UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Office of Air Quality Panning and Standards
Research Triangle Park North Carolina 27711

JUL 24 1987

MEMORANDUM

SUBJECT: Calculating Amortized Capital Costs

FROM: Robert D. Bauman, Chief
Standards Implementation Branch, CPDD (MD-15)

TO: Stephen H. Rothblatt, Chief
Air and Radiation Branch, Region V (5AR-26)

This is in response to your April 21, 1987, memorandum requesting clarification regarding the appropriate criteria to be used in calculating the amortized capital costs of control options in the selection of best available control technology (BACT). The 1980 "Prevention of Significant Deterioration Workshop Manual" states that U.S. Internal Revenue Service (IRS) criteria should be used to determine equipment life expectancy. However, EPA, in developing new source performance standards (NSPS), uses economic assumptions based on "useful economic life." You wish to know which set of criteria to use in the BACT economic analysis.

The EPA still relies on IRS criteria, but there are now several different IRS equipment life estimation systems and several EPA equipment life information sources based on IRS data, so it is more difficult now to know what information to use. Our policy is that unless the source can offer compelling data to the contrary, the useful life of a control option should be selected from one of the following:

* For process-related controls, use:

  -- the NSPS/national emission standard for hazardous air pollutants (NESHAP) Background Information Document (if a source is subject to an NSPS or NESHAP), or

  -- the IRS Class Life Asset Depreciation Range (CLADR) system guideline with a mid-point estimate (if no NSPS/NESHAP applies).

* For "add-on" controls, use the Economic Analysis Branch Control Cost Manual, which is based on CLADR data.

Regarding the appropriate annual interest ("discount") rate to use in these analyses, the Office of Management and Budget (OMB) guidelines recommend 10 percent for regulatory impact analyses. Because all NSPS are submitted to OMB for review, we have typically used 10 percent in our

analyses. However, this value represents a very high rate of return because it is a "real" discount rate (i.e., it does not incorporate inflation). The OMB has assembled a task force which is now studying this matter and will likely recommend a substantially lower value to be used in future EPA risk assessment analyses; we plan to use the lower value when and if it is adopted.

The two attachments provide additional information on the economic life criteria discussed above. I hope this memorandum clarifies the BACT guidance in this area. If you have any questions about it, please feel free to contact me at FTS 629-5629 or David Solomon at FTS 629-5375.

2 Attachments

cc: NSR Contacts

Attachment 1

Background Information on Capital Cost Criteria

When the 1980 "Prevention of Significant Deterioration Workshop Manual" stated that the U.S. Internal Revenue Service (IRS) criteria should be used to determine equipment life standards, it was referring to the IRS "Class Life Asset Depreciation Range" (CLADR) system which provides a range of depreciation periods for each class of assets. Although the CLADR system was repealed for tax purposes for property placed in service after 1980, these guidelines still provide estimates of low, medium, and high useful lives for depreciable assets used in a wide range of business, industrial, and other activities. The CLADR should not be confused with the current IRS rules for the Accelerated Cost Recovery System (ACRS). The ACRS is not recommended for equipment life expectancy because it uses "recovery periods" which, for many types of equipment, are considerably less than actual useful equipment life.

In our opinion, the "useful economic life" criterion using CLADR data is the most realistic one to use when estimating the amortized capital ("capital recovery") costs for control options, be they "add-on" or process-related controls. The only exception should be if documentation, proving that the equipment life is shorter, is provided. The CLADR provides a range of estimates; we recommend using the mid-point CLADR life to obtain the best estimate of "useful economic life."

Under CLADR, "useful economic life" may vary not only with the type of equipment but also with where and how that equipment is being used. Consider a gas turbine installed in an industrial facility for purposes of generating (or cogenerating) electricity for consumption on site. If the total rated capacity for electrical production/distribution at the site were greater than 500 kilowatts (KW), the turbine would fall under "Asset Guideline Class (AGC)"00.4:" Industrial Steam and Electric Generation and/or Distribution Systems. The "asset depreciation range" for this class provides a lower limit of 17.5 years, a mid-point of 22 years, and an upper limit of 26.5 years. However, if this turbine is installed at, say, a plant producing breakfast food and the electrical production/distribution capacity at this facility is less than 500 kW, the lives to use would be 13.5 (low), 17 (mid-point), and 20.5 years (high) (AGC 20.1, "Manufacture of Grain and Mill Products"). A complete listing of the CLADR values can be found in IRS Publication 534.

Ideally, all control options should be amortized using useful lives that are not only representative but standardized. The IRS CLADR meets both requirements in this respect, as do the background information documents (BID) written to support the setting of new source performance standards and national emission standards for hazardous air pollutants. A BID's cost and economic analyses contain useful life data for the source category subject to the standard. These life data have been based, in turn, on information obtained from the industry (e.g., via section 114 letters), control equipment vendors, and other reliable sources.

It may prove difficult in some cases to determine useful life of add-on control equipment in the IRS listings. Accordingly, EPA has tabulated low, midpoint, and high economic lives for eight commonly used add-on control devices (see attachment). These data were taken from Capital and Operating Costs of Selected Air Pollution Control Systems (EPA 450/5-80-002, December 1978). This report, now retitled the Economic Analysis Branch Control Cost Manual (Third Edition), is being revised; for a copy, contact Bill Vatavuk at (FTS) 629-5309.

Attachment

TABLE 3.6 GUIDELINES FOR PARTS AND EQUIPMENT [SEE FOOTNOTE *]

MATERIALS AND PARTS LIFE	LOW (Years)	AVERAGE (Years)	HIGH (Years,
Filter bags	.3	1.5	5
Adsorbents	2	5	8
Catalyst	2	5	8
Refractories	1	5	10
EQUIPMENT LIFE			
Electrostatic Precipitators	5	20	40
Venturi Scrubbers	5	10	20
Fabric Filters	5	20	40
Thermal Incinerators	5	10	20
Catalytic Incinerators	5	10	20
Adsorbers	5	10	20
Absorbers	5	10	20
Refrigeration	5	10	20
Flares	5	15	20

[FOOTNOTE *] Based on discussions with manufacturers and operators with corroborating data from refs. 19, 20, 37, 38, 40, 78 and 82.

Source: Capital and Operating Costs of Selected Air Pollution Control Systems (EPA 450/5-80-002, December 1978).