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March 31, 2009

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VIA ELECTRONIC MAIL

Office of Information and Regulatory Affairs
Records Management Center
Office of Management and Budget
Attention: Mabel Echols, Room 10102
NEOB
725 17th Street, N.W.
Washington, DC 20503

Comments on New Executive Order on Federal Regulatory Review
74 Fed. Reg. 8819 (February 26, 2009)

Dear Ms. Echols:

Attached are the comments of the Utility Water Act Group on a planned new Executive Order on Federal Regulatory Review.

Please call me if you have any questions.

Yours very truly,

James N. Christman

James N. Christman

Attachment

UWAG
Utility Water Act Group©

COMMENTS OF
THE UTILITY WATER ACT GROUP ON NEW
EXECUTIVE ORDER ON FEDERAL REGULATORY REVIEW
74 Fed. Reg. 8819 (February 26, 2009)

March 31, 2009

The Office of Management and Budget has asked for comments on developing a set of recommendations to the President for a new Executive Order on Federal Regulatory Review. 74 Fed. Reg. 8819 (February 26, 2009). The comment period was extended to March 31, 2009. 74 Fed. Reg. 11,383 (March 17, 2009). The comments are to address how to improve the process and principles governing regulation.

In particular, the President has said that the recommendation should address the following issues:

- the relationship between OIRA and the agencies;
- disclosure and transparency;
- encouraging public participation in agency regulatory processes;
- the role of cost-benefit analysis;
- the role of distributional considerations, fairness, and concern for the interests of future generations;
- methods of ensuring that regulatory review does not produce undue delay;
- the role of the behavioral sciences in formulating regulatory policy; and
- the best tools for achieving public goals through the regulatory process.

Id.; 74 Fed. Reg. 5977 (February 3, 2009).

These are the comments of the Utility Water Act Group (UWAG).[1] UWAG has asked economic consultant William Desvousges of W.H. Desvousges & Associates, Inc.

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[1] UWAG is a voluntary, *ad hoc*, non-profit, unincorporated group of 208 individual energy companies and three national trade associations of energy companies: the Edison Electric Institute, the National Rural Electric Cooperative Association, and the American Public Power Association. The individual energy companies operate power plants and other facilities that generate, transmit, and distribute electricity to residential, commercial, industrial, and institutional customers. The Edison Electric Institute is the association of U.S. shareholder-owned energy companies, international affiliates, and industry associates. The National Rural Electric Cooperative Association is the association of nonprofit energy cooperatives supplying central station service through generation, transmission, and distribution of electricity to rural areas of the United States. The American Public Power Association is the national trade association that represents publicly owned (municipal and state) energy utilities in 49 states representing 16 percent of the

to address three of the listed issues, namely the role of cost-benefit analysis; the role of distributional considerations, fairness, and the interests of future generations; and the role of the behavioral sciences. His comments are in the attached report, W. Desvousges, *Response to Request for Comments on Regulatory Review Alternatives: The Value of Cost-Benefit Analysis* (March 31, 2009).

As the attached report says, cost-benefit analysis has been widely recognized as a "useful" (Adler and Posner) or even an "indispensable" (Organization for Economic Co-operation and Development) tool. It is not perfect, and it does not eliminate the need for judgment, but it does provide a "model of rationality" (Pearce *et al.*). Dr. Desvousges points out that it would be better to concentrate on improving cost-benefit analysis than to abandon it for some alternative decision structure, especially since no superior method of decisionmaking has been discovered.

Dr. Desvousges goes on to observe that cost-benefit analysis is based on a sound theoretical foundation in economics and seeks to identify factors that increase or decrease human well-being. And increasing human well-being is unquestionably an important object of government regulation, particularly when "well-being" is taken to include intangibles like justice. Cost-benefit analysis provides a way of identifying the gainers and losers from a proposed regulation and, in the process, provides transparency. Even if one disagrees with the numbers attached to benefits and costs in the analysis, having the benefits and costs spelled out and the distribution impacts identified reveals the thought process behind the regulatory evaluation.

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market. UWAG's purpose is to participate on behalf of its members in EPA's rulemakings under the CWA and in litigation arising from those rulemakings.

Dr. Desvousges also points out that cost-benefit analysis is a flexible tool that can be (and has been) applied to a wide range of subjects from environmental regulations (UWAG's main concern) to transportation and highway safety, early childhood education, and programs to help parolees re-enter society.

Dr. Desvousges compares cost-benefit analysis to prominent alternatives, namely cost-effectiveness analysis and multi-criteria decision analysis, and shows that only cost-benefit analysis can determine what level of regulation would have the greatest net improvement in well-being.

The attached report discusses the issue of comparing costs and benefits that occur in the present to those that are realized only in the future. The report cautions against confusing the discounting of variables used in the analysis from "discounting" real lives or health or the environment. The report notes that, while people's willingness to pay for benefits depends on their ability to pay and can make cost-benefit analysis sensitive to the existing distribution of income, this can be managed in various ways, such as giving higher weights to people with lower incomes. Again, the sensitivity to the distribution of income is not so much a reason to abandon cost-benefit analysis as a factor to be addressed in the analysis itself.

Dr. Desvousges closes his analysis with a discussion of "nonuse" values and of measuring the value of marginal changes in common resources, and he addresses methodological issues in using survey methods to measure how people evaluate environmental resources. He concludes that the behavioral sciences can provide important insights for cost-benefit analysis; for example, research shows that providing information, properly designed, can improve people's decisionmaking about risk. Thus,

providing information to the public can complement regulatory risk management programs.

In short, the attached report, which we commend to OMB's attention, shows that cost-benefit analysis is an important tool and ought to be used in reviewing federal regulations as much as possible. Cost-benefit analysis does not by itself provide answers to difficult risk-management questions, but it can help regulators make those decisions with greater rationality and greater transparency.

Donna B. Hill
Chair, Effluent Guidelines Committee
Utility Water Act Group

Russell J. Furnari,
Chair, Water Quality Committee
Utility Water Act Group

Attachment: William H. Desvousges, Response to Request for Comments on Regulatory Review Alternatives: The Value of Cost-Benefit Analysis (March 31, 2009)

Response to Request for Comments on Regulatory Review Alternatives: The Value of Cost-Benefit Analysis

Prepared for:

Utility Water Act Group

Prepared by:

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March 31, 2009

INTRODUCTION

The Director of the Office of Management and Budget (OMB) has invited public comments on a number of issues that the President has directed OMB to consider in producing recommendations for a new Executive Order on federal regulatory review. As the notice inviting comments recognizes, the purpose of OMB review has been "to ensure consistency with Presidential priorities, to coordinate regulatory policy, and to offer a dispassionate and analytical "second opinion" on agency actions" (74 Fed. Reg. 8819 (Feb. 26, 2009)).

Based on almost 30 years of experience in working on applied environmental economic issues, my opinion is that providing a dispassionate second set of eyes to review agency regulations is a critical role for the OMB. The regulations that emerge from this process are much more likely to produce benefits that justify their costs, or if not, achieve other important regulatory objectives. As discussed below, I strongly believe that cost-benefit analysis (CBA) should remain the keystone for this dispassionate review. CBA provides the essential analytical foundations for measuring both benefits and costs on a sound basis. It also provides the platform from which important distributional considerations can be identified and evaluated in the regulatory decision-making process. In doing so, CBA provides the necessary transparency that can lead to improved public confidence in the regulatory process. Although criticisms of CBA exist, some are justified while many others are not. I will try to distinguish between those in my comments on the role of CBA to support why I think it is the most valuable tool in the OMB regulatory review tool-kit. Finally, I will recommend strategies to mitigate certain limitations of CBA.

In a February 3, 2009 Memorandum for the Heads of Executive Departments and Agencies, published in the Federal Register [74 FR 5977], the President directed the Director of OMB to produce a set of recommendations for a new Executive Order on Federal regulatory review. Among other things, he sought suggestions for the following:

- The relationship between OIRA and the agencies;

- Disclosure and transparency;
- Encouraging public participation in agency regulatory processes;
- The role of cost-benefit analysis;
- The role of distributional considerations, fairness, and concern for the interests of future generations;
- Methods of ensuring that regulatory review does not produce undue delay;
- The role of the behavioral sciences in formulating regulatory policy; and
- The best tools for achieving public goals through the regulatory process.

In my comments below, I will not try to address all of these items, but instead will focus on the three which have been the concentration of my research and practice in environmental economics--CBA, distributional considerations, and the role of behavioral sciences. Although my comments address mainly environmental issues, many of these important debates are relevant to other regulatory arenas as well.

THE ROLE OF CBA IN REGULATORY IMPACT ANALYSIS

A review of recent publications provides insights as to what government agencies and academic scholars have to say about the state, and importance, of CBA in the review of government regulations. For example, in the Forward to the Organization for Economic Co-operation and Development's (OECD) 2006 "Cost Benefit Analysis and the Environment: Recent Developments" (2006 OECD), Lorents Lorentsen, Director of the OECD Environment Directorate, stated:

> Cost-benefit analysis is now recognised as an indispensable tool for policy design and decision making. As environmental policies are becoming more complex and challenging (e.g. global warming, biodiversity loss, and health impacts of local air and water pollution), a number of countries and the European Commission have introduced legal provisions requiring impact and cost-benefit assessments of major policies and regulations. Over the last 5-10 years, considerable progress has been made in the conceptual framework and techniques of environmental cost-benefit analysis (p. 3).

The OECD is an organization of 30 countries that serves as one of the world's largest and most reliable sources of comparable statistics and economic and social data.

Matthew Adler and Eric Posner (1999), two key contributors to the scholarly literature on CBA, conclude in their article:

> CBA is a useful decision procedure and it should be routinely used by agencies. CBA is superior to rival methodologies in enabling agencies to evaluate projects according to the extent that they contribute to overall well-being. It allows agencies to take into account all relevant influences on overall well-being, unlike simpler decision procedures such as risk-risk; and it enables agencies to weigh the advantages and disadvantages of projects in a clear and systematic way, unlike more complex decision procedures. ...Finally, CBA plays the important political role of increasing regulatory transparency. The political branches can monitor agencies more easily when the agencies monetize the advantages and disadvantages of projects than when agencies use qualitative decision procedures (pp. 245-246).

David Pearce, Giles Atkinson and Susana Murato, co-authors of the 2006 OECD volume on cost-benefit analysis, offer their own insights as to why CBA is so essential to regulatory review:

> The first rationale for using CBA is that it provides a model of rationality. ...Independently of its use of money measures of gain and loss, CBA forces the decision-maker to look at who the beneficiaries and losers are in both the spatial and temporal dimensions. ...CBA's insistence on all gains and losses of "utility" or "well-being" being counted means that it forces the wider view on decisionmakers (pp. 34-35).

Cass Sunstein (2005) in his article on "Cost-Benefit Analysis and the Environment" offers this summary view:

> The most general conclusion is that CBA does not tell regulators all that they need to know; but without it, they will know far too little (p. 385).

As an economist interested in environmental economics, I began my applied research career in 1980. Of course, this was the year before President Reagan signed Executive Order (EO) 12291, which required the performance of a regulatory impact

analysis (RIA), a form of CBA, of all major regulations, i.e., regulations whose costs exceed $100 million dollars. Although viewed by many with skepticism as a vehicle for reducing regulatory actions, this EO spurred renewed interest in and demand for CBA.

The main components of EO 12291 were kept in place by EO 12866, which was signed by President Clinton in 1993. Although the later EO replaced the "benefits outweigh costs" provision of the earlier EO with "benefits justify costs." The later order defined benefits to include "economic, environmental, public health and safety, other advantages, distributive impacts and equity" not all of which may be quantifiable (Pearce, Atkinson, and Mourato 2006).

Additionally, the influence of CBA has found its way to both Canada and the United Kingdom. In 1995, the Canadian Government issued general guidelines for CBA for all regulations. Pearce, Atkinson and Mourato (2006) indicate that the most recent guidance is given in UK Cabinet Office (2003). The most recent information on measuring benefits and costs can be found in the UK Treasury website (http://www.hm-treasury.gov.uk/data_greenbook_detguidance.htm#Environment), which supplements the UK Treasury (2002) "Green Book."

In seeking input on improving regulatory review, the Obama Administration appears to be setting the stage for another revisiting of the EOs that requires some form of CBA. In doing so, I think it is critical for the Administration to continue to place CBA as the central focus of its regulatory review, and not replace it with a potentially less effective alternative. While room for improvement exists, the enhancements can be made within the CBA framework to make CBA better. My rationale is presented in the three sections that follow. First, I offer four reasons why CBA should be the cornerstone of regulatory review in the Obama Administration. Second, I discuss how potential limitations of CBA can be addressed in practice. Finally, I offer some suggestions for improving the practice of CBA.

II. The Advantages of CBA

CBA is based on solid economic foundations.

CBA draws its strength from a sound theoretical foundation for measuring both benefits and costs. Pearce, Atkinson, and Mourato (2006) state:

> The essential theoretical foundations of CBA are: benefits are defined as increases in human well-being (utility) and costs are defined as reductions in human well-being. For a project or policy to qualify on cost-benefit grounds, its social benefits must exceed its social costs. "Society" is simply the sum of individuals (p. 16).

Well-being is usually measured in terms of people's willingness-to-pay (WTP) for the improvement that would result from some regulatory action. However, this measure is the subject of substantial criticism in some quarters (Ackerman and Heinzerling 2004; Applegate, et al. 2009). Critics argue that a person's willingness-to-accept (WTA) compensation for proposed regulatory changes would be a more appropriate basis because it is thought to be less sensitive to the existing distribution of income. However, critics often overlook three important facts about most regulations.

First, benefits from regulations often involve potential improvements in people's well-being, not potential reductions. Thus, the scope of potential regulations in which WTA might be more appropriate is not that large.

Second, if the regulation produces benefits that justify their costs measured on the basis of the public's WTP, then regulators have an extra degree of assurance that the regulation would lead to increases in overall well-being. That is, WTP would be a conservative measure of potential benefits from the regulation. Such rationale led the Blue Ribbon Panel formed by the National Oceanic and Atmospheric Administration (NOAA) to recommend that WTP be the basis for any well-being change described in a survey to measure potential natural resource damages (Arrow, et al., 1993). The Panel was concerned that the increased empirical difficulties of evaluating potential regulations based on WTA would offset any usefulness gained from using a well-being measure that may in a few instances be more conceptually appropriate.

Third, as I discuss below in more detail, because CBA results maybe sensitive to the existing distribution of income, if a regulatory decision were a close call, and there were some indication that benefits would be higher with a different distribution of income (e.g., the benefits accrue more to lower income households than others with higher income), then regulators could factor this consideration into their decisions. As Pearce, Atkinson and Mourato (2006) note, CBA provides regulators a mechanism by which to identify and consider the gainers and losers associated with a potential regulation. They further note that such a consideration should be an essential part of any properly performed CBA. As a result of this process, regulators are given a broader perspective to consider the relative soundness of a potential regulation. Moreover, throughout the process, CBA would provide the transparency that Adler and Posner (1999) view as essential. Thus, even if one were to disagree with the regulatory decision, having the benefits and costs spelled out and the distribution impacts identified would reveal the thought proc ess behind the regulatory evaluation.

In addition, CBA uses the economically correct measure of cost. Specifically, CBA uses the opportunity cost principle, which states that the cost of something is measured in terms of foregone units of something else. That is, when one measures the cost of any regulatory action, one also needs to consider what society is giving up. Too often, in my experience, the costs of regulations are measured mainly in terms of what it will cost the regulated entity to comply with the proposed rule. However, opportunity costs extend beyond simply the costs of compliance. They would include increases in consumer prices or other market adjustments that result from the regulation. Thus, I encourage OMB to consider that any discussion of costs include the full opportunity costs of a regulation.

Some critics take the position that CBA consistently overstates the costs of compliance because it ignores potential for technological change that may lead to reduced costs (Driesen 2003). Even if this were a legitimate criticism, it is not a basis for eschewing cost-benefit analysis altogether. Instead, it suggests the n eed to account for reasonably anticipatable technological improvements in situations where regulatory compliance costs are likely to be affected by such changes. While some type of technological change is likely in the long run, businesses that face immediate

responsibilities to comply with government regulations will not have the luxury of employing new technology. They will have to make their investment choices from among technologies that are currently on the shelf. Thus, adjusting costs to accommodate technological change is appropriate only if there is a reasonable basis for anticipating that such change will occur (for instance, because of the existence of ongoing research or the commitment of substantial funds to stimulate research) and the regulation provides compliance schedules long enough to allow that research to bear fruit.

CBA is a flexible framework that can be easily adapted to each unique regulatory analysis.

The flexibility of CBA is most evident in the wide range of applications of RIA based on CBA within the United States. These applications range from environmental regulations, to transportation and highway safety, to food safety and inspection (Harrington and Morgenstern 2004; Miller, Galbraith and Lawrence 1998; Antle 1995).

The versatility of CBA can be found in other recent applications as well. For example, researchers have used CBA to evaluate the payoffs to an intensive early childhood education program that also included childcare and nutritional components (Masse and Barnett 2002). The CBA was based on an analysis that followed the performance of high-risk children until they were in their early 20s. It also assessed the impacts on the mothers' earning abilities as well. Based on a comprehensive analysis of both benefits and costs, the researchers showed that the program provided benefits in excess of costs and was robust to differences in discount rates and whether or not certain categories of benefits were counted. Thus, the CBA showed that not only did the children and their families benefit from the intensive education and child enrichment program, it represented a sound social investment as well.

Additionally, researchers at the Urban Institute used CBA to evaluate the effectiveness of the Maryland Reentry Program (REP), which provided additional assistance to parolees when re-entering society (Roman, et al. 2007). They found that, compared to a control group, the REP successfully reduced criminal offenses with a five percentage point difference in crimes committed and fewer crimes committed

during the approximately three-year study period. As to the CBA results, the study authors conclude:

> We find that the REP program was cost-beneficial, returning about $3 in benefits for every dollar in new costs. The total net benefit, total benefits minus total costs, to the citizens of Baltimore from the REP program is about $7.2 million, or about $21,500 per REP participant. While there was a small and non-significant benefit to public agencies from REP, most of the program's benefit accrued to the citizens of Baltimore, whose risk of victimization was reduced. Much of the difference in cost-effectiveness is due to a difference in the incidence of serious crimes, as we observed 11 attempted murder charges and two murder charges among the comparison group and no murder or attempted murder charges within the treatment group (p. 1).

The examples above demonstrate that CBA includes both hard numbers on costs and monetized benefits but also can include other relevant benefits, even if they are not quantified. Moreover, the studies demonstrate that money is simply the numeraire, or metric, in which benefits and costs are usually expressed, but the CBA framework can encompass broader social considerations. The most important information to be derived from the CBA framework is the measure of society's willingness to trade off more of one good for less of another.

Thus, CBA enables social investment opportunities ranging from early childhood education programs to crime prevention programs to be evaluated in terms of their net social benefit. Not only does CBA provide hard numbers on the magnitude of the social payoffs, but it also can provide insights into other social gains that may not be monetized in the analysis, such as the lower risk of victimization in the REP study or the more rewarding lives experienced by the children in the intensive early childhood education program. Finally, CBA enables the identification of the winners and losers of each of these programs so that the distributional impacts can be assessed by decision-makers as well.

CBA is superior to potential alternatives.

In considering CBA as the keystone for regulatory policy evaluation, it is useful to compare it to several alternatives. Two of the most common alternatives are: cost

effectiveness analysis (CEA) and multi-criteria decision analysis (MCDA). One feature shared by all three decision tools is that they require that a potential regulatory policy be viewed as a series of options or alternatives. As such, each provides regulators a menu from which to view and compare the various alternatives. However, only CBA provides a basis for determining which of the alternatives, if any, would result in the largest net gain in well-being. Thus, not only does CBA provide the basis for evaluating alternatives, it can indicate which choice would improve well-being the most. Although CEA can array alternatives by their costs for achieving a specified objective, it cannot answer the question of whether that objective would lead to benefits that would be greater than costs. It merely assumes that the objective is worthwhile and that the alternatives are all capable of providing the same outcome.

MCDA is a decision tool that attempts to divide alternatives into their relevant attributes or characteristics. It also involves using interviews to elicit the preferences of stakeholder groups about their willingness to make tradeoffs between the various attributes of different alternatives. As such, it would indicate how these groups would view the desirability of various outcomes, but would fall short of indicating which regulatory alternative would lead to the greatest improvement in well-being. Thus, only CBA has the capability of determining what level of regulation would lead to the largest change in net well-being.

CBA provides a conceptually correct basis for standardizing the impact of time on regulatory alternatives.

One of the most important, and often misunderstood, elements in CBA is the discounting of benefits and costs. Discounting is based on the time value of money. That is, people would prefer to have an additional dollar today rather than the same dollar a year from now. They could either use the dollar today to meet current needs or invest it for future gains. In order to get people to accept that dollar a year later, they must be offered a premium, which is the interest rate.

In CBA, discounting is necessary to standardize the comparison of costs and benefits with respect to time. Specifically, compliance costs often are highest in the years immediately following the implementation of a regulation, while benefits will

accrue over the lifetime of the regulation, which may extend to fifty years or longer. By discounting, all costs and benefits can be translated into present value equivalents so that they can be compared on a consistent basis. Currently, OMB's Circular A-94 requires the use of a 7 percent discount rate for regulatory impact analysis.

Some critics complain that a high positive discount rate (such as the 7 percent used by OMB) sacrifices the interests of future generations in the interest of the present one. That is, benefits which occur in the distant future are given too little weight in the decision process today, leading to myopic decisions. In response to this controversy, some proponents have recommended that a zero rate of interest be used in CBA (Cowen and Parfit 1992). However, a zero discount rate position does not represent sound economics for two reasons: (1) it presumes that the greatest increase in well-being will occur if the present generation always sacrifices it interests to those of future generations (Pearce, Atkinson and Mourato 2006); and (2) it would ignore the empirical reality that technological change and economic growth have enabled higher standards of living to be achieved.

Of course, the question remains that if zero is not the appropriate discount rate, is the current OMB rate the most appropriate? While there is no easy answer to this question, some potential guidance can be found in Lind's (2000) treatise on the topic. Lind provides some valuable insights as to the differences between regulatory actions that displace investment versus those that displace consumption, arguing for a higher discount rate in the case of the former and a lower rate in the case of the latter. To the extent that the Obama Administration decides to re-consider the choice of a discount rate, then the Lind guidance would seem helpful, at least as a starting point.

III. Recommendations for Improving the Practice of CBA

Make distributional considerations explicit.

One of the limitations of CBA is that WTP benefit measures are sensitive to the existing distribution of income (Pearce, Atkinson and Mourato 2006; Adler and Posner 1999). That is, people's WTP will be influenced by their ability to pay. Although some critics have used this limitation as a rationale for discarding the use of CBA (Ackerman

and Heinzerling 2004), other researchers have considered alternatives that would limit the influence of the existing income distribution (Pearce, Atkinson, and Mourato 2006). They consider various alternative distributive schemes that might be used to offset the income distribution effects, including the use of a re-weighting scheme that would give higher weights to those with lower incomes. After thoroughly considering the various alternatives, though, they conclude:

> As a practical matter, the danger is whether the most ambitious proposals for distributional CBA generate more heat than light. While it would be worthwhile for research to seek further understanding of these preferences – perhaps making greater use of stated preference methods – in the interim, estimating implicit weights might be the most useful step beyond the necessary task of cataloguing the distribution of project cost and benefits (p. 25).

This conclusion is fundamentally sound. Re-weighting the benefits to determine the sensitivity of the CBA outcome to the distribution of income is a relatively straightforward exercise. It can be included as part of a sensitivity analysis, which is a component that every CBA should include. Such an analysis provides a convenient way to assess the robustness of the outcome to key benefit and cost parameters, as well as the rate of discount.

Additionally, the arguments regarding sensitivity to inequities in the existing income distribution overlook two important empirical considerations. First, to the extent that incomes increase over time, and improvements in public goods such as air quality and water quality are normal goods, then people's WTP for such goods would increase with time. Thus, a rising standard of well-being would lead people to demand better air and water quality, while having higher disposable incomes would enable them to obtain such public goods. Second, to the extent that technological change occurs over time, making it less expensive for companies to reduce environmental emissions, these public goods may be available at a lower cost.

Finally, it is important to not overlook the value of the simple cataloguing of the distribution of benefits and costs as part of the CBA. For example, distribution impacts can be summarized on a variety of bases, including potential regional impacts as well as variations in income levels. Once this information is assembled and described, the

decision-maker would be in a much better position to assess whether the distribution impacts of the proposed regulatory alternatives are significant. In cases where they matter, then a more detailed analysis could be undertaken to determine the extent and variability of the impacts. Such an approach recognizes that CBA is a decision tool that can be used to help inform decisions, but it does not dictate the outcome of decisions.

Use economic principles to evaluate whether or not monetizing nonuse values significantly understates benefits.

One of the important considerations in CBA is what to do about including so-called "nonuse values" — that is, values that do not depend on people's use of the resource. In my experience, agencies often assume that there will be sizeable nonuse values for changes associated with a particular regulation. In some cases, the agency believes that people have high nonuse values for particular resources. In others, the agency believes that even if the nonuse values are small on a per-capita basis, if they are held by a large fraction of the population, the can be very large in the aggregate. Thus, the agency assumes that not monetizing nonuse values will substantially understate benefits. As discussed below, several basic economic principles can be used to gauge whether and to what extent it is necessary to quantify, monetize or otherwise assess nonuse values.

a. Would the regulation create a reduction in ecological services?

Banzhaf and Boyd (2005) emphasize that services are the end products of nature that yield human well-being. Their analysis states that although ecological services are derived from the natural environment, in order to have an explicit economic value, they should create an end-product that is useful to humans. Thus, in an economic paradigm, ecological services are more than simple ecological functions. They include the interaction between people and the natural environment, or at least some awareness of the environmental feature in question. If services are not reduced, then it would seem highly unlikely that any of the motives ascribed as the basis for nonuse values would arise. Thus, evaluating service losses is a necessary pre-condition for assessing whether nonuse values are likely to be significant.

b. Would the regulation result only in substantial changes in unique resources, or marginal changes in commonly occurring resources?

One of the important issues that arise in regard to nonuse values is to determine the features that underlie such values. The National Resource Council (2005) offers several examples of the types of situations that would likely yield substantial nonuse values for aquatic ecosystem services:

- Cultural heritage
- Resources for future generations
- Existence of charismatic species
- Existence of wild places (p.46).

These situations demonstrate that the ecosystem services which are more likely to have substantial nonuse values involve services that are unique in some way, such as the wild places, or involve features that may be important for certain subgroups, such as the cultural heritage interests. In many instances, the empirical studies that have attempted to quantify nonuse values for these types of resources involved substantial changes or risks to the continued existence of the resource. They have not focused on marginal changes in a unique resource, much less common resources.

To my knowledge, no empirical or theoretical study has demonstrated any basis or rationale for using the values for large changes in unique resources to draw inferences about either the potential existence of, or the magnitude of potential nonuse values for marginal changes in common resources. While many people's well-being may indeed be affected by the changes to the landscape at the Grand Canyon, this would tell us little or nothing about the value they ascribe to changes in abundant or widely occurring resources.

c. How would the principle of substitution influence the likelihood of substantial nonuse values?

The substitution principle, which is one of the most widely recognized principles in economics, shows that the greater the number of substitute resources, the lower the

value that people would have for any individual resource. The potential for nonuse values of marginal changes in common resources is limited by the existence of many substitute resources, not to mention the lack of any discernible impact on ecological services. Moreover, any attempt to define broader markets for natural resource services simultaneously increases the number of substitutes that would be relevant to the potential market participants.

Incorporate behavioral sciences within CBA to the extent possible.

In recent years, behavioral economics has begun to be recognized for the value that it can offer for CBA. Through the work pioneered by the efforts of Daniel Kahneman, Richard Thaler and many others, behavioral economics bridges the gap between conventional economic and psychological research to offer valuable insights into CBA. These analyses can yield a better understanding of how benefits are perceived and measured, as well as how people make discounting decisions. They also can help to understand how various decision biases can limit people's ability to make the kinds of rational and informed decisions that often are assumed in CBA.

For example, Schkade and Payne (1994) show that people have much broader motivations than economists assume in developing their valuation estimates. Specifically, people are motivated by various moral views and perceptual cues that are unrelated to the natural resource services in question. These views and cues lead to a bias or flaw known as embedding. The bottom line is that people often end up answering a different question than what was asked of them. For example, in the Clark Fork River Basin contingent valuation study, the survey designers went to considerable lengths to inform respondents that their answers would only apply to resources in that river basin. However, when respondents were asked whether they considered only the Clark Fork River Basin in developing their answers, approximately 83 percent indicated that they were valuing something other than the Clark Fork River (Diamond and Hausman 1994).

Indeed, there is substantial psychological literature on constructed preferences, in which respondents develop their preferences through an interview or learning process. Such preferences would be consistent with the respondent preferences

elicited in a survey such as the one described above. As such, the preferences are sensitive to the form, type and amount of information provided (Payne, Bettman, and Schkade 1999; Bettman, Luce and Payne 1998; and Frederick and Fischhoff 1998). Developing a better integration of this research into conventional economic methods for measuring benefits may yield more reliable CBA estimates.

Incorporating behavioral economics into CBA may yield other valuable insights. For example, it may be possible for the CBA to include analyses of benefits that would reflect decision aids that would help to offset some of the potential decision biases, such as anchoring and availability. Sunstein (2000) argues that:

> ...Cost benefit analysis is best defended as a means of overcoming predictable problems in individual and social cognition. Most of these problems might be collected under the general heading of selective attention. Cost-benefit analysis should be understood as a method for putting "on screen" important social facts that might otherwise escape private and public attention. Thus understood, cost-benefit analysis is a way of ensuring better priority setting and of overcoming predictable obstacles to desirable regulation, whatever may be our criteria for deciding the hardest questions about that topic (p. 1060).

Additionally, some regulatory situations include information provision as a regulatory alternative. EPA's decision to view radon as primarily an information problem rather than a regulatory one is an excellent example of the role that behavioral economics can play in the regulatory arena. Because radon in homes is a naturally occurring phenomenon, regulatory actions did not offer a viable alternative. Instead, EPA focused its efforts on an information program that would provide guidelines to assist homeowners in making informed choices about their potential risks from radon. EPA also conducted several substantial research projects to investigate the impacts of the provision of different types of risk information on people's decision (Smith, et al. 1990). Using a panel study, it was possible to observe how stated risk perceptions responded to information about indoor radon concentrations and brochures explaining the radon readings. This research concluded that:

> The findings indicate that risk communication policies can be effective in modifying risk perceptions. Moreover, they have three specific implications for radon policy: (1) Public officials should not adopt

> strategies that provide minimal risk information to the public as a means of avoiding undue alarm, for this can have the reverse effect; (2) measures of the effectiveness of risk communication will depend on how education and behavior change are defined; (3) categorical guidelines about risk without quantitative information can lead people to treat the levels as thresholds, creating an artificial discontinuity in their responses to small changes in risk perceptions (p.41).

Finally, EPA also funded research to evaluate the effectiveness of the delivery of radon information. This research compared the use of media campaigns versus a community-oriented campaign that emphasized local actions along with the media campaign. This research showed that the community campaign led to significantly higher levels of awareness, knowledge and radon testing than the media-only campaign (Desvousges, Smith, and Rink 1992). Thus, this research shows that it is possible to develop risk communication materials and delivery programs that can lead to socially desirable behavior without the need for explicit regulatory actions. Granted the naturally occurring nature of radon is an important characteristic of the risk that led to the information provision option. Nonetheless, the research clearly shows that the provision of information, properly designed, can help improve people's decision-making involving risk. Such information provision could be an important complement to other regulatory risk management programs, and could lead to greater societal benefits as people make more informed choices about risk.

IV. Summary

These comments demonstrate that CBA is a sound framework for evaluating proposed regulations. Uniquely, CBA provides a consistent basis for measuring benefits and costs, and for determining which regulatory alternative would lead to the greatest increase in society's well-being. CBA also can show the potential distributional considerations in ways that makes it easier to evaluate how the regulatory burden will be borne and how the potential benefits will be shared across different groups in society. In doing so, it also adds valuable transparency to the regulatory process. The comments also have provided some suggestions for improving the use of CBA, including making distribution considerations an explicit part of the CBA. In addition, I recommend the use of economic principles to help determine whether or not nonuse benefits should be monetized. And finally, I recommend an expanded role for

behavioral economics to improve regulatory evaluations, and/or to provide alternatives to regulations in certain situations where improved information programs may yield the greatest benefit to society.

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