

COST-BENEFIT CONSIDERATIONS IN REGULATORY DECISION-MAKING

J.D. Harvie
Director General

ATOMIC ENERGY CONTROL BOARD
Ottawa, Canada

INTRODUCTION

The Atomic Energy Control Board is investigating the feasibility of developing methods for factoring cost-benefit considerations into its regulatory decision-making. This initiative results, in part, from the federal government policy requiring cost-benefit considerations to be taken into account in regulatory processes, and from the recommendations of an Advisory Panel on Regulatory Review in 1993, submitted to the Minister of Natural Resources Canada. One of these recommendations stated:

"that mechanisms be developed to examine cost-benefit issues and work towards some consensus of opinion among stakeholders: a task force on the subject could be an appropriate starting point"

INITIAL ACTIVITIES

The AECB initially engaged a consulting company, Price-Waterhouse, to carry out some preliminary work, and an exploratory meeting was held with representatives of licensees and other interested parties on March 29th, 1994. Subsequent efforts to set up the recommended task force of stakeholders were not successful, since the nuclear industry insisted on conditions for its participation which the AECB could not accept.

Since all parties maintained a strong interest in the subject, another project was initiated under the AECB Regulatory Research and Support Program to investigate further the feasibility of including cost-benefit considerations in the regulatory decision making process, and in particular to obtain information on the use of such considerations by other regulatory agencies, both in Canada and in other countries. The results of this project have been reported in the AECB report INFO-0566, which was also prepared by Price-Waterhouse.

FORMATION OF WORKING GROUP

It was decided to invite a group of experts, from both within and outside the industry, to attempt to draw up proposals for factoring cost-benefit considerations into regulatory decision-making. While these experts clearly could not dissociate themselves entirely from the companies where they were employed, the intent was to invite people with expertise to offer rather than people who would represent specific interests. The main objective of the group was to prepare a report containing proposals which would be the basis for AECB consultation with stakeholders and other interested parties on the subject. The terms of reference of the working group are attached as appendix 1.

This approach was not without its critics. On the one hand, some nuclear industry interests whose representatives were not invited to participate were displeased, criticized the process, and attempted to link the initiative to other unrelated issues. Equally, Energy Probe, in a letter to the President of the AECB, was critical that the group appeared to be "dominated by a small group of like-minded people, and apparently excludes local citizens groups representing the public at risk and environmental public interest groups." It suggested that the process "has been unduly influenced, behind closed doors, by the regulated industry and its friends."

Despite these criticisms and external influences, it was decided to proceed and attempt to produce a workable set of technical proposals which could be distributed to, and commented on, by all stakeholders in the process and other interested parties to obtain feedback prior to implementation. This would of course include the entire industry regulated by the Atomic Energy Control Board, workers in the industry and their unions and professional societies, as well as groups representing public interests and individual members of the public.

SUBSEQUENT PROGRESS

At the initial meetings of the group it proved to be necessary to clarify the types of decisions that are made by the AECB in the regulatory process. These range from formal legal decisions on regulations or licences, to the myriad of detailed decisions taken by AECB staff members on the adequacy of licensee actions or submissions. It became clear that for some of these decisions cost-benefit considerations could have a role in the decision-making process, while for others such considerations would play little or no role.

It also became clear, from discussions inside and outside the group, that there was a wide variation in expectations on application of cost-benefit considerations in the regulatory process. While some appeared to envisage all decisions made by AECB staff to be subject to a formal cost-benefit analysis before being implemented, others perceived this to be unworkable, given the large number of routine day-to-day decisions, and envisaged cost-benefit to be one of several tools available in certain situations to contribute to the decision-making process.

Notwithstanding these difficulties, the group was able to function in a constructive fashion, and agreement has been reached on a relatively brief proposed policy statement, and a guide to address where and how this policy could be applied is being developed.

The group expects to complete its work by the fall of 1996, and produce documented proposals for a policy and guide. These would form the basis of an AECB Consultative Document which will be circulated to all stakeholders and interested parties. Following the process of consultation, recommendations will be made to the Board on establishing an AECB policy and publishing an AECB guide on the subject.

PROPOSED POLICY

A proposed wording for the basic policy on the subject is as follows:

"When regulatory decisions are made with respect to nuclear activities, the costs and benefits shall be given appropriate consideration."

This simple statement of principle affirms the role of cost-benefit considerations, without putting inappropriate constraints on the decision-making powers of the AECB.

Two areas were identified where there would be mandatory consideration and documentation of cost-benefit considerations.

- 1) All proposed new regulations must be subjected to a Regulatory Impact Analysis, in accordance with the policy of the government. This analysis includes examination of the costs and benefits associated with the regulations.
- 2) Similarly, any new Regulatory Policy Statement issued by the Board would be subjected to a cost-benefit analysis, to the extent practicable. Since such policy statements are issued relatively infrequently, such an analysis should not put an unacceptable burden on the process.

Costs and benefits would not be considered in decisions related to enforcement of the legal requirements of the Atomic Energy Control Act (or its successor), or of Regulations issued in accordance with the act (except perhaps on methods of enforcement). For example, the Physical Security Regulations, issued pursuant to the Act, are legally binding requirements, and the AECB does not have discretion in their enforcement. Similarly, decisions related to enforcement of Regulatory Policy Statements, such as those specifying requirements for special safety systems (AECB Regulatory Documents R-7, R-8, and R-9), would not normally be subjected to cost-benefit analysis.

The general principle stated above would govern all decisions taken by the AECB, and affected parties could of course submit their views on costs and benefits for consideration

with respect to any regulatory decision. However, for the vast majority of decisions, it is not envisaged that a formal cost-benefit analysis would be undertaken, since this would make the process much too cumbersome for all parties.

Nevertheless, the group concluded that, in cases where an affected party believed that cost-benefit aspects should be an important factor in a decision, there should be a process by which a more formal analysis could be requested and, if agreed to by the Board, carried out. In such cases, it is envisaged that the AECB would appoint a staff member or an external consultant to review the study and produce a statement on the validity of the predicted costs and safety benefits associated with the decision.

COSTS AND BENEFITS

It was concluded that the costs associated with a decision should include the financial costs borne by all parties, including licensees, the AECB, and the public, as well as health and safety costs, including doses to licensee staff or the public resulting from implementation of the decision. However, only costs which would be incurred by a reasonably competent, efficient organization would be considered, since it would be inappropriate to have a decision on a safety improvement influenced by unnecessarily high costs caused by inefficiency.

Similarly, the safety benefits would include reduction of doses to licensee staff or the public, as well as reduction of risk to workers, the public, or the environment due to operational upsets or accidents.

It is recognized that some costs are difficult to assess. For example, while the health and safety costs of small releases of tritium to a lake may be trivial, there may be costs related to public anxiety, or benefits related to avoidance of such anxiety, that are impossible to evaluate. This is one reason why cost-benefit analysis must be considered as only one tool in the decision-making process.

It is of course necessary to use a relationship between financial costs and benefits in terms of reductions in dose, risk, or negative social or environmental impact. While this is a controversial subject, it must be addressed if a meaningful policy is to be developed.

The group discussed employment as both a benefit and a cost. A decision causing an increase in employment can be perceived as a contributor to job creation and hence as a benefit to society. Conversely, arguments were made regarding the calculated loss of life expectancy associated with each person-hour spent in construction and maintenance activities, resulting in a theoretical safety cost of each person-hour at work. Since these aspects involve judgements about the value to society of employment, and are related to considerations of the safety of people who are not at work, it was concluded that these should not be included in the process, unless work of an unusually hazardous nature is involved.

APPLICATION

A fundamental consideration is that any AECB policy on cost-benefit considerations cannot constrain in any way the decision-making authority of the Board. While it is accepted that costs and benefits should be given appropriate consideration, the Atomic Energy Control Board must retain the authority to establish acceptable standards for safety in the nuclear industry, and to insist that such standards be satisfied. If the costs of meeting reasonable safety standards are too high, the industry is not viable.

The weight given to cost-benefit considerations would clearly depend on the extent to which the costs and benefits associated with a decision can be predicted, and on the level of confidence in the predictions. The level of confidence in risk estimates is dependent on the extent to which predicted frequencies of occurrence of events are based on actual experience or reasonable extrapolations therefrom, and on the extent to which predicted consequences are based on experience or realistic experimental simulations.

For events with very low expected frequencies, it is difficult to obtain a high level of confidence in risk estimates, since experience shows that the real frequencies are often dominated by factors that have not been recognized. However, even with considerable uncertainty in the estimates, cost-benefit considerations may be relevant if the conclusions of the analysis point clearly in one direction.

Some decisions lend themselves better to cost-benefit considerations than others. In the former category would be decisions related to safety improvements for events with a significant and measurable frequency of occurrence. On the other hand, it is difficult to see how cost-benefit could be a factor in decisions on approval of personnel for licensed positions in operating stations. Some decisions, such as setting of dose limits in accordance with international standards, might well be taken regardless of the cost-benefit implications. Equally, urgent decisions to correct serious safety problems would not be delayed by cost-benefit analyses.

A further example would be a decision to require that a probabilistic safety analysis be done for a new plant design. While the costs of doing the analysis are predictable, the benefits could range from zero for a well-designed plant, to the identification of important shortcomings in safety which require correction. It is impossible to know the outcome, and hence the benefits, at the time that the decision to require the analysis is taken.

CONCLUSION

The proposed policy and guide on cost-benefit considerations in regulatory decision-making should furnish a useful tool which would, along with other relevant tools, form part of a sound regulatory decision-making process. Following release of an AECB Consultative Document and appropriate input from stakeholders and other interested parties, it is intended that recommendations be made to the Board on implementation of an AECB policy in this area.

TERMS OF REFERENCE OF COST-BENEFIT WORKING GROUP

- 1) The objective of the group is to produce documented proposals for factoring cost-benefit considerations into regulatory decision-making, including
 - a) identification of types of decisions for which cost-benefit will be a consideration, and types for which it will not,
 - b) a process by which the cost to a licensee of implementing a regulatory requirement can be reliably estimated, including both monetary costs and costs to the safety and health of workers and the public, and implications for the environment,
 - c) a process by which the benefits of implementing a regulatory decision can be reliably estimated, including benefits to the safety and health of workers and the public, and implications for the environment,
 - d) a process by which the costs and benefits of a regulatory decision can be meaningfully compared.
- 2) The group will be made up of people with expertise relevant to the subject. Members will be free to consult with others as they see fit.
- 3) The working group may invite non-members to make presentations at its meetings to obtain a sufficiently wide range of views on the subject.
- 4) The working group will prepare a report containing its proposals, for consideration by the AECB. It is intended that this report be the basis for AECB consultation with stakeholders and other interested parties on the use of cost-benefit considerations in the regulatory decision-making process.
- 5) The group will be chaired by a representative of the Atomic Energy Control Board.