

**Echols, Mabel E.**

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**Sent:** Sunday, March 15, 2009 2:48 AM  
**To:** FN-OMB-OIRA-Submission  
**Subject:** Federal Regulatory Review

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**Attachments:** Life Cycle Cost Calculations Provide Questionable Basis for Sustainability.doc



Life Cycle Cost  
Calculations P...

Please find a comment attached in response to your Federal Register of Feb 26, 2009.

Thank you for the opportunity to comment.

## **Life Cycle Cost Calculations Provide a Questionable Basis for Achieving Sustainability**

**Topic Area:** The role of distributional considerations, fairness, and concern for the interests of future generations

**Comment:** The use of economic discounting calculations in deciding whether to make long-lived energy related investments potentially shortchanges future generations.

### **Applicability:**

Department of Energy regulations specifically related to building energy efficiency, and DOE consumer product energy efficiency standards in general. Other regulatory decisions relevant to long term sustainability where life cycle cost comparisons are made.

**Rationale:** The use of economic discounting calculations to determine the cost effectiveness of very long term investments such as in energy-related layout and design features of buildings surrenders too much discretion to interest rates and projections of future energy prices. If discount (interest) rates are low, then investments in building energy efficiency calculate favorably, but if interest rates are high, investments may not be undertaken. Even low discount rates trivialize the (present value of the) energy expenses that will be incurred in the later years of a building's life. "Sustainability" will require that we make buildings, and other goods last longer, and that they operate more efficiently.

Engineers and bankers will defend the validity of discounting to present value. Indeed, it represents the reality of borrowing funds at compound interest. However, the time value of money is a human construct, and from the perspective of future generations there is something inherently artificial about discounting to insignificance the future outlays to heat and cool a building that may continue in service for seventy to a hundred years or more. Future generations will almost certainly not find those expenses insignificant.

Quoting from Bromley, 2007.

'Discounting considers the future in terms of the present, that is, benefits and costs are reduced to present values.'

'Sustainability is about the world to be inherited by future generations, not about what would be efficient for the present generation to bequeath to the future. Environmental policy that is consistent with achieving sustainability must consider the present in terms of the future.'

Federal decision-making on energy investments is further weakened by reliance on Department of Energy price projections that do not address the price of climate change, or even the cost of potential cap and trade expenses or carbon taxes. DOE energy price projections also do not appear to consider, e.g., through a sensitivity analysis, the potential effects of 'peak oil' on energy prices.

### **Recommendations:**

Use of life cycle cost calculations for buildings should be limited to comparing the payback on energy upgrades to existing buildings. Regulations addressing new construction standards should be placed in a separate class with the goal of zero net energy use.

Department of Energy price projections for fuels, and electricity that are used in determining the appropriate levels of minimum product efficiency standards need to include costs of relevant externalities such as climate change.

**References:** Environmental Regulations and the Problem of Sustainability, Daniel W. Bromley,  
Ecological Economics, March 2007, pp 676-683  
<http://www.aae.wisc.edu/dbromley/pdfs/ecolecon%20market%20failure.pdf>