HIGH-LEVEL WASTE PROGRAM MANAGEMENT:

A RATEPAYERS' AND REGULATORY PERSPECTIVE

Edwyna G. Anderson, Commissioner
Michigan Public Service Commission
Chairperson, Nuclear Waste Disposal Subcommittee
National Association of Regulatory Utility Commissioners
Lansing, Michigan 48909

ABSTRACT

The nation's electric utility regulators have joined the effort to enhance the federal project to dispose of high-level nuclear waste. Because all financial support comes from ratepayers, the National Association of Regulatory Utility Commissioners (NARUC), through the mechanism of a subcommittee, seeks to investigate and monitor the federal program to provide to the Congress and the U.S. Department of Energy (DOE) the NARUC's unique expertise. Its views to enhance program management and improve cost control are its central contribution. While conveying no lack of confidence in the federal management, the NARUC is imparting its relevant experience derived from review of nuclear power plant construction and cost control.

Recommendations are made for more cost-effective program direction and views on its management are given. Financial control, public input and cost responsibilities for disposal of defense and commercial wastes are separately identified. Needs for the DOE's heightened insight into and development of the monitored retrievable storage proposal to the Congress are described. Finally, with a warning that there exists a limit to ratepayer funding of this effort, the request is made for Congressional cost-control hearings and for expanded dialogue between the Department of Energy and financially responsible parties.

The development and construction of a high-level nuclear waste disposal facility is as important an issue as any in our time - both from a physical and a fiscal point of view. Creation by the Congress of the Nuclear Waste Fund under Section 302 of the Nuclear Waste Policy Act of 1982 results in the assessment for this project of one mill for each kilowatt-hour of electricity generated by nuclear fuel. Funds are to be used to dispose of all spent fuel from commercial reactors. Despite frequent references to utilities which are called on to collect the money, it is ratepayers who are the source of all these revenues. Recognizing this, the National Association of Regulatory Utility Commissioners (NARUC) established, by unanimous resolution at its 1984 annual meeting, its intention to investigate and monitor on an ongoing basis the national nuclear waste disposal program. To implement the resolution, a standing Subcommittee on Nuclear Waste Disposal was established and represents the views and position of the NARUC as contained in this statement. The Subcommittee seeks to provide critical information to commissioners in all states and to impart to the Congress and the U.S. Department of Energy (DOE) the NARUC's unique expertise in utility regulation so as to enhance the conduct and cost-effectiveness of the federal program.

The NARUC is a quasi-governmental, nonprofit organization founded in 1889. Within our membership are the governmental agencies of the fifty states and the District of Columbia, Puerto Rico and Virgin Islands engaged in the regulation of utilities and motor carriers. Among other duties, the NARUC is the national representative of state commissions responsible for the economic regulation of utilities now operating nuclear-powered electric generating stations. As such, these commissions have been charged under law with the task of ensuring that the power provided by such generating stations is reliable and reasonably priced -- in short, that the public interest is protected.

Public service commissioners across the country have taken note of the Nuclear Waste Policy Act of 1982. This unique, prescriptive law represents to us the embodiment of national policy on one of the most elusive socio-technical problems of modern times, the disposal of high-level nuclear waste.

The driving force behind the NARUC's involvement in this federally-mandated process, aside from the safe and orderly removal of spent reactor fuel from temporary storage at in-state nuclear reactor sites, is the concern for sound fiscal management of the program. Recognizing the technical complexity, the public apprehension, the need for absolute assurance of safety, and the necessity in the public eye for administrative credibility, it is no wonder this program represents a vast financial commitment, now estimated to total $25 to 35 billion. My colleagues and I in commissions across the nation are required by law to judge the fiscal bases for the reimbursement by ratepayers of every penny of nuclear waste program payments made by utilities to date.

We face the prospect of further such reimbursement requests until the program ends some time in the next century. Thus, our central objective must be to assure ratepayers within our regulatory jurisdictions that their funds are being utilized wisely; that the management of this project is no less than excellent; and that, while efforts to minimize total costs are not undertaken in some "penny-wise pound-foolish" way, all necessary controls, decisions and tasks are prudently and cost-effectively designed and carried to completion.

Our attention to this program conveys no lack of confidence in its management by the DOE. Recognizing the cost, scope and *importance of the present* effort, we of the NARUC must note, however, that the present DOE management and program represent only the latest in a long series of such efforts over a

30-year period, each devoted to solving the high-level nuclear waste problem. The fact is readily apparent that program after program for disposal of nuclear waste has been planned, authorized, forces deployed, and then vanished, all without the disposal of a single spent fuel assembly. The NARUC believes it must expend every reasonable effort to contribute to the assurance that this latest, by far most costly, program is the final one, final because it has been successful.

Nuclear Electric Power Plant Construction

In attempting to place in focus the concerns and recommendations of the NARUC on the high-level waste disposal program and to suggest solutions to problems identified by us, it is essential first to understand some of the painful learning experiences that public service commissioners have accumulated from a closely-related activity - nuclear power plant construction review. That this experience carries messages for the waste disposal program rests, to be sure, with the obvious nuclear focus of both arenas, but much more with the fact that this nation is once again moving toward construction of a very expensive first-of-a-kind technically complex nuclear waste facility both proposed and licensed at the federal level. The safety licensing agency, the U.S. Nuclear Regulatory Commission (NRC), has repeatedly stated that cost occupies a lower priority on its agenda. It will be able to make changes in definition of an acceptable final facility throughout and perhaps even beyond the construction program. The constructor, the DOE, while cost-conscious, has a task of taking nuclear waste by 1998; thus, cost may be a secondary concern. Finally, total costs are to be laid at the feet of, or more aptly, in the pockets of ratepayers. Public service commissions are faced with the unenviable task of determining whether all future costs have been discovered and whether, to date, program costs were prudently incurred.

This review should not be understood as an assessment of the nuclear option. The NARUC is painfully aware that the national experience with nuclear power ranges from excellent to abysmal. The popular press has made most citizens aware of the troubled, expensive and checkered past of nuclear electric generation. Whereas nuclear construction costs have soared to levels never imagined by anyone years ago, the even more astounding fact is that despite massive infusions of capital, many nuclear plants will never be finished. Not so noticeable to the public but obvious to public service commissioners is that not all nuclear plant projects have been troubled. Why have apparently similar companies had such different degrees of success? Are there reasonable answers or explanations to the widely-varying results of performing essentially the same job? There are many reasons offered and perhaps all have some relevance. The NRC has some answers to our questions. So, too, do several public service commissions or staffs, including my own in Michigan. So do Forbes Magazine and Secretary of Energy Donald Hodel. They all point to, among the many factors, the level of competence, ability and aggressiveness of project management as a key factor in the success or failure of a project. Evidence from failures points to management --some, not all -- that underestimated the size and scope of the task before them and, as the challenges grew and complexity increased, repeatedly continued to underestimate the challenge and mismanage the projects.

We are sadder, but perhaps wiser, veterans of a process in which gaps in interests and responsibilities among utilities, state and federal regulators and others appeared, remained unresolved and which in the end will reduce efficiency and results, and will be left to public service commissions to overcome.

There are three central conclusions to be drawn from this brief description of a lengthy, complex, arduous, expensive and controversial experience. The first is that, despite all the acknowledged changes, interruptions, diversions and reconsiderations, there are well-managed plants whose overall costs are, on an industry-wide basis within reasonable limits. That proves that the job can be done. Second, excellent management of a project is mandatory if the project is to be successful. And third, constructor and regulators - both state and federal - must coordinate so as not to drag the system down.

I believe these expensively-obtained conclusions are directly and fully applicable to the national nuclear waste disposal process. The effectiveness of nuclear waste program management will assuredly have enormous impact on the cost of the final repository and on the success of the overall disposal program. It is, therefore, the NARUC's intention to do whatever it can to contribute to the understanding of the importance of excellent program management and to take whatever measures it can to help assure that such management is applied to this task. Clearly, we cannot await the close of the program only to be met with untenable financial consequences.

Further, the NARUC seeks to reach out to overcome any jurisdictional, management or regulatory gaps among major partners in the waste program, without interfering with any other entity's purview or prerogative. That means that we will not wait until 1990 or 2010 for whatever price tag may eventually result from the deliberations, disagreements, deals and conclusions of other parties. Our mandated responsibility to our ratepayers requires our full involvement in the assessment of the nuclear waste project to assure that cost-effective decisions are made throughout the program.

NARUC's Current Assessment of the Federal Program

As a result of its evaluations, the NARUC Subcommittee has developed an understanding of the extensive federal program. Together with a carefully maintained position on our role in the disposal process, we have formed a series of opinions on the federal program, its successes and needs for improvements.

There is apparently considerably more effort being devoted to overall disposal program organization and direction than ever before. The DOE has exposed more of its deliberations leading to its decision-making to public review and scrutiny. Much to its credit the DOE has recognized the need to communicate openly, frequently and successfully with the public. The DOE elevated this function to the highest management levels in its organization by creating an Office of Policy and Outreach. Examples of program improvements include demonstrated recognition by the DOE that the goal of the disposal program is the development of an integrated system for fuel handling and disposal, not merely the construction of a repository Also evident is the development of a

cost-consciousness which should spell the beginning of a cost-control mentality, as a series of important decisions and products have been produced. This is vital, as never before were expenses at such a level.

Other results seem to us, however, to suggest that the DOE's good intentions simply have not borne substantial fruit in that not much widespread public acceptance has been achieved. It appears that far greater and more negative response was received than anticipated by the DOE. Two well-known examples are responses to the site selection guidelines and to the draft Environmental Assessments. The NARUC believes that the DOE and the Congress should be very concerned, as are we, with the disparity between the DOE effort at communication and the lack of public response in the form of understanding and acceptance. We have attempted carefully to find our way through the mine fields and other traps to, as emphasized, reach our own conclusions and report our constructive criticism aimed at supporting the program where it is making appropriate progress, and to describe improvements where it should be changed.

Program Cost and Cost Control

There are serious questions as to program costs. Acknowledged by the DOE and others is the fact that the present 1 mill fee may be inadequate to supply sufficient income. If true, present and past ratepayers are not and never will be assessed sufficiently to pay actually incurred disposal costs. This raises a dilemma, since the program may not be based on cost-effective decisionmaking and an increased fee would not be justified. Additionally, the NARUC is also aware that schedule delays and unanticipated activities may raise program costs even higher than the present $25-35 billion figure, with sobering consequences for ratepayers and the nuclear industry.

The NARUC is concerned with the DOE's use of a "mid-case" estimate produced by the U.S. Energy Information Agency of the amount of nuclear electric generation that constitutes the basis for its estimates of ultimate volumes of waste disposal. This "mid-case" estimate presumes a very substantial increase in nuclear plant construction over present nuclear generation including those units now under construction. If a "no-new-orders" future occurs with regard to nuclear power plant construction, the DOE's estimates show program expenses will be reduced by $3 billion, but income would be reduced by $9 billion. Spent fuel inventory would be reduced below 100,000 metric tons of uranium (MTU). If extended burnup were included, it has been estimated inventory might be reduced to 80-85,000 MTU. This raises substantial questions about the need for two repositories along with related cost and planning implications therein.

Estimated costs for a variety of program options are outlined in considerable detail in the DOE's Mission Plan. As has consistently been the case, the cost analysis being used is not for the current program, but rather for a previous one. Further, present cost data does not reflect the DOE decision to incorporate a Monitored Retrievable Storage System (MRS) in the overall system. Although the cost of an MRS has been estimated, as the DOE states, the range of that estimate does not appear to coincide with earlier estimates made by the U.S. Congressional Budget Office. This problem apparently stems from the fact that the DOE makes program decisions prior to obtaining substantive cost data as input to decisionmaking. A correction or refinement may become available in the DOE's proposal to the Congress, but the agency has already decided to recommend MRS construction.

Observations on Program Management

A successful outcome, i.e., the efficient and cost-effective disposal of high-level nuclear waste, is not necessarily guaranteed by the DOE's program. As with nuclear power plant construction and operating programs, redirection, repetition, rework, repairs or redesign in the waste disposal program due to changes in approach and late regulatory decisions or political expediency can produce very negative effects. Cost increases result not only from repeating the same job, but also because all parts of the program are then delayed. That time is money is nowhere more dramatically shown than in nuclear power plant construction. Loss of public confidence also flows from such delays and this result could have the most devastating impact on the nuclear waste program. The history of nuclear plant construction indicates that logical products of public frustrations are rounds of criticism, voluntary or involuntary regulatory response, added safety requirements and more delays assuredly resulting in more costs. Careful, thoughtful planning, full and fair public hearings and excellent waste program management could enable us to avoid a repetition of historical nuclear power plant failures and omissions.

More specifically, let us now turn to aspects of concern of nuclear waste program management.

One troublesome area of program management that touches deeply on lessons learned from nuclear power plant construction is the meeting of established program deadlines. There have been numerous missed deadlines by the Office of Civilian Radioactive Waste Management (OCRWM). These delays have been mentioned and discussed by many reviewers. For example the U.S. General Accounting Office (GAO), in its 1984 annual audit, chastises the DOE for not formally alerting the Congress in a timely way to important missed deadlines. In a description of management plans given in the Mission Plan, the DOE does not lay out this problem; deadlines and compliance dates are not compared.

We are told that there are a variety of reasons deadlines, some imposed by the Congress and some planned by the DOE, have not been met. We acknowledge unanticipated levels of public response, the uniqueness and complexity of certain tasks, and perhaps the unrealistic expectations embodied in the Act. However, it appears that this failure is expected to continue. The DOE now believes it will miss by four years the site characterization and first repository recommendation to the Congress; but it must be recognized that even this prediction is six years in prospect, hence subject to considerable re-evaluation. Furthermore, the predicted date recently slipped nine months in 14 calendar months.

The DOE, perhaps tenuously, still holds to the 1998 date for spent fuel acceptance. The DOE tells us success will require: NRC speed in approving licensing, minimal delay from what is a growing court agenda, and development among the public of extensive credibility in the program. However, these threats to program time cannot be ignored. Viewed in historical context, they are very much the same story

as happened repeatedly over the last 30 years to federal efforts to dispose of high-level waste. The NARUC believes that, considering no discussion is given in the Mission Plan of past experience or acknowledgement of the DOE's missed deadlines, the statement ". . . the current organization and management system reflect the application of lessons learned from the history of the radioactive waste programs," is simply not borne out by the DOE's program results.

As for the DOE management performance, the NARUC sees signs that all may not be well. The present leadership is perhaps the most extensive and overall competent management of any U.S. high-level waste program ever assembled and we recognize that its personnel have been at work a rather short time. However, signs of difficulty are evident. The definitive written source, the revised chapter on management in the Mission Plan, is not insightful in explaining operations and control and, in itself, does not contribute very much confidence to program perceptions. For example, the DOE states the primary monitoring tool to be utilized is the Project Management System, which was released only recently. Deployment and resulting improvements apparently are still in prospect.

Another example of considerable importance to us: the GAO has made a series of findings and recommendations which we believe are very important. Among them is the need for more extensive and consistent audit of program contractors and subcontractors, recognizing that about 85% of all nuclear waste expenditures is by these parties and that the GAO finds that systematic and uniform auditing has not occurred. Yet, DOE has seen fit largely to resist GAO recommendations.

The NARUC is concerned for these reasons, that the DOE program management, certainly not without a salutary sense of mission and an aggressive intent to succeed at this very formidable task, is attempting to resist a great deal of outside criticism. Granted, some advice is distractive and even intentionally counterproductive, but some of it appears to us to be helpful and usable.

The NARUC was pleased to note that OCRWM has contracted with a certified public accounting firm for an independent annual financial audit to "reassure the utilities, the public utility commissioners, and the electricity consumers who ultimately pay most of the fees, that generally accepted accounting principles are observed and that the financial statements and presentations of the OCRWM fairly and accurately present the financial conditions and operations of the Nuclear Waste Fund." The NARUC understands that the DOE has included this review, in part, to place the program on a "business-like basis. Such moves to strengthen the program also bring credibility to it.

Defense Waste

Turning now to defense waste. The Presidential decision to include defense waste in the two mandated nuclear waste repositories is behind us. Now the issue to be addressed in planning to assure safety and fiscal integrity is the inclusion of defense waste in the integrated disposal system in the repository. We are awaiting the results of a DOE decision on its views of the differences between defense waste and civilian waste, and the effects on commitment to the amount of defense waste to be buried and on ensuing cost impacts. We also await a draft formula for defense cost burden and a schedule for payments including interest to be paid.

Under current planning the DOE estimates about 20,000 canisters of defense high-level waste would require disposal. However, governors of the three states involved have, in response to public pressure, called for removal from their states of all high-level nuclear wastes. If their efforts are successful later, the number of canisters could be far higher, and this could have a substantial non-linear impact on the size of the repositories and the funding split between the defense and commercial arenas. A major increase in waste inventory at a much later date could cause program disruptions if not sufficiently anticipated. Clearly, such contingencies should be considered now, long before construction has begun.

The Defense Programs Office of the DOE has negotiated with the Department's Office of Civilian Radioactive Waste Management, in camera, to determine an equitable allocation formula payment for defense waste disposal. The NARUC is concerned with the apparent conflict of interest in one division within the DOE negotiating with another. We are awaiting an agreement, the terms of which will be published in the Federal Register for comment; however, the agent to receive and resolve all recommendations and critique is the DOE itself. The resolution process appears to the NARUC not to be very amenable to outside suggestion, gives no encouragement to thoughtful and concerned parties and no release to skeptics.

A formula for cost sharing has been recommended that the NARUC believes represents an equitable arrangement. Total life-cycle cost of separate repositories for defense and commercial wastes would be compared with the cost of the as-planned combined disposal facility. The cost savings so determined would be shared between the two programs on the same basis that would be employed in supporting the cost of separate facilities. This plan, advanced by the Edison Electric Institute, not only has the value of determining cost responsibility, but also results in identifying the defense and commercial areas as partners in waste generation and as responsible agents for providing disposal expenses. It is thus that both partners should remain overseers and assessors of the entire disposal program to share the cost burden, management oversight and future program cost increases, if any.

For the defense-commercial disposal program, we believe:

- the defense disposal cost sharing discussions should have been immediately opened to input from all interested and financially-responsible parties,
- there should be assurance that cogent advice and criticism on the defense payment proposal are accepted and influence the final decision,
- the cost allocation formula should be based on cost savings resulting from commingling of defense and civilian wastes,
- the Congress should ensure that the defense and commercial programs are to share on a

similar basis, all future overall program cost increases,

- to achieve equity with payments for civilian wastes begun in 1983, payments for defense waste should adequately reflect the delays in their receipt.

Monitored Retrievable Storage

Looking now at the issue of Monitored Retrievable Storage, the Congress has reserved to itself the decision of whether to construct at this time an interim central spent fuel storage unit, referred to in the Act as a Monitored Retrievable Storage Facility (MRS). The NARUC neither supports nor opposes the decision to build an MRS. We are, however, very concerned that the Congress obtain the necessary information on which to come to and maintain a reasonable consensus on the largest program decision since the Act was passed.

Our conclusions are as follows:

(1) The MRS has been a controversial issue for many years and the impending decision no doubt will be a hard-fought one. Inadequate exploration of the advantages and disadvantages of the option could only confuse the issue, delay the Congress's decision, and heighten public apprehension and anxiety.

(2) A decision to build the MRS will negate other integrated system decisions, require new conclusions, and have cost, fuel acceptance schedule and safety ramifications that will reach throughout the waste disposal program. The DOE support and enthusiasm for the MRS option must not diminish its independence, thoroughness, dispassionateness or comprehensiveness.

(3) In all integrated system analyses, it must be recognized that ratepayer financial responsibility encompasses not only the federal portion of the disposal process, but the at-reactor storage portion as well. Therefore, in determining overall disposal costs, analyses must include evaluation of both portions.

(4) A decision to build an MRS will add significantly to the burden on the DOE management and staff and should be planned for well in advance. There should be no dissipation of DOE or contractor strength in pursuing repository development. There should be no deliberate or inadvertent abandonment of the task of final disposal in the repository.

In summary, the NARUC's review of and conclusions on the DOE program are still under development and are expected to so continue in the foreseeable future. Our present observations are made in the hopes of focusing attention on any necessary corrective response. We note that the federal disposal effort is more than 30-years old, the present program is more than two-years old, and the DOE currently is expending funds at the rate of about one-half billion dollars per year. We conclude that it is too early to decide if the federal nuclear waste disposal program will be successful, i.e., that it will reach the goal of safe, timely and cost-effective disposal of all the nation's spent reactor fuel and defense wastes.

We also conclude that the high-level nuclear waste disposal program is in some difficulty - a conclusion we are not pleased to arrive at - but unless matters are attended to, we know from experience the result could be added costs and delays which threaten the program or at least its credibility.

The DOE schedule for its overall program has been released. The question raised by many observers is whether it is realistic. There is a crucial need for a plan which has wide acceptance by the DOE, observers and critics as a vehicle that can deliver a conservative, predictable and successful program on a reasonably certain schedule -- one that utilities can confidently employ.

We believe the DOE should make immediate changes to ensure that cost becomes a major input to program and system decisions. We are on record with concern over the total program cost and have warned the Congress that considering equity and ability to pay, there simply is a limit to ratepayer funding for this project. We have called for Congressional hearings on cost control because of our serious interest in control of this enormous, expensive, decades-long mandated project.

Above all we believe the DOE must improve its ability to assess present difficulties, be encouraged to establish a cooperative solution-oriented dialogue among itself, its responsible critics and interested involved institutions and make the necessary revisions in timely, cost-effective fashion.