funds. OPDIVs shall submit improvement projects costing $1,000,000 or more to the OFMP and those costing $10,000,000 or more to the Capital Investment Review Board. These projects must be identified in the OPDIV's Annual Facilities Plan. If the project is not earmarked in the OPDIV's appropriation, the OPDIV shall identify the project by name and program amount within the appropriate OPDIV apportionment request.

Repairs – Repairs, including Repair-by-Replacement, shall be funded from the B&F appropriation from funds either specifically identified in an OPDIV's B&F appropriation or in its budget as lump sum R&I funds. OPDIVs shall submit repair projects costing $3,000,000 or more to OFMP for prior written approval and costing $10,000,000 or more to the Capital Investment Review Board. These projects must be identified in the OPDIV's Annual Facilities Plan.

Maintenance - OPDIVs shall not use funds identified for R&I in either an OPDIV's appropriation or in an OPDIV budget for maintenance, as defined in 2-1-00A.3., with the exception of IHS because IHS' B&F appropriation typically includes maintenance within it.

c. Maintenance & Improvements (IHS only) – Funds identified for Maintenance & Improvements (M&I) in the IHS budget can be used for all improvements, maintenance and repairs as defined in 2-1-00A.2. through 2-1-00A.4. above.

Improvements (Renovations or Alterations) – IHS shall fund improvement projects that are not Construction or Minor Renovations, as defined above, from its B&F appropriation using funds identified in the IHS budget as lump sum M&I funds. IHS shall submit improvement projects costing $1,000,000 or more to the OFMP and those costing $10,000,000 or more to the Capital Investment Review Board. These projects must be identified in the IHS Annual Facilities Plan. If a project is not earmarked in the IHS appropriation, IHS shall identify the project by name and program amount within the appropriate IHS apportionment request.

Maintenance – IHS shall fund maintenance projects, as defined above, from B&F appropriation using funds identified in the IHS budget as lump sum M&I funds. Routine maintenance projects, such as maintenance contracts for paving sealing, roof recoating, or mechanical equipment calibration, are not subject to the $3,000,000 threshold requiring ASAM approval under the Capital Investment Review Board policy.

Repairs– IHS shall fund repairs, as defined above, including Repair-by-Replacement, from its B&F appropriation using funds identified in the IHS budget as lump sum M&I funds. IHS shall submit repair projects costing $3,000,000 or more to OFMP for prior written approval and those costing $10,000,000 or more to the Capital Investment Review Board. These projects must be identified in the IHS Annual Facilities Plan.

e. Temporary Construction - Operating funds may be used for temporary buildings (as defined above) to support urgent, short-term needs. Written approval (through submittal of a FPAA) from OFMP must be obtained before using operating funds for any temporary construction exceeding 134 square meters.

f. Equipment - Operating funds are used for the purchase of moveable equipment except when funding from the B&F appropriation has been specifically authorized by law. Operating funds are used for the purchase of special purpose equipment unless the equipment meets the definition of fixed equipment. For new facilities only, special purpose equipment that can be classified as fixed equipment per Section 2-1-00A.7.a. shall be funded from the B&F construction appropriation.

g. Activation and Relocation Costs – Operating funds are used for activation and relocation costs such as telecommunications cabling, moving, etc. except where B&F funds have been specifically identified for these purposes in an OPDIV's appropriation act, the HHS B&F budget process documents (starting with an OPDIV's Preliminary Budget Submission to DHHS through the Congressional Justification to the Appropriations Committee), or a Congressional reprogramming action as defined in Section 1-2.

3. Other Sources of Funds

a. Quarters Rental Return Funds - In accordance with P.L. 98-473, quarters rental return funds (i.e., funds collected as rent) are to be used for the operation and maintenance of quarters. These funds should be used prior to using appropriated funds.

b. Medicare/Medicaid Reimbursements - Appropriation language normally permits the Indian Health Service (IHS) to utilize Medicare/Medicaid reimbursements to perform construction, repairs and improvements to meet accreditation requirements of the Joint Commission on Accreditation of Healthcare Organizations, exclusive of planning, design, and construction of new facilities or major renovation projects. The use of Medicare/Medicaid reimbursement for projects $1,000,000 or more or for planning, design and construction of buildings requires congressional authorization. IHS will submit these projects for congressional authorization after providing notification to OFMP and the Department's Budget Office.

c. Gift Funds – The acceptance and use of gifts of money received from external sources shall be in accordance with the Section 231 of the Public Health Service Act, as codified in 42 USC§ 238. OFMP shall be notified of any project(s) that are being constructed using gift funds or gifts of real property in any form.

d. Other – Appropriations language may from time to time authorize the use of other sources of funds for facilities construction. In such cases, the OPDIV shall refer to the language of that authorizing legislation in the FPAA documentation to ensure the appropriate use of the funds.

B. FACILITY PROJECT BUDGETS

1. General - Unless described otherwise in the justification for the HHS Budget request, a facility project budget is assumed to include all component costs necessary to design, construct, inspect and equip new or improved space, and as detailed in the Facility Project Approval Agreement (FPAA). On all construction, improvements, minor renovations and repair projects requiring a FPAA, a breakdown of project costs shall be provided in the FPAA. See Section 2-3 for detailed instructions on preparing a FPAA and identifying project costs. This is a routine requirement for

HHS FACILITY PROJECT APPROVAL AGREEMENT	1. Project No./ID	2. Revision No.:
3. Project Title:	4. Budget Year:	5. Date: (mm/dd/year)
	6.a. Total B&F Cost ($M):	6.b Total Project Cost ($M)
7. OPDIV/Program Office:	8. Installation/Location (City & State)	

9. Facility Cost Estimate ($M)				10. Related Cost Estimate ($M)			
Item	Amount	Funds Source	FY	Item	Amount	Funds Source	FY
a. Land Acquisition				a. Special Studies			
b. Design				b. Pre-Project Planning			
c. Construction				c. Activation (include moving)			
d. Equipment				d. Special Purpose Equip.			
e. Other				e. Other			
f. Total Facility Cost Est.	$0.00			f. Total Related Cost Est.	$0.00		

g. Off-Site Utilities: ☐ Sufficient capacity and type of off-site utilities are available to support this project.
☐ Costs have been included in the estimate for the required off-site utilities.

11.Category	☐ Repair	☐ Maintenance	☐ Improvements	12. PDRI Rating: ____out of ____
	☐ Construction	☐ Temporary Construction		at ___% preliminary engineering or ___ % design

13. Project Description (Scope/Quantify):

14. Justification:

15. Schedules (Month/Year)			16. Program Commitment Approval		
			Authority	Signature	Date
a. Studies	Start	/			
	Complete	/			
b. Planning	Start	/	a. Project Manager		
	Complete	/			
c. Design	Start	/	b. Project Director		
	Complete	/			
d. Construction	Start	/	c. OPDIV Board Member		
	Complete	/			
e. Activation	Start	/			
	Complete	/	d. Office of the Secretary		
f. Operational	Complete	/			

shall also include a summary of status of pre-project planning activities to date, and any project risks identified to date. . Any agreements in place with stakeholders should be referenced. Also include a description of all related projects. The project scope described in this entry will be the approved scope of the project. Changes in project scope require resubmittal of the HHS FPAA.

14. Justification – should begin with a concise statement of the functional purpose for which the project is needed.

- The need should specifically refer to OPDIV mission and program requirements and to the role of the proposed facility in the mission or program.
- Specifically address FRPC performance measures of operating costs and condition index.
- Customer and stakeholders should be identified.
- As an example, a personnel housing project's justification should discuss the personnel requirements, deficiencies in existing housing, resulting excessive administrative costs and plans for the use of the existing space for other purposes or its disposal.
- Support facilities, such as libraries, auditoriums and cafeterias, must be justified separately and specifically.
- Justification should clearly establish the requirements for the facility, cite any applicable studies.
- Identify how the project will reduce costs or improve efficiencies.
- Highlight the project's priority, describe and justify any relationship to any current or new project, and identify link to approved master plans.
- Identify the disposition and/or disposal of any existing facilities.
- Identify how life cycle cost (LCC) analysis as required by OMB Circular A-11 has been or will be addressed.
- Include a summary of alternatives considered and their viability.

15. Schedules – enter the schedule dates for the activities listed and the date the facility is to be operational.

- Include a month and year for each milestone date.
- Dates should be consistent with funding proposal.
- Do not use durations.

16. Program Commitment Approval – the Project Manager signs as the project submitter committing to complete the project within the stated budget, scope and schedule. The Project Director's signature commits the OPDIV organization to completing the project within the stated budget, scope and schedule. The OPDIV Board Member's concurrence indicates a commitment to the programmatic need and the stated budget, scope and schedule for the project. The Department signature approves the project and accepts the OPDIV's commitment to execute the project, based on the requirements, budget, scope and schedule as defined in the FPAA.

HHS Facility Project Approval Agreement (Continuation Sheet 2) – the form automatically completes blocks 1 though 8 with the same information as sheet 1. Any continuation data provided shall be prefixed with the block number from sheet 1.

SECTION 3-5: SUSTAINABLE DESIGN

3-5-00 Policy
10 Procedures
20 Guidance and Information
30 (Reserved)

3-5-00 POLICY

HHS and its OPDIVS shall consider sustainable design during planning, programming and budget formulation for all new federally-owned HHS facilities. Sustainable design is a desired integral characteristic of HHS facility project development. Through sustainable design and construction of HHS facilities, OPDIVs will model responsible environmental practices and help create the framework within which the building industry as a whole can shift towards practices that will promote "Green Buildings". HHS has signed the Memorandum of Understanding on Federal Leadership in High Performance and Sustainable Buildings. More detailed policy and guidance will be developed to implement the Guiding Principles of the MOU as appropriate and practical.

3-5-10 PROCEDURES

Several executive orders affecting facilities have been issued which promote and mandate the greening of the Federal Government. The design therefore shall provide for the protection of the environment through energy efficiency, recycling, pollution prevention, and affirmative procurement.

1. Energy conservation shall be given major consideration in the design of HHS buildings. Products, materials, and systems shall be selected with a view toward minimizing the use of nonrenewable resources.

2. Pursuant to Executive Order (E.O.) 13101, *Greening the Government Through Waste Prevention, Recycling, and Federal Acquisition*, HHS is committed to recycling and buying recycled content and environmentally preferable products. OPDIVS are encouraged to reduce construction and demolition waste by reducing debris, reusing materials and recycling. The design shall maximize the use of environmentally preferable products and services to the extent feasible, consistent with price, performance, availability, and safety considerations.

3. Pursuant to E.O. 13123, *Greening the Government Through Efficient Energy Management (June 3, 1999)*, HHS shall select, where life-cycle cost effective, ENERGY STAR® and other energy efficient products when specifying energy - using products. The design should specify products that are in the upper 25 percent of energy efficiency as designated by the Federal Energy Management Program (FEMP). The design should meet ENERGY STAR® building criteria for energy performance and indoor environmental quality in eligible HHS facilities.

4. Pursuant to E.O. 13148, *Greening the Government Through Leadership in Environmental Management (April 21, 2000)*, the design shall maximize the use of cost-effective environmentally sound landscaping practices to reduce adverse impacts to the natural environment, prevent pollution and potential future liabilities at HHS facilities.

5. Explore life-cycle cost-effective system alternatives and make selections based on long-term durability, energy efficiency, flexibility, accessibility, ease of operation and maintenance, for Heating, Ventilation, and Air Conditioning (HVAC), Plumbing, Fire Protection systems, steam systems, boilers, air compressor systems, industrial processes, fuel switching systems, and cogeneration.

SECTION 3-8: VALUE ENGINEERING

3-8-00 Policy
10 Procedures
20 Guidance and Information
30 Reporting Requirements

3-8-00 POLICY

This section describes HHS policy and procedures for value engineering (VE) in Architectural/Engineering (A/E) and construction contracts for federally-owned HHS real property assets. VE is mandatory for projects where the construction cost is $1 million or greater. (See OMB circular A-131.) All projects developed using Design-Build that are procured using full and open competition and are awarded based on a best value selection process are exempt from further VE. HHS requires an independent VE analysis by a specialized consultant or Government personnel for projects with a total project cost of $ 10 million or more.

Each OPDIV facilities office that performs technical management of A/E and construction contracts shall designate a value engineering coordinator (VEC) to coordinate the OPDIV's VE activities. The VEC shall receive formal Society of American Value Engineering (SAVE) approved training in value engineering. The Contracting Officer, in consultation with the VEC, is responsible for determining which contracts are subject to VE and for accepting or rejecting VE proposals.

A. DEFINITIONS

Life Cycle Cost (LCC) - The sum of all costs over the useful life of a building, system or product including the costs of design, construction, acquisition, operation, maintenance, repairs, disposal and salvage (resale) value, if any, using present worth costs. For evaluating proposed capital investment projects the modes of analysis to be used include:

a. Total Life Cycle Costs

b. Net Savings

c. Saving-to-Investment Ratio

d. Payback Period

e. Internal Rate of Return

Value Engineering (VE) - The formal technique by which contractors may (1) voluntarily suggest methods for performing more economically and share in any resulting savings or (2) be required to establish a program to identify and submit to the Government methods for performing more economically. Value engineering attempts to eliminate anything that increases acquisition, operation, or support costs, without impairing essential functions or characteristics. VE involves an organized effort to analyze alternative approaches for provision of systems, equipment, facilities, services, and supplies for the purpose of achieving the essential functions at the lowest life cycle cost consistent with required performance, reliability, quality, and safety.

Value Engineering Change Proposal (VECP) - A proposal developed by a construction contractor under a value engineering clause in its construction contract that typically involves sharing in any resulting savings. The proposal normally involves changes in the drawings and specifications directed at reducing the construction costs or life cycle costs without impairing the project's essential functions or characteristics.

CIRCULAR NO. A–11

PART 7

PLANNING, BUDGETING, ACQUISITION, AND MANAGEMENT OF CAPITAL ASSETS

EXECUTIVE OFFICE OF THE PRESIDENT
OFFICE OF MANAGEMENT AND BUDGET
JULY 2007

SECTION 300—PLANNING, BUDGETING, ACQUISITION, AND MANAGEMENT OF CAPITAL ASSETS

Table of Contents

300.1 What is the purpose of this section?
300.2 Does this section apply to me?
300.3 What background information must I know?
300.4 What special terms should I know?
300.5 How will agencies manage capital assets?
300.6 What other requirements does exhibit 300 fulfill?
300.7 What must I report on exhibit 300 and when?
300.8 How will OMB use the exhibit 300s?

Ex–300 Capital Asset Plan and Business Case Summary

Summary of Changes

Adds new question about the relationship to the GAO High Risk Areas (Sec 300.4 and Ex 300, Part I, Sec A, 24.).

Adds new requirement to identify certification levels via the Federal Acquisition Certification for Program and Project Managers (FAC-P/PM) (Ex 300, Part I, Sec A, 11, a.).

Merges the Performance Information Tables into a new Performance Information Table (Ex 300, Part I, Sec D.).

Changes the security and privacy status reporting tables (Ex 300, Part I, Sec E.).

Adds new questions about segment architectures (Ex 300, Part I, Sec F, 3.).

Adds new questions about legacy system replacements (Ex 300 Part II, Sec A, 5. and Ex 300 Part IV, Sec A, 9.).

Simplifies the Cost and Schedule Performance section (Ex 300 Part II, Sec C. and Ex 300 Part IV, Sec C.).

300.1 What is the purpose of this section?

Part 7 (section 300) of this Circular establishes policy for planning, budgeting, acquisition and management of Federal capital assets, and instructs you on budget justification and reporting requirements for major information technology (IT) investments. OMB provides procedural and analytic guidelines for implementing specific aspects of these policies as appendices and supplements to this Circular and in other OMB circulars. For IT, this is a companion section to section 53.

For non IT capital assets contact your Resource Management Offices (RMOs) at OMB to determine any additional budget justification and reporting requirements.

300.2 Does this section apply to me?

The policy and budget justification and reporting requirements in this section apply to all agencies of the Executive Branch of the Government subject to Executive Branch review (see section 25). An exhibit

300 must be submitted for all major investments in accordance with this section. Major IT investments also must be reported on your agency's exhibit 53 (see section 53) and be consistent with what is reported in section 51.3.

300.3 What background information must I know?

The Federal Government must effectively manage its portfolio of capital assets to ensure scarce public resources are wisely invested. Capital programming integrates the planning, acquisition and management of capital assets into the budget decision-making process, and is intended to assist agencies in improving asset management and in complying with the results-oriented requirements of:

- The Energy Policy Act of 2005, Section 109, which requires that sustainable design principles are applied to the siting, design and construction of all new and replacement buildings and that new federal buildings be designed to achieve energy consumption levels that are at least 30 percent below the levels established in the 2004 International Energy Conservation Code for residential buildings or the ASHRAE Standard 90.1-2004 for non-residential buildings, if life-cycle cost-effective.

- The Federal Acquisition Streamlining Act of 1994, Title V (FASA V), which requires agencies to establish cost, schedule and measurable performance goals for all major acquisition programs, and achieve on average 90 percent of those goals.

Additional background information for Information Technology can be found in section 53.2.

300.4 What special terms should I know?

Capital assets means land, structures, equipment, intellectual property (e.g., software), and information technology (including IT service contracts) used by the Federal Government and having an estimated useful life of two years or more. See Appendix One of the *Capital Programming Guide* for a more complete definition of capital assets.

Capital programming means an integrated process within an agency for planning, budgeting, procurement and management of the agency's portfolio of capital assets to achieve agency strategic goals and objectives with the lowest life-cycle cost and least risk.

Capital project (investment) means the acquisition of a capital asset and the management of that asset through its life-cycle after the initial acquisition. Capital projects (investments) may consist of several useful segments.

Contracting officer certification means the highest current level of certification in contracting obtained by the contracting officer (CO) assigned to the acquisition. For defense agencies, indicate the CO's highest level of Defense Acquisition Workforce Improvement Act (DAWIA) certification in contracting. For civilian agencies, indicate the CO's highest level of Federal Acquisition Certification in Contracting (FAC-C), in accordance with OMB memorandum, The Federal Acquisition Certification in Contracting Program, dated January 20, 2006. Available levels are 1, 2, or 3. The FAC-C is a new program that civilian agencies are in the process of implementing. To address the transition period, if the CO has not obtained a FAC-C, the agency must determine that the CO assigned to the effort has the competencies and skills necessary to support the acquisition.

Cost saving represents the reduction in actual expenditures below the projected level of costs to achieve a specific objective (as defined in OMB Circular A-131).

Cost avoidance represents results from an action taken in the immediate time frame that will decrease costs in the future (as defined in OMB Circular A-131).

Planning means preparing, developing or acquiring the information you will use to: design the investment; assess the benefits, risks, and risk-adjusted life-cycle costs of alternative solutions; and establish realistic cost, schedule, and performance goals, for the selected alternative, before either proceeding to full acquisition of the capital project (investment) or useful segment or terminating the investment. Planning must progress to the point where you are ready to commit to achieving specific goals for the completion of the acquisition before preceding to the acquisition phase. Information gathering activities may include market research of available solutions, architectural drawings, geological studies, engineering and design studies, and prototypes. Planning is a useful segment of a capital project (investment). Depending on the nature of the investment, one or more planning segments may be necessary.

Risk adjusted life-cycle costs means the overall estimated cost for a particular investment alternative over the time period corresponding to the life of the investment, including direct and indirect initial costs plus any periodic or continuing costs of operation and maintenance that has been adjusted to accommodate any risk identified in the risk management plans. If project funding is to be requested for specific phases, segments or modules of the project, each of these parts will be risk adjusted for their individual life-cycle.

Total Value of Contract/Task Order means the current total value of the Contract or Task Order to acquire and operate the capital asset. For contracts/task orders shared by multiple capital assets, please provide only the current total value associated to the identified capital asset.

Useful segment/module means an economically and programmatically separate component of a capital investment that provides a measurable performance outcome for which the benefits exceed the costs, even if no further funding is appropriated.

Utility Energy Service Contract (UESC) is a contract between a Federal agency and a local utility providing energy, water, or sewage services, as well as provision of technical services and/or upfront project financing for energy efficiency, water conservation, and renewable energy investments, allowing Federal agencies to pay for the services over time, either on their utility bill, or through a separate agreement.

Additional budget terms and definitions are included in the Glossary in Appendix J, "Principles of Budgeting for Capital Asset Acquisitions" and in section 53 (for IT).

300.5 How will agencies manage capital assets?

The *Capital Programming Guide*, which supplements this part, provides guidance on the principles and techniques for effective capital programming. Appendix J of this part explains the principles of financing capital asset acquisitions. Section 8b of OMB Circular A–130 establishes additional requirements for EAs, planning and control of information systems and technology investments and performance management. Agencies must develop, implement, and use a capital programming process to develop their capital asset portfolio, and must:

- Evaluate and select capital asset investments that will support core mission functions performed by the Federal Government, and demonstrate projected returns on investment that are clearly equal to or better than alternative uses of available public resources;

- Initiate improvements to existing assets or acquisitions of new assets only when no alternative private sector or governmental source can more efficiently meet the need;

- Simplify or otherwise redesign work processes to reduce costs, improve effectiveness, and make maximum use of commercial services and off-the-shelf technology;

- Reduce project risk by avoiding or isolating custom designed components, using components that can be fully tested or prototyped prior to full implementation or production, and ensuring involvement and support of users in the design and testing of the asset;

- Structure major acquisitions into useful segments with a narrow scope and brief duration, make adequate use of competition and appropriately allocate risk between Government and contractor. The Agency Head must approve or define the cost, schedule, and performance goals for major acquisitions, and the agency's Chief Financial Officer must evaluate the proposed cost goals;

- Ensure consistency with Federal, agency, and bureau EAs, demonstrating such consistency through compliance with agency business requirements and standards, as well as identification of milestones, as defined in the EA transition strategy;

- Institute performance measures and management processes monitoring and comparing actual performance to planned results. Agencies must use a performance-based acquisition management or earned value management system, based on the ANSI/EIA Standard 748, to obtain timely information regarding the progress of capital investments. The system must also measure progress towards milestones in an independently verifiable basis, in terms of cost, capability of the investment to meet specified requirements, timeliness, and quality. Agencies are expected to achieve, on average, 90 percent of the cost, schedule and performance goals for major acquisitions. Agency Heads must review major acquisitions not achieving 90 percent of the goals to determine whether there is a continuing need and what corrective action, including termination, should be taken;

- Ensure IT systems conform to the requirements of OMB Circular No. A–130, "Management of Federal Information Resources;"

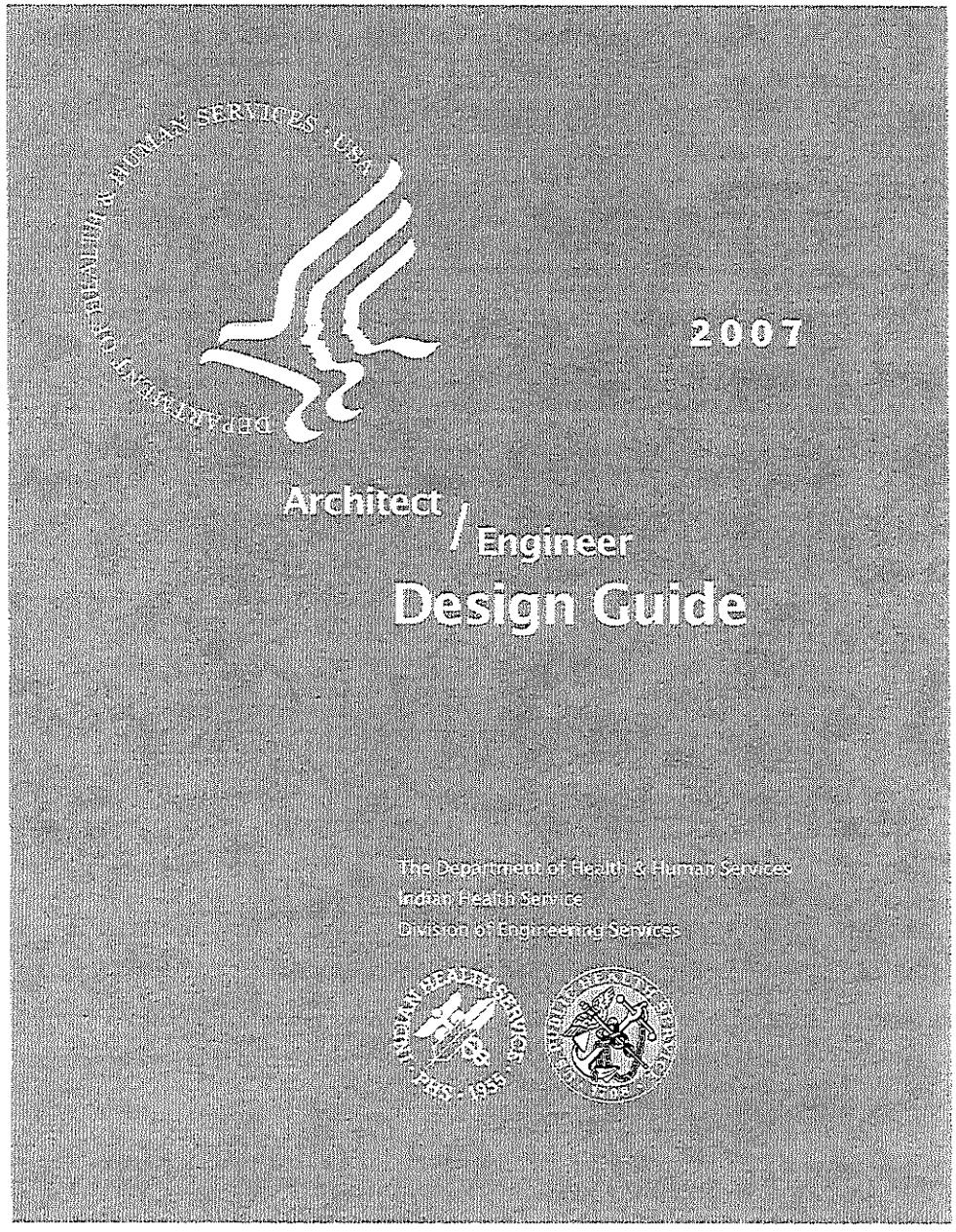
- Ensure financial management systems conform to the requirements of OMB Circular No. A–127, "Financial Management Systems;"

- Conduct post-implementation or post-occupancy reviews of capital programming and acquisition processes, and projects to validate estimated benefits and costs, and document effective management practices, i.e., lessons learned, for broader use; and

- Establish oversight mechanisms requiring periodic review of operational capital assets to determine how mission requirements might have changed, and whether the asset continues to fulfill ongoing and anticipated mission requirements, deliver intended benefits to the agency and customers, and meet user requirements.

300.6 What other requirements does exhibit 300 fulfill?

The Exhibit 300 is designed to coordinate OMB's collection of agency information for its reports to the Congress required by the Federal Acquisition Streamlining Act of 1994 (FASA Title V) and the Clinger-Cohen Act of 1996; to ensure the business case for investments are made and tied to the mission statements, long-term goals and objectives, and annual performance plans developed pursuant to the GPRA. For IT, exhibit 300s are designed to be used as one-stop documents for many of IT management issues such as business cases for investments, IT security reporting, Clinger Cohen Act implementation, E-Gov Act implementation, Government Paperwork Elimination Act implementation, agency's modernization efforts, and overall project (investment) management.



2.4 Sustainability

The A/E shall integrate sustainable design principles into the design addressing site development, energy performance, water conservation, indoor environmental quality, and the reduction of the environmental impact of materials.

2.5 Life Cycle Cost Analysis

The A/E shall utilize Life Cycle Cost analysis where called for in the scope of work, where needed to justify critical decisions regarding capital expenditures, and to demonstrate long-term savings in operation and maintenance costs.

The A/E shall follow standard procedures for preparing and presenting this information, as outlined in this A/E Design Guide.

The A/E is responsible for the technical accuracy of all life cycle cost estimates, and shall not be compensated for additional work as a result of insufficient effort in conducting previous life cycle cost analyses.

2.6 Value Engineering

The A/E shall use value engineering principles throughout the design phase of the project, thereby making efficient and effective use of the construction and operational budgets.

Depending on the size of a project, DES may require a formal value engineering (VE) study. This determination shall be made prior to award of the A/E contract.

Critical decisions regarding mechanical systems and components, architectural elements, site configuration, etc. shall be made through a comprehensive VE evaluation, and shall include life cycle cost principles as part of the analysis. Consideration shall be made so as to make efficient and effective use of the construction and operational budgets.

Box 2c - Types of Value Engineering Teams

Formal VE studies may be accomplished by IHS via one of the following types of VE teams:

1. Specialized VE consulting firm subcontracted though the A/E design contract
2. Specialized VE consulting firm contracted directly by IHS
3. IHS engineering staff

The type of VE team shall be determined prior to award of the A/E contract.

2.7 Commissioning

Commissioning of building systems shall be incorporated into the design and construction of new health care facilities and be performed in compliance with sustainability requirements.

Commissioning should be performed in accordance with the Building Commissioning Association's standards or the ASHRAE Guideline 0.

The commissioning process shall begin no later than the design development phase and continue through the one-year warranty period.

2.8 Testing, Adjusting & Balancing (TAB)

HVAC testing, adjusting, and balancing shall be performed in accordance with ASHRAE 111-1988. The A/E shall coordinate the requirements of testing adjusting and balancing (TAB) system for HVAC and other building systems with the commissioning requirements. Before any testing or balancing are performed, all systems must be complete; all controls must be installed and operational. All test and balance work shall be performed under the supervision of a certified NEBB or AABC manager by an independent subcontractor. System testing, adjusting, and balancing shall be accomplished before final inspection and shall include:

(1) HVAC, air and water systems:

- air-conditioning system
- boiler system
- chiller system
- chemical feed system (water treatment)
- domestic hot water system
- distilled and deionized water

(2) The adjustment of all equipment within the system such as air terminal boxes, coils of all types, heat converters, pumps, fans, unit heaters, and air handling units.

engine-generator sets, unit heaters, and steam for sterilizers, deionized water, and gases (air, oxygen, nitrous oxide, nitrogen, etc.) Provide sizing of all tanks and service lines to and within buildings for gases and liquids such as propane, natural gas, fuel oil, oxygen, and water.

4.3.5 Electrical

4.3.5.1 Electrical Drawings

Provide a separate drawing for each of the following when the drawing scale is 1:100 or less.

(1) Demolition

(2) Power

(3) Lighting

(4) Special systems, including:

(a) Communications & data system – all telephone and data outlet location and typical conduit with pull wire rope detail.

(b) Nurse call system – location of all call system outlet and required equipment.

(c) Security system

(d) Fire protection system – show all equipment per paragraph 4.3.3.1(6)

(e) Grounding system, including:

(1) Building grounding system

(2) Lightning protection grounding system

(3) Telecommunications/data grounding system

(5) Advanced metering system

(6) Renewable energy systems

4.3.5.2 Electrical Documents

(1) Identify all circuits with panel and branch designation. Circuits requiring two or three-pole protection shall be clearly identified in the panel schedules. All wiring shall be easy to follow on the drawings and easy to identify the branch circuit or home run for each device or circuit and the related panel and circuit number or switch leg. Provide a minimum of 20 percent future load connection capacity on each panel. Identify grounded conductors, graphically or in schedules, similar to phase or neutral conductors. Do not rely on separate notes or specifications to identify these conductors.

(2) Provide larger scale drawings and/or elevations of electrical equipment layout on pads and in electrical rooms when appropriate for legibility.

(3) Show interrupting capacities for switchboards, motor control centers, and panel boards. In panel board schedule, separately identify each special single-pole load and each multi-pole load.

(4) Provide riser diagrams (block diagram will not be accepted) for all systems. Provide a one-line diagram of the incoming service and the secondary distribution system. When necessary show, in plan view, each component shown on the riser or the one-line diagrams. Provide cross-identification.

(5) Show and identify the equipment to be furnished and installed by the utility company. Delineate the division of work between the utility company (or Government) and the construction contractor. Coordinate with the local utility.

(6) Identify load requirements (kW, volts, phase) for each outlet such as motor, heating device, or special equipment on the equipment schedules.

4.4 Life Cycle Cost (LCC) Analysis

(1) The A/E shall devote sufficient time and attention to assure that the cost data is adequate and accurate. LCC analysis reports shall be submitted no later than two weeks prior to a design review in order to provide the Government sufficient time to review the parameters and findings prior to making any critical decisions.

(2) Life cycle cost analyses shall include, but not be limited to the following: a summary of alternatives being compared, cost data (including capital cost, O&M, salvage value and replacement cost), frequency of replacement, discount rates, inflation rates, savings to investment ratio (SIR), discounted payback period (DPP), discounting conventions, period of analysis, start/base years, and assumptions.

(3) The A/E shall have the latitude to utilize independent LCCA software, however the analysis must be presented in a format that is easily readable, with the parameters clearly stipulated in each report.

An acceptable model for LCC analysis is the US Army Corps of Engineer's ECONPACK. The latest version of this software is available for download at: http://www.hnd.usace.army.mil/paxspt/econ/download.aspx

(4) The parameters for Life Cycle Cost Analysis are summarized below:

(a) Primary versus Secondary Analysis. Primary analysis will be used when a status quo alternative is available. Secondary analysis will be used when a requirement is not currently being met (no status quo available). In primary analysis, the objective is to demonstrate economic justification for replacing the status quo. In secondary analysis, LCCA is conducted in order to demonstrate the most economically viable alternative.

(b) Project Viability. For primary analyzed systems alternatives to be considered viable, the savings to investment ratio (SIR) should be 1.5 or greater, and the discounted payback period (DPP) should be in the single digits. Where economic viability cannot be demonstrated, additional justification is required.

(c) Discount Rate. The real interest rates shall be used for the discount rate in LCCA. Appendix C of OMB Circular A-94 provides current real interest rates used for discounting real (constant dollars) flows for effective cost analysis.

(d) Objective. Economic analysis objectives will be stated in clear, concise, unbiased, and quantitative terms.

(e) Discounting Conventions. For all costs, use middle-of-year (M-O-Y) convention, and for residual values use end-of-year (E-O-Y) convention.

(f) Period of Analysis. Usually 25 years + lead time (design and construction time).

(g) Start/Base Years. Must be the first year funds included in the analysis are to be expended on the project (or system).

(h) Constant Dollars. Should be a constant dollar analysis, using the real discount rate (i.e. no inflated numbers).

(i) Salvage Value Calculations. For new construction, assume the physical life is 40 years, the method is straight-line, the begin year is the first year after the facility is completed, discounting convention is E-O-Y, and constant dollars are applied. For renovation projects, assume the life of the system is 25 years, and hold all other parameters the same as in new construction.

(j) Wash Costs. Costs that are equal (magnitude/cost and timing/same year) across all alternatives can be excluded from the life cycle cost report because they do not affect the alternative selection. Discuss all wash costs in the Assumptions section.

(k) Assumptions. Should contain information such as the sources of the discount rates, residual/salvage calculation parameters, important data concerning the project, assumptions concerning the scope of the project, local conditions, ordinances, etc. Cost assumptions must be clearly specified and should include; construction, installed equipment other than building equipment, operation (including utilities) and maintenance (including potential modifications and component/equipment restorations/replacements), component or facility failures, and facility downtime, all based on center's operational experience. All wash costs are also to be discussed.

(l) Utilities Cost. Normally 10-15% lower for new construction vs. renovation; however, each situation should be assessed individually.

(m) Source and Derivation of Costs. Emphasis is required for this most critical part of the analysis and it must be checked for accuracy and logic. An "audit" trail and explanation for each cost must be provided in the analysis; for example: Utilities - Includes all water, sewer, gas and electric costs associated with the project and from where and how the costs were derived. All costs associated with the life-cycle of each alternative must be included unless it is a wash cost, see discussion of wash costs above.

(n) Non-Monetary Benefits. Should be discussed, if applicable.

(o) Savings. Total present value of savings will be determined for primary analysis and discussed in Results and Recommendations section.

(p) Results and Recommendations, or Discussion.

A recommendation with justification should be provided. Although the primary criterion for selecting an alternative is least cost (i.e., lowest net present value), an alternative that is not least cost may be selected based on other factors.

(q) Cost Sensitivity Analysis. Must be performed by varying initial investment cost and all of the associated costs (all of the alternative's costs) of the selected project alternative up and down by at least 25%, and keep the next closest alternative constant; do not vary any of it's costs.

(r) Discount Rate Sensitivity. Must be performed by applying to all alternatives, and vary the rate up 10.0% and down by at least 1.0%.

(s) Where There is Only One Feasible Option. Must contain the project objective, a description and listing of the alternatives considered, and a recommendation; this must be completed, even though a full-blown analysis is not necessary.

(t) Additional Paragraph. Should contain one of the following sets of statements in the first paragraph of the results and recommendations:

- An economic analysis has been prepared and utilized in evaluating this project. This project or system is the most cost-effective method to satisfy the requirement. Use when a full economic analysis is prepared, and the least cost alternative was selected.
- Alternative methods of meeting this requirement have been explored during project development. This project or system is the only feasible option to meet the requirement. Use when there is only one viable alternative available due to non-monetary reasons.
- An economic analysis has been prepared and utilized in evaluating this project or system. This project or system is the best method to satisfy the requirement. Use when a full economic analysis has been prepared but the alternative selected was not based on least cost, but on non-monetary issues.

4.5 Value Engineering

4.5.1 Requirements

(1) The VE study shall be conducted at the conclusion of the schematic design phase and prior to commencement of the design development phase. In certain circumstances, additional VE studies may be needed during other design phases.

(2) The A/E shall brief the VE team about the project requirements and design concepts, provide copies of design documents to the VE team, and review and comment on the VE team's recommendations.

(3) The A/E shall modify the design documents to incorporate all accepted VE recommendations at no additional cost to the government.

(4) The VE team shall be lead by a certified value specialist (CVS) registered with SAVE International. VE team members are required to have, at a minimum, experience in health care and must have participated in related VE studies previously. All disciplines applicable to the project at each phase shall be represented on the team.

(5) The VE study shall be conducted independently from the A/E contract. Under no circumstances shall the A/E be a team member for the VE study. This condition shall apply even should the VE study be conducted through a subcontract to the A/E. The A/E's only involvement in the study shall be to provide information to the VE team and to attend the oral presentation.

(6) The VE team shall give an oral presentation of the VE study results at the end of the study.

(7) Further VE study reporting requirements are identified in the Technical Handbook for Environmental Health and Engineering, volume III, chapter 23-3 Value Engineering. The standards for conducting value engineering study are provided by SAVE International.

4.5.2 Value Engineering Report Contents

The VE study report shall contain the following:

(1) A summary of the functional analysis phase, including:

(a) A list of critical functions

(b) A functional analysis system technique (FAST) diagram.