Executive Summary

On April 9, 1999, the Low-Level Radioactive Waste Working Group of the National Conference of State Legislatures held a summit meeting on low-level radioactive waste policy. The meeting was held in conjunction with the NCSL's spring 1999 Assembly on State Issues. Site development programs have been halted, suspended, postponed, or otherwise rendered dormant, in California, Connecticut, Illinois, Massachusetts, Michigan, Nebraska, New Jersey, North Carolina, Ohio, Pennsylvania, and Texas. The failure of all these efforts has given rise to frequent suggestions for alternatives to the dilemma of siting new disposal facilities. However, these suggestions and innovations have never been openly and frankly discussed because they were seen as potentially disruptive to state efforts to site new disposal facilities. NCSL's impetus for sponsoring this summit was to provide that opportunity for frank, open discussion of the advantages and disadvantages of four frequently touted alternatives. . This report is the summary of the wide range of views from stakeholders, experts, and other interested persons on current low-level radioactive waste policy and four potential policy options.

The NCSL's impetus for sponsoring the meeting was identified as a growing concern that the current national policy for providing LLW disposal capability was not yielding the desired results. The meeting began with brief introductory presentations that provided background information on the issues to be discussed. Other topics covered in the meeting were: (1) a background paper explaining how the current policies were developed, (2) a status report from the U.S. General Accounting Office on Congressional interest in commercial low-level waste management policy issues, (3) a panel discussion on the barriers to implementing the current policy, and (4) an interactive dialog on four policy alternatives that have been proposed as potential improvements to the current policy.

Because of limited meeting time, summit participants were provided with a briefing paper prepared by the National Low-Level Waste Management Program prior to the meeting. A staff member from the National Program presented the highlights of the paper that included a summary of the history of legislation and actions that affected the national strategy for LLW management and a brief summary of the status of state activities. The paper is available from the National Low-Level Waste Management Program or the National Conference of State Legislatures. The presenter closed by stating that in considering a policy that is national in scope, each state and compact is forced to start from circumstances that are uniquely related to the status of its own project and its existing commitments. Where significant investments have already been made toward the establishment of a disposal facility, and there remains a prospect of success, it is more difficult to abandon the project in favor of other options. Because of this, it is likely that local circumstances will lead states to different conclusions.

A member from the General Accounting Office summarized the intent, content, and schedule for GAO's report on LLW disposal. The report will not draw any conclusions about the best approach for LLW management or disposal. Rather, it is intended to provide a balanced discussion of the challenges faced by states in their efforts to site disposal facilities. GAO's report will be issued in late July.

The panel discussion was intended to serve as an "ice-breaker" for the remainder of the meeting by identifying some of the problems that have arisen in the various state and compact efforts to develop new LLW disposal capacity. It was *not* designed to produce a thorough listing of all perceived fallacies of the current national policy. Most panelists and other designated speakers addressed specific topics of interest regarding the successes and failures of state and compact programs, without attempting to cover all of the problems that have been encountered.

A primary purpose of the meeting was to elicit testimony from legislators, LLW management experts, and stakeholders that will assist the NCSL's LLW Working Group in examining four specific policy options

for future LLW disposal policy. The four options have been frequently touted by proponents, but have never been thoroughly evaluated and discussed by any organization. The options were not intended to be discrete or mutually exclusive. Multiple variations of each option are possible, and specific features of multiple options could be combined. Because variations of options may be used to mitigate undesirable features, such variations could have greater appeal than any of the four options as defined.

The reader is encouraged to read beyond this executive summary for background discussions separate from those that address options and for more thorough understanding of the arguments for and against each option.

SUMMARY OF POLICY OPTION #1:

DISSOLVE THE COMPACTS TO RESTORE MARKET INCENTIVES

Declining waste volumes and small regional compacts have reduced incentives for private companies to develop new disposal facilities on their own in response to market demand. If compacts were dissolved, this would result in a single large market region in which private developers could meet the demand for disposal. Each compact includes provisions that describe conditions under which states can withdraw. Compacts could be dissolved in either of two ways: through withdrawal legislation that is enacted by individual states, or through federal legislation that repeals congressional consent to an entire compact.

Arguments For

Private developers have had greater success than state agencies in winning local support for new waste management and disposal facilities. State agencies face more procedural constraints in siting radioactive waste facilities than do private sector developers.

Private development using investment capital, rather than state or waste generator funds, would avoid the complex funding issues that have arisen among compact member states.

A free market system would be better able to determine an economically suitable number of disposal facilities through competitive forces, without the artificial boundary constraints of the state/compact system.

If private companies take over facility siting and development, states would be able to focus on their regulatory roles, and avoid a perceived conflict of interest resulting from combined developer and regulator roles.

Arguments Against

If this option eliminates the current state/compact authority to exclude waste from outside a defined region, host states are likely to erect additional administrative barriers to siting new facilities; furthermore states that currently host disposal facilities may take action to curtail their operation.

If this option were only partially implemented (i.e., only a few compacts were dissolved), the resulting market region may not be large enough to provide adequate economic incentives for private developers.

If the private sector does not view low-level radioactive waste disposal as a potentially profitable venture, the private sector cannot be relied upon to provide this service without government intervention.

Private sector development may not satisfy the initial objective of "equity" among states, since an "equitable" geographic dispersion of disposal sites cannot be guaranteed.

Because the life cycle of a LLW disposal facility entails a century or more of institutional control, development and operation of such facilities is more suitable for public agencies.

State collaboration in siting decisions is unavoidable, because in most states low-level waste disposal sites are required to be located on state-owned land.

SUMMARY OF POLICY OPTION #2:

FEDERAL DISPOSAL OF COMMERCIAL LOW-LEVEL RADIOACTIVE WASTE

In the 1950s, the Atomic Energy Commission made disposal capacity available at its installations. While the Low-Level Radioactive Waste Policy Amendments Act states that the federal government is responsible for disposal of low-level radioactive waste generated by certain weapons-related activities, it does not specifically preclude the federal government from providing disposal capacity for commercial waste. However, because it is DOE's policy not to dispose of commercially generated waste, federal legislation likely would be needed to implement this policy option.

Arguments For

The DOE already operates several waste disposal facilities that could be expanded to accommodate commercial low-level waste.

The volume of commercial low-level waste is small in comparison to the volume of DOE waste that will require disposal.

A single agency would have responsibility, thus avoiding the need for many different jurisdictions to implement controversial siting programs.

Budget concerns at many DOE sites may increase state willingness to negotiate trade-offs with DOE, and commercial low-level waste disposal could be one of the bargaining points.

With sufficient time, resolve, and money, DOE has achieved a few successes in overcoming opposition to controversial programs (e.g., opening of the Waste Isolation Pilot Plant, receipt of spent fuel from foreign research reactors).

Arguments Against

DOE disposal facilities are located within state borders, and these states would be likely to protest, and perhaps prevent, the importation of additional waste for disposal.

State opposition would be intensified if DOE's waste disposal activities were less subject to environmental oversight than a state or private facility.

The host states of the most likely DOE disposal facilities include the same states that pressed for federal relief in 1980 for "equity" reasons (i.e., Nevada, South Carolina, and Washington).

If DOE needed to establish new disposal sites, it would be at least as difficult for DOE as it is for states.

DOE would be in competition with the current privately operated disposal facilities, unless these facilities were transferred to DOE, or the DOE facilities were privatized and externally regulated.

Waste generators might be reluctant to use DOE facilities where DOE and commercial waste are commingled, unless liability issues are resolved through legislation.

SUMMARY OF POLICY OPTION #3:

ALLOW THE COMPACT SYSTEM TO SUCCEED

While shortcomings have been noted in the current system of waste compacts, the states and compacts possess the authority and flexibility to address and correct problems. For example, due to small volumes of waste, the Rocky Mountain Compact entered into a contract with the Northwest Compact to provide its waste generators access to the disposal facility in that region. Existing compacts also can negotiate with the currently operating disposal facilities to help ensure long-term access to these facilities. If no changes are made to the current system, waste generators, site developers, and state and compact officials can operate within the framework to eventually achieve stable access to disposal.

Arguments For

As long as Barnwell and Envirocare remain available to accept waste, there is no crisis that requires a legislative fix.

Compacts provide official negotiating entities through which access to existing disposal facilities can be negotiated.

If access to current disposal facilities is disrupted, compacts provide a possible mechanism to address any problems that result.

Small compacts have the flexibility to enter into consolidation agreements with other compacts, if they cannot justify their own disposal facilities (e.g., the agreement between the Rocky Mountain Compact and the Northwest Compact).

Arguments Against

The compact system has already demonstrated an inability to bring new disposal facilities online.

Compact regions are not needed to negotiate access arrangements with the currently operating disposal facilities.

The existence of many small compact regions is a deterrent to the development of new disposal capacity, because separate disposal facilities for each compact would, in many cases, lack sufficient waste receipts for economical disposal operations.

SUMMARY OF POLICY OPTION #4:

RESTORE FEDERAL INCENTIVES FOR SITE DEVELOPMENT

With expiration of the site development milestones in federal law, and with the striking of the "take title" provision by the U.S. Supreme Court, there no longer are adequate incentives for states to establish new disposal facilities. The federal government could establish new incentives for compacts to develop disposal facilities or otherwise provide for disposal. These incentives could be in the form of monetary rewards for achieving specific milestones toward site development. Congress also could conditionally withdraw its consent to compacts that are unable to provide for disposal after some date-certain in the future (10 years?). This would provide a final deadline for states and compacts to provide for disposal. In addition, federal legislation could explicitly prohibit arbitrary state and local impediments to siting and licensing new facilities.

Arguments For

The earlier federal milestones provided critical incentives for states to develop new disposal sites; these incentives no longer exist.

The compact system would be given an additional opportunity to succeed, and this opportunity would be reinforced by new incentives.

New milestones and associated schedules could instill a new focus on objectives, and could reduce wasted energy on debating policy options.

Arguments Against

Because the earlier federal incentives failed to satisfy the objective, there is little reason to believe that new incentives would have greater success.

Although many states and compacts met most of the earlier milestones, they still failed to establish new disposal sites.

States and compacts may be unwilling to meet a new set of milestones unless and until the need for new disposal facilities becomes more crucial.

Another round of costly and unsuccessful attempts to site new facilities would be a waste of resources.

Incentives, either beneficial or punitive, that are strong enough to spur action are also those that are least likely to be enacted into federal law.

Introduction

With the demise of state siting programs has come recognition of the need for an exchange of ideas on policy options

The free exchange of ideas and opinions regarding improvements to the national strategy for low-level radioactive waste management has not always been welcome among the various stakeholder groups. For years, suggestions and innovations, apart from their actual merits, were seen by many as being potentially disruptive to the momentum of state efforts to develop new disposal facilities. With the demise of disposal facility siting and development programs in most states and regional compacts, we are entering a period of nuclear waste *glasnost*, in which there is an increased recognition of the need for forums in which stakeholders, experts, and interested individuals can exchange frank opinions in a professional and non-confrontational manner.

On April 9, 1999, the Low-Level Radioactive Waste Working Group of the National Conference of State Legislatures (NCSL) held a summit meeting on low-level radioactive waste policy. The meeting was held in conjunction with the NCSL's Spring 1999 Assembly on State Issues. The meeting elicited a wide range of views from stakeholders, experts, and other interested persons on current low-level radioactive waste policy and policy options. The meeting consisted of: (1) a background paper explaining how the current policies were developed, (2) a status report from the U.S. General Accounting Office on Congressional interest in commercial low-level waste management policy issues, (3) a panel discussion on the barriers to implementing the current policy, and (4) an interactive dialog on policy alternatives that have been proposed as potential improvements to the current policy.

The NCSL's LLW Working Group saw the summit as a starting point from which to narrow the range of differences among those advocating different viewpoints

The NCSL's LLW Working Group saw the summit meeting as a starting point from which to narrow the range of differences among those who have advocated a variety of viewpoints. In this respect, the meeting succeeded in meeting the objective. Contrary to published reports, the meeting's objective was *not* to attempt to reach a consensus on a policy direction. Instead, the objective was to provide legislators and decision-makers with a balanced discussion of the wide-ranging viewpoints and options, so that they can make informed choices concerning the future direction of LLW management.

Discussions were centered on four optional strategies that are often proposed.

The key portion of the meeting was devoted to discussing four optional strategies that have frequently been touted by proponents, but have not been thoroughly evaluated with regard to their probable consequences. The NCSL's LLW Working Group believes in two key principles regarding potential changes in the nation's LLW management strategy: (1) the current strategy should not be abandoned without providing a replacement strategy that has been thoroughly evaluated and found likely to have significantly

Any strategy changes will require thorough evaluation with full utilization of current expertise in LLW issues.

improved chances for success, and (2) the need for a strategy change should be determined with full utilization of existing expertise within the LLW management community. Therefore, the LLW Working Group viewed this meeting and this report as an initial step toward providing decision-makers with a balanced discussion of the issues associated with potential changes in LLW management strategy.

The meeting benefited from a broad cross-section of LLW experts having diverse opinions.

The NCSL staff promoted diversity of opinion among meeting attendees to elicit thorough identification of potential issues. They sent specific invitations to numerous individuals known to have expertise (and divergent viewpoints) on low-level waste management issues; in addition, the meeting was advertised as being open to any other interested persons. In addition to several state legislators, the meeting was attended by representatives of state and federal agencies, waste generators, disposal facility operators, trade associations, compact commissions, and a variety of other interested groups. Meeting attendees are listed in Appendix A of this report. While many legislators were unable to attend the summit meeting because of state legislative commitments, this report was reviewed by all LLW Working Group members and their comments are included as part of the report.

Background on the Issue

In the past, when disposal capacity was provided by the private sector in response to market demand, the role of government was limited to regulating these facilities. When, for a number of reasons, disposal capacity became limited or uncertain, state governments stepped in to assume a more direct role as service providers did.

Although disposal capacity is available today to most waste generators, there is concern over long-term stability

Today, disposal capacity for low-level radioactive waste is available to waste generators in all states except North Carolina. But policy makers and waste generators are concerned about the long-term stability of access to the available low-level radioactive waste disposal facilities. The sharp differences in opinion among South Carolina lawmakers regarding the future of the Barnwell County disposal facility are well known. In the past decade, the Barnwell facility has been closed and then reopened to waste generators in most states.

Opinions differ on the possible impacts of a lack of disposal capacity. Most people agree that the industries and organizations that generate low-level radioactive waste byproducts can weather short-term disruptions in disposal access. Larger generators, especially nuclear power reactors, can store waste onsite for extended periods of time. At greater risk are medium-sized or small organizations that are cut off from access to disposal. In these cases, such organizations must divert resources to interim waste storage,

or discontinue the manufacturing, research, diagnostic, or medical treatment activities that result in the production of such waste.

The Current Policy

Current national policy makes states responsible for low-level radioactive waste disposal.

From the beginning, the federal government, the states, and the private sector have shared in efforts to provide stable and efficient access to disposal capacity for commercially generated low-level radioactive waste. Nevertheless, states remain ultimately responsible for protecting their citizens from any negative consequences of the potential lack of access to disposal capacity. Forty-four states have entered into ten interstate low-level radioactive waste management compacts that have been approved by the U.S. Congress. The implementing legislation for these compacts contains a complex web of obligations and commitments related to the establishment of new disposal facilities. On several occasions, these commitments have been, or have threatened to be, the subject of lawsuits among the states.

Status of Implementing the Current Policy

Most state programs to site and develop new disposal facilities have been suspended, postponed, or significantly slowed. The problem-definition portion of the summit meeting included a panel discussion of "what went wrong" with attempts to establish new LLW disposal facilities. The panel consisted of state officials and representatives of industry and trade organizations.

Some of the successes and failures of the current national strategy were identified early in the meeting.

This segment of the meeting was intended to be an "ice-breaker" for the remainder of the meeting, in which specific policy options would be discussed. It was *not* designed to produce a thorough identification of all perceived fallacies of the current national policy on commercial LLW disposal. In their opening remarks, most panelists and other designated speakers focused on specific details regarding the current status of state and compact programs, without dwelling on how the current status differs from earlier expectations, and the reasons for these differences. Therefore, as expected, there is no direct correlation between the points made in this segment of the meeting and subsequent comments on specific policy options.

Early during the panel discussion, panel members and other presenters were encouraged to acknowledge what has gone *right* since the enactment of federal legislation that encourages states to develop disposal capacity. One panelist suggested that today's improved waste treatment technologies provide a much safer waste form than that which was disposed in the past. He asserted that improved waste handling and processing resulted from the federal

legislation that in turn has yielded significant benefits to the organizations and industries that generate the waste.

It was also noted, however, that improvements in waste form and treatment methods came about, in part, because of regulatory reforms by operating sites and proposed sites and were not directly associated with the federal laws that encouraged states to develop new disposal sites. Initiatives by the states of Nevada, South Carolina and Washington and the U.S. Nuclear Regulatory Commission to overhaul the disposal and transportation regulations happened at the same time states were beginning efforts to form compact regions. Still other participants suggested improvements by waste generators in waste forms and treatment methods were motivated largely by sharp increases in disposal costs throughout the 1980's. These increased costs were a byproduct of the new regulatory requirements and new state fees and taxes, as well as reduced competition among the remaining disposal sites.

More than one panelist pointed to the poor record in *licensing* proposed disposal sites. Approximately 14 candidate site locations have been selected (depending on one's definition of a candidate site), and 5 license applications have been submitted to state agencies for approval. Only one license application has been approved.

Many of the compacts that have selected candidate sites have encountered problems in obtaining approval of license applications.

A panelist observed the lack of agreed-upon standards among developers and regulators for "reasonable assurance." Radioactive waste disposal regulations provide, for the most part, only broad qualitative guidance. The rules leave wide discretion to individual regulators in deciding whether information and data in an application provide reasonable assurance that the facility will perform as promised. The resulting give and take between the applicant and licensing officials can drag a licensing process out for years, depending on the clarity of guidance provided by the licensing agency, the responsiveness of the applicant, and the quality of communications between the parties.

One panelist expressed the view that disposal facility license applications had been rejected for political, and not technical, reasons. It is often said that there is an uneven playing field among the states in their willingness to approve applications for controversial nuclear facilities.

One participant expressed concern about including waste with long-lived radionuclides in near-surface disposal facilities. The disposal regulations specify that institutional control of a closed facility need not exceed 100 years, while the half-lives of some radionuclides runs into the thousands or millions of years.

In a radioactive universe, it would not be practical to separate out every long-lived radioactive atom found in waste. Instead, the disposal regulations specify limits on the concentrations of long-lived radionuclides that may be deposited in near-surface disposal facilities. Whether the participant's concern is resolvable or not, the popular perception that inappropriate materials are being deposited in near surface disposal facilities does illustrate a communications challenge that has faced every jurisdiction that has attempted to site a near-surface disposal facility for low-level radioactive waste.

The states of Texas and Ohio, among others, are moving toward assured isolation as an alternative to traditional disposal

One panelist introduced into the discussion the concept of "assured isolation" as an alternative to traditional disposal. Assured isolation was introduced in 1995 as extension of above-grade, engineered disposal. Because institutional control of a closed disposal site is required for at least 100 years, developers of the assured isolation concept proposed leaving the interior of the facility accessible during this extended institutional control period. Providing for direct inspection of waste packages, they reasoned, would obviate groundwater monitoring around the perimeter of the site. It would also give facility operators and regulators long-term data on the actual performance of the engineered barriers containing the waste. This data should provide future regulators a basis for concluding whether or not the facility alone (irrespective of geologic conditions) could continue to isolate the waste without the need for ongoing institutional controls. Assured isolation, according to its proponents, provides adequate isolation of the waste without foreclosing options for future generations.

One participant commented that there were significant technical problems with assured isolation, but did not go into detail. One possible drawback that was mentioned was the difficulty of estimating how much money would need to be collected today in order to ensure that enough funds are available in the future to address the range of possible contingencies (removal of the waste, facility closure, etc.).

The failure of the federal laws may be due to poor implementation rather than faulty policy.

The Low-Level Radioactive Waste Policy Act provides only a broad framework that invites states to form compacts. Compacts and their host states have broad discretion on how to achieve their objectives. One panelist cautioned that there is danger in altering the policy if the policy is not the root cause of the problem. He suggested that the apparent failure of the federal laws might be due to poor implementation by the states and compacts. He pointed to California's successful efforts to involve the public in the site selection process, a process that had been praised by the California League of Women Voters.

Where Do We Go From Here? An Analysis of Policy Options

The key portion of the meeting was the discussion of four policy options that have often been suggested.

A large portion of the summit meeting was devoted to discussion of four distinct potential policy directions. These are:

1. Dissolve compact regions in order to restore market demand as an incentive for the private sector to develop new disposal capacity.
2. Enact legislation calling upon the federal government to dispose of commercial low-level radioactive waste.
3. Allow additional time for the current compact system to resolve problems.
4. Restore federal incentives for states and compacts to provide for disposal.

Policy Option 1: Restore Market Incentives by Dissolving Compact Regions

Dividing the nation into compacts may have reduced incentives for private companies to address disposal needs.

Dividing the nation into small disposal regions may have reduced incentives for private companies to address the demand for disposal. This is because waste volumes have declined to the point where the expected return does not justify the investment risk. In particular, one of the current LLW disposal site operators has strongly encouraged the repeal of federal laws that allow states and compacts to restrict the market areas for LLW disposal services.

Compacts could be dissolved in two ways: (1) by federal legislation repealing its consent to the compacts, or (2) by individual state legislation withdrawing membership from the compacts, one state at a time until no members remain.

There was brief discussion of which route toward compact dissolution, if any was more likely to happen. One participant doubted the feasibility of passing federal legislation to repeal congressional consent. If the compact system were to dissolve, he suggested that it would be far more likely to be as a result of individual states withdrawing, in accordance with the provisions of their compact agreements. (On May 12, 1999, Nebraska enacted legislation withdrawing from the Central States Compact. Previously, South Carolina and Wyoming withdrew from congressionally approved compacts.) Another participant disagreed, stating that it would be easier to get Congress to enact a bill withdrawing its consent than to accomplish the same task in multiple state legislatures.

Speaking in favor of a market approach to developing disposal sites, one participant noted that governments may do a good job of regulating, but seldom are good at implementing projects such as this. Another speaker agreed, pointing out that state agencies face more procedural hurdles in siting radioactive waste facilities than

Unlike government agencies, private developers are able to make discrete contacts with local community leaders before targeting prospective locations

do private companies. It has long been noted, for example, that private sector developers can make discrete contacts with local community leaders to assess the likelihood of community acceptance *before* targeting prospective locations. In general, they also have more leeway to negotiate delicate terms of acceptance than do their state government counterparts, who often operate under "sunshine laws" and lack authority to close the deal.

Similarly, a participant pointed out that private companies are in a better position to take advantage of development opportunities. In the case of Envirocare of Utah, for example, a private company began a low-level radioactive waste disposal operation by starting with an existing hazardous waste disposal site that had community support. State siting processes, by contrast, have had to adhere to more rigid procedural constraints.

A private sector approach may be more likely to result in an economically supportable number of disposal facilities.

Another meeting participant, also in support of the private sector approach, noted that a market system could determine a supportable number of disposal facilities through competitive forces, without the need for government planning. He also observed that leaving the development to private companies would free the state to focus on its role as regulator. This might avoid the perception of a conflict of interest inherent in the state's role as both developer and regulator. A private sector approach could also eliminate turmoil between compact commissions and their designated host states.

Several participants spoke against this kind of market approach to developing new low-level radioactive waste disposal facilities. One pointed out that the private sector would only provide for disposal as long as it was profitable. If disposal became unprofitable, then there would be no one to provide it unless government stepped back into the void.

It was clear that the meeting attendees had differing views on the meaning of "equity" and the feasibility of achieving it.

A few participants doubted that an open market would allow for "equity" in low-level radioactive waste disposal. It became clear, however, that the participants had differing views on the meaning of equity, with one conceding that its meaning "was in the eye of the beholder."

The notion of equity underpinning the federal legislation held that disposal responsibilities for low-level radioactive waste should be shared relatively equally among regions or among states. This inferred some rough geographical dispersion of facilities.

Because of sharply lowered waste volumes and lowered estimates of the number of disposal facilities that are needed, this approach to achieving equity has been largely replaced by one based on "willingness to pay." South Carolina, for example, has acceded to accept waste from others in exchange for fees that might seem

usurious under different circumstances. It is not mandatory that such fees be paid, since waste generators are not compelled to ship waste to South Carolina for disposal.

A meeting participant reminded the group that the concept of interstate equity is not unique to low-level radioactive waste disposal. He noted especially the current controversy among states in the importation and exportation of solid wastes for disposal. The comment suggests a possible benefit in evaluating equity among the states based on aggregate waste management burdens, rather than to conduct separate assessments of equity for each subtype of waste management facility.

Compacts might still have a role within a market system by negotiating access agreements on behalf of their generators

Finally, the possible role of compact organizations as agents for negotiating access agreements on behalf of their generators was discussed. One participant acknowledged that compact organizations were well placed to assume such a role. He cautioned, though, that waste generators might balk at being forced to use a specific facility under terms not to their liking. Another participant questioned why generators could not act on their own behalf in arranging access to operating disposal facilities.

Option 2: Federal Disposal of Commercial Low-Level Radioactive Waste

Some participants believe that federal (DOE) disposal of commercial LLW might be more likely to succeed than the current system.

A publisher who has advocated such an approach as an alternative to state efforts to build new disposal sites initiated the discussion of the federal disposal option. His approach for implementing this policy alternative was quite specific: The traditional notion of geographic equity (see discussion above) would be replaced with one in which incentives were used to compensate the host state or community for any real or perceived burdens of accepting commercial waste. The compact organizations would remain intact to negotiate with the federal disposal sites for the best disposal price. The proponent of this option suggested that compacts would be able to negotiate a better price because they could guarantee larger volumes to the disposal operator.

The DOE system appears to have adequate capacity.

One advantage of federal disposal is that sufficient disposal capacity appears to be available at Department of Energy installations. The speaker cited *DOE's Current and Planned Low-Level Radioactive Waste Capacity Report* as projecting adequate disposal capacity through the year 2070.

Another participant questioned the projected disposal capacity in the DOE report identified above said he believed that DOE's current waste acceptance criteria are more restrictive and might exclude some amount of commercially generated waste.

The incentives for host states at DOE sites to accept commercial LLW would be a key factor in the likelihood of success.

A participant noted that, as DOE sites compete for new projects, there might be increased interest in accepting commercial waste, especially if other "quid pro quos" (incentives) were offered. He also noted that DOE has recently disposed of several million cubic feet of waste at commercial facilities, whereas the incremental commercial LLW burden on DOE facilities would only be about 200,000 cubic feet per year.

A participant expressed the opinion that states in which DOE disposal facilities are located would likely not volunteer their use for commercial waste, regardless of any incentives that might be offered. Congressional action would probably be needed in order to implement federal disposal of commercial waste.

Future waste liability issues could be a concern regarding co-mingling of DOE and commercial waste.

One commenter pointed out that there may be there may be potential liability issues associated with co-mingling commercial waste with DOE waste. Some waste generators may be reluctant to use DOE facilities unless these liability issues are resolved through legislation.

There appeared to be general agreement that DOE disposal of commercial waste would probably be accompanied by external regulation by the Nuclear Regulation Commission. Although DOE might object to external regulation of its disposal facilities, the speaker observed that DOE already deals extensively with state regulators at each of its sites. One participant suggested that the DOE disposal sites should be privatized if they open to commercial waste, because commercial operators are more familiar with handling the commercially generated waste and with external regulation.

The DOE disposal option would probably include arrangements for external regulation.

On the subject of external regulation, conflicting opinions were expressed regarding whether existing DOE sites could be licensed. One potential issue would be the problem of "masking," or the inability to properly model radionuclide movement from DOE sites due to the complexity introduced by nearby nuclear facilities.

A participant commented on longstanding efforts within South Carolina to close the Barnwell commercial disposal facility. He indicated that the state would be unlikely to accept disposal of the same waste at the nearby Savannah River Site after such a protracted political battle. It was also emphasized that the Northwest Compact, which provides regional disposal at a facility located in Washington State, has consistently expressed satisfaction with the current arrangement and would resist federal disposal. Another participant expressed concern over the transitional nature of federal decisionmaking. One administration might support federal disposal only to be replaced with another one committed to

Decisionmaking changes with administrations.

reversing the decision.

One speaker noted that there have been some federal successes, such as the opening of the Waste Isolation Pilot Plant in New Mexico. This project succeeded because the federal government was willing to go to court to defend the project against those who didn't want it done. Another example is the shipment of foreign fuel to DOE facilities. Last summer, over objections of California state officials, a California port was used to import foreign fuel to Idaho.

If the Federal disposal sites set standard fee schedules and acceptance requirements, there would not be a need for compacts to negotiate access

Regarding the specific approach to federal disposal that was presented by the initial speaker, one participant questioned why compact organizations would be needed in order to negotiate access to such facilities. He thought it would be more feasible for the federal facilities simply to establish waste acceptance criteria and standard fee structures. Individual customers would then be free to use or not use the facilities as they saw fit, without the need for additional compact bureaucracy.

Option 3: Let the Compact System Succeed

Despite its lack of successes to date, the compact system may yet be able to perform as intended.

This option proceeds from the assumption that states and compacts have all the flexibility they need to bring about stable and affordable disposal capacity. Like the disposal arrangement between the Northwest Compact and the Rocky Mountain Compact, small compacts could enter into agreements to consolidate their efforts, if they believe it is not feasible to establish their own facilities.

States and compacts unlikely to restart development efforts if access is denied.

Because waste generators currently have access to disposal, several speakers said that there is no crisis that demands immediate attention. It was suggested, however, that the compact organizations should be retained as a "back-up," should access to disposal capacity be disrupted in the future. However, one speaker expressed the opinion that those states and compacts that have stopped their site development efforts would be unlikely to restart them, even if access to current disposal sites were closed.

State development and operation of disposal facilities is perceived as facilitating state government control.

One participant indicated that many radioactive materials regulators prefer the compact approach because they believe it provides an added measure of control over the development and operation of new disposal facilities. Arguably, the same state or federal regulatory oversight would apply, whether a private company or a government agency operates a disposal facility. Development of new disposal sites by state agencies, however, gives the government a more direct role in the operational aspects of disposal. This may be especially important as it relates to long term institutional control of, and liability for, closed facilities.

In most states, low-level radioactive waste disposal sites are required to be located on government-owned land. This provision seems to require state support for a proposed disposal facility, whether or not a state agency or a private company is promoting it. A possible disadvantage, as noted earlier, is the possible perception of a conflict of interest in one state agency regulating another.

One participant criticized the optimistic title given to this option, "Let the Compact System Succeed," reminding meeting participants of the poor track record thus far.

Option 4: Restore Federal Incentives for Site Development

Federal milestones between 1986 and 1993 provided incentives for states to develop new disposal facilities. States meeting the milestones received payments from an escrow account that consisted of disposal surcharges paid by waste generators. Successful states also avoided the possibility of losing access to the operating disposal facilities during the interim access period, 1986 through 1992. Since the end of the milestones, state programs have been halted, suspended, or postponed.

The final option entails maintaining the compact system, but providing significant new Federal incentives for site development.

There was very limited support for this option among summit participants. According to one, incentives (or disincentives) strong enough to spur action are also the ones least likely to be enacted into Federal law. If such incentives are to work, one participant suggested that they be targeted to the local level. Another participant emphasized that incentives must be positive (rather than punitive) and that they must be truly meaningful and important to the local community.

Federal incentives strong enough to spur action are also the ones least likely to be approved by Congress

It was suggested that a draconian form of disincentive might be for the federal government to pass legislation withdrawing its consent to compacts unable to provide for disposal at some "date certain" in the future. This suggestion by a meeting participant met with skepticism in the form of silence. Since federal incentives had not achieved the objective in the previous two decades there is little reason to believe that they would work today. Another added that the state of Michigan had been threatened regularly with loss of access by the three sited states, went five years without access to disposal, and still did not embark on a siting program. The lesson is that onerous penalties do not always spur action.

Federal incentives were ineffective in the current legislative approach to providing LLW disposal capability.

A Combination of Policy Options

Throughout the discussion, meeting participants observed that the four policy options are not mutually exclusive. For example, some meeting participants did not view a private sector approach to low-level radioactive waste disposal as incompatible with the compact system. In California, for example, it was noted that the state had allowed a private company to site and develop the proposed disposal facility for the Southwestern Compact states (as did the Central States Compact).

A combination of features from multiple options may be more palatable than any of the four options.

It was observed, moreover, that the compact regions had not, in fact, exercised their powers to limit the exportation of waste to facilities in South Carolina and Utah. Though true, another participant cautioned that the mere potential for limiting the free movement of waste might act as a deterrent to private development of new facilities.

Another combination of options that was mentioned involves the use of federal disposal sites in the short run until states are able to provide disposal facilities for the long run. California officials and industry representatives, for example, have urged the federal government to accept commercial waste from the Southwestern Compact region until such time as it is able to transfer the land to the state for the region's proposed disposal facility.

The Next Steps

As was expected, the summit meeting did not result in a consensus position on what changes, if any, should be made to the current national strategy for developing new LLW disposal capability. In fact, several participants appeared to believe that no changes are needed.

Although firm conclusions on policy issues have yet to be formulated, the meeting succeeded in initiating frank and open discussions of policy options by a diverse cross-section of personnel having expertise in, and experience with, commercial LLW management issues. Discussions during this summit meeting will provide a basis for expanded deliberations in a future "summit" meeting. The results of this meeting will also be of interest to other organizations and government agencies that are contemplating the need for a revised national strategy for commercial LLW disposal.

The meeting succeeded in initiating policy discussions and providing data that can be used in future deliberations.