Toward a Productive Divorce: Separating DOE Cleanups from Transition Assistance

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The purpose of this paper is to stimulate discussion of an alternative approach to cleanup of DOE sites and the transition of host communities to sustainable economic vitality. These tasks are large, contentious and complex—more so on all dimensions than was widely recognized a decade ago when the current approach was formulated.

Some adjustments have been made in response to the reality of the enormity of the task as it was originally conceived and in recognition of technological and budgetary constraints. Most notably, the Ten Year Plan, renamed the Focus on 2006 Plan, has sought to shorten the process and limit the long-term call on the nation’s resources while still doing everything necessary to protect health and the environment. The underlying contention of this paper is that the reforms envisioned in the Focus on 2006 Plan itself are at risk due to conflicting political dynamics, and that in any event, larger change is needed.

In essence, that change is to implement a risk-based, least-cost remediation strategy. This can only be done with the support of host communities who are assured that the Federal Government’s obligation to assist them to sustainable economic vitality will be met. This paper describes how the cleanup program has taken on the character it has, the problems that the current arrangement generates, and the outlines of a Grand Agreement that could leave DOE sites safe and host communities vital—at lower cost to the taxpayer.

This is a paper to initiate discussion, not a research treatise. It makes arguments in grand sweeps, not in detail. It eschews numerous footnotes and does not provide specific examples or confirming data. It aims for what is generally true, not for what is specifically correct in every detail at each DOE site.

This paper is based on the author’s observations and research, and on conversations that have taken place over more than a decade. Origins for the ideas presented here are many and no adequate way of acknowledging the intellectual contributions of others exists. It is possible, however, to acknowledge the great assistance of persons who read previous drafts of this
paper and took the time to provide careful and thoughtful comments. Reviewers were selected in some cases for their expertise and direct involvement in the matters discussed. Other reviewers were selected to represent various degrees of involvement and distance from the subject. Each was asked to examine the manuscript for substance and for clarity. The comments they made represented their personal views and for that reason, no institutional affiliations are given. The comments sharpened the presentation, prevented errors, and improved the analysis. Obviously, the final product is the responsibility of the author alone.

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INTRODUCTION AND EXECUTIVE SUMMARY

Changes in international commitments and military requirements have left several large Department of Energy (DOE) installations idled or with a much diminished production mission.\(^1\) Civilian energy research activities have also fallen at some sites. Unfortunately, these sites are also contaminated with the residues of their previous activities in the form of hazardous, radioactive and mixed wastes.\(^2\) The DOE has the uncontested obligation to assure that these sites do not now or in the future present an unreasonable risk to human health or the environment. It also has the obligation to accomplish this task at minimum cost and with maximum efficiency as fiscal steward of national resources.

The Federal Government’s obligations are broader. Substantial specialized human and other resources were drawn to the DOE sites to conduct the defense production mission and energy research. These resources were supported by increased public infrastructure and private investment provided by states, localities, and the private sector. The sites are surrounded by populations and facilities that owe their presence to the existence of DOE activities, which are now unneeded. Without the continued DOE presence, much of this population would find no gainful employment in the locality. The off-site private investment in homes and businesses would lose much of its economic value. Moreover, the decline in the economic base would lead to social dislocation and decline in quality of life as incomes fell and opportunities shrank. Thus the benefits to the nation from reduced national security expenditures are mirrored in reductions in the welfare of the affected persons living in proximity to the sites. The Federal Government has an obligation, well established in precedent, to mitigate these impacts.

\(^1\) The US Nuclear Program is the responsibility of DOE and its predecessor agencies. This responsibility includes creation and maintenance of military nuclear capability, early research and development leading to civilian nuclear power, creation and maintenance of naval reactors, support of the space program, and support of international non-proliferation programs, including the treatment and storage of repatriated nuclear fuels.

\(^2\) For convenience, in this paper the term “hazardous” is used to include radioactive, mixed radioactive, and hazardous materials.
As it happens, the end of the production mission at DOE sites corresponded with an increase in expenditures to remediate them. This cushioned the reduction in the level of economic activity in host communities and masked the deeper problem of the long-term transition required to keep these communities vital. It also served to confuse two distinct tasks: site cleanup to control risks and transition assistance. Because cleanup expenditures delayed the need for host-community adjustment to a post-DOE world, they came to be seen as a substitute for adjustment and as a means of transition. The DOE Environmental Management (EM) program by default inherited the Federal Government’s obligation to communities and persons impacted by the decline in the DOE production mission. The EM program now had two tasks, not one. The only connection between the tasks was that money spent on remediation (mostly) flowed through host communities. Host communities and their political allies understandably seek to maximize this flow.

The size of the cleanup is daunting. There are about 133 sites in thirty-one states and Puerto Rico that require some degree of remediation (1). DOE’s first comprehensive estimate of the size of the task gave the cost as about $230 billion (in constant 1995 dollars) and the length

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3 This paper uses the terms “remediate,” “cleanup,” “waste management and environmental restoration,” “risk-control,” and their derivatives loosely and interchangeably to describe the suite of activities designed to deal with the hazardous and radioactive residuals from the operation of DOE facilities.

4 This paper uses the term “host community” to designate the area around a DOE site that is directly affected by the risks it might present and by the economic role of site expenditures. Unless otherwise clear by context, “host community” includes both individuals in their personal capacity, local governmental units, and the broader social milieu often connoted by the word “community” taken alone. “Host community” refers to the people, governmental units, and economic region that are affected directly by the potential risks from the site and by its economic impact. For example, the Aiken, South Carolina-Augusta, Georgia metropolitan region is affected economically by the Savannah River Site. The two states are obviously affected, too. With respect to potential risks, those down stream along the Savannah River are also part of the host community by this definition.

5 This paper uses the term “transition” to mean the process by which communities shift from reliance on DOE production and/or remediation expenditures to a sustainable economic future. In most cases transition will require transformation into a new set of conditions. Indeed, transformation may be a better description of the process required.

6 This statement over simplifies the administrative and organizational situation within DOE but in a way that does not affect the heart of the argument that follows. The DOE Defense Programs (DP) organization, for example, formerly “owned” some of the sites that have now been turned over to EM, and retains formal responsibility for transition and some other related activities. The Office Worker and Community Transition and the Community Reuse Organization are specifically tasked with assisting host communities. These efforts are significant and should be recognized. However, the bulk of the employment that replaced the declining production mission comes through the EM budget. For simplicity and ease of presentation, these organizational complexities are ignored below.
as about seventy-five years (2). Five major installations—Hanford, Savannah River, Rocky Flats, Idaho National Engineering Laboratory, and the Oak Ridge Reservation—are expected to consume seventy percent of those costs (4). Annual expenditures on EM activities have grown from about $4.3 billion in 1992 to $6.6 billion in 1996 (5). The budget for FY 98 is [to be supplied when congressional action is complete].

The uneasy juxtaposition of the two tasks under the EM program is becoming increasingly troublesome. Specifically, the need to consider economic impacts on host communities is hampering the EM program’s ability to allocate its resources effectively and frugally to accomplish its mission. It is leading to resistance on the part of the public at large (as reflected in Congress), which is skeptical that it is getting its money’s worth in terms of national health and ecological protection. In addition, host communities are looking ahead with concern at what the future will bring because remediation expenditures seem sure to decline.

Developments over the past few years are making it increasingly clear that the way the cleanup task and the transition assistance task are organized and conducted should be reexamined (for examples see 6, 7, 8). First, there is growing recognition that cleanup and waste management can be achieved at dramatically lower costs than previously envisioned by changing the focus to controlling risks rather than to addressing contamination per se. Second, the prospect of declining budgets has led to scrutiny of what really needs to be done to protect health and the environment; some costly activities have been found to yield little, if any, increase in safety. This scrutiny has also revealed that wasteful practices abound in performing necessary tasks.

Third, and partially in response to the two elements above, the EM program has announced the “Ten Year Plan” (now called the “Focus on 2006 Plan”) with a goal of completing major elements of the remediation program in approximately ten years and substantially reducing the long-term mortgage of continuing expenditures (1). As a result, the transition to the post-

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7 In 1991, using the less stringent “topdown” approach and the assumption that cleanup would proceed on then-existing criteria, University of Tennessee researchers put the total at $240 billion in 1990 dollars (see 3).
DOE world now holds greater urgency for host communities. Further, if the EM program is to succeed in achieving its Focus on 2006 Plan goals with the funds it projects to have available, it must have more flexibility in the way it allocates its resources than it now has. It cannot succeed if it is straitjacketed by an imperative to maintain past expenditure patterns (stable site funding) and constrained by regulatory requirements that have little to do with protecting health and the environment—but much to do with satisfying host communities by moderating economic impacts. The paradigm shift with regard to cleanup found in the Focus on 2006 Plan has been pragmatically necessary, laudable, and substantial. It will remain incomplete, however, unless and until implicit responsibility for the future of host communities is removed from the EM mission.

The thesis of this paper is that the accident of history that gave the EM program the dual responsibilities of providing for the future well being of host communities and for remediation must be reversed. Both cleanup and community transition are obligations of the Federal Government. Each requires concentrated attention and adequate funding. Each must be addressed separately, and on its own terms, by an appropriate government body. There is a well-established principle in public policy that one instrument cannot be efficient in achieving two equally pressing goals. The consequences of violating this principle have been demonstrated in practice by the EM program—cleanup that costs far more than is necessary to achieve health and ecological protection, and transition assistance that is ineffectual in putting communities on the path to sustainable economic vitality.

This paper contends that if the tasks of remediation and of transition assistance are separated they can be achieved more quickly, more effectively, and at lower cost than with continuation on the present course. It contends further that this is an opportune time to start the discussions that will lead to the “Grand Agreement” that will protect health and the environment, set host communities on the path to sustainable economic vitality, and lower costs to the American taxpayer.

The argument of the paper begins by distinguishing polar cleanup strategies with similar environmental risk outcomes, but with substantially different costs. Given that the EM
program is found toward the more costly end of the spectrum, this establishes the premise that substantial cost savings can be secured by systemic changes. The argument then proceeds by describing characteristic general goals of host communities. The same process is then undertaken with respect to national goals, taken to be those of the public not specifically involved with host communities or the cleanup program. The results of these exercises are then summarized by bringing together the contradictions within the current EM program. The conclusion is that much could be improved with a separation of these functions and responsibilities. The paper ends with a discussion of implementation of the Grand Agreement which separates the cleanup and transition functions and uses savings on cleanup to provide targeted, effective, and adequate transition assistance to host communities, while assuring protection of health and the environment.

ALTERNATIVE APPROACHES TO REMEDIATION

Two polar approaches to remediation of DOE sites can be distinguished. The first, which will be termed the “hazard-elimination” approach, is that DOE sites will be treated to the maximum extent that is technologically feasible to allow unrestricted access to the sites for the broadest array of potential uses. The purpose is to eliminate current and potential health and environmental risks to the level of background to the extent practicable, and at least to reduce any risk to acceptable levels. The goal of this approach is to eliminate the hazard. That is, the goal is to address contamination—to detoxify, if possible, and to concentrate and permanently sequester if not, substances that may be harmful, whether found in soils, groundwater or structures. Under this approach, if technologies do not now exist to achieve these goals, they will be developed. Once available, they will be applied to achieve further incremental movement along the path to permanent elimination of the hazard. With respect to DOE sites, an additional condition is imposed: To the extent possible, each site will be responsible for treating and disposing of its own hazardous materials. DOE Complex cross-site solutions that would require movement of hazardous materials are discouraged as a

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8 These approaches and their ramifications are described in greater detail in testimony given by Milton Russell to the 104th US Congress, Senate Committee on Environment and Public Works, Subcommittee on Superfund, Waste Control and Risk Assessment, Oversight Hearing Regarding the Comprehensive Environmental
matter of policy. While costs play a part in what is considered technologically feasible, cost is not otherwise a significant constraint on actions or choices.

The second polar approach takes as its goal eliminating unacceptable risks to health and the environment by using the least-cost (over the long term) combination of techniques and actions. It will be termed here the “risk-control” approach. It makes use of the detoxification and permanent sequestration options as only two of a suite of activities. This suite includes technologies that prevent exposure as well as those that eliminate the hazard. In this approach, containment of contaminants using engineered barriers and prevention of exposure through both active and passive means are considered in an unbiased way, along with detoxification and sequestration solutions. They are not treated as inherently inferior fallback choices as they are under the hazard-elimination approach. The goal is to prevent harm, without striving to return a maximum amount of land and facilities to unrestricted use. Complex-wide optimization is sought; there is no bias against shifting wastes to where they can be treated most effectively and efficiently as long as overall risks are not increased.

The two approaches use the same technologies and require the same activities, but implement them to a different degree according to the particular circumstance. In addition, each approach can be designed to achieve the same risk targets, though the mix of risk vulnerabilities and uncertainties may differ. For example, more intensive remediation, as envisioned by the hazard-elimination approach, will lead to relatively higher worker risks in the short term (digging up hazardous waste to move it will lead to worker exposure), and to uncertainties about the long-term safety and security of the permanent repositories for hazardous materials. The risk-control approach, on the other hand, gives rise to questions about the effectiveness and long-term reliability of the actions designed to restrict access to contaminated materials. Containment structures can fail, and intruders can get past fences. It also requires a greater degree of active surveillance over the longer term.

A major difference in the two approaches, however, is in their potential costs. The risk-control approach is cheaper because it allows greater flexibility in achieving a safe and healthy environment. No good estimates of the cost differences have been made specifically for DOE sites, but research on non-Federal Superfund sites has found cost differences of approximately one-third (see 3, 9). The larger geographic extent of the Federal sites (which provides buffer zones), their relative isolation, the greater ease in providing long-term access restriction, and other factors suggest that the cost reductions for Federal sites could equal or exceed those for the non-Federal sites. The immediate cost reductions would exaggerate the difference to some degree, however, because the risk-control approach may result in expenditures in the future if it were decided that a particular area of contamination should be removed. This could occur because of a change in circumstances (the land is needed for another use) or because of a projected failure in containment. For example, a ground water plume that was expected to remain in a controlled-access area may need to be remediated if future monitoring shows that it threatens to move off-site.

Actual practice, of course, need not follow either of these polar approaches. In the first place, the specific conditions in a locality will join technological considerations in determining whether it is or is not wise to decontaminate or to contain an area. Further, intermediate positions exist on a continuum between the two approaches. National policy and local preferences can lead to an array of possibilities.

The EM program has been structured to operate toward the hazard-elimination end of the spectrum between these poles. Decontamination, permanent sequestration in engineered facilities, and maximum return of land to unrestricted use is the preferred option. Technological infeasibility is the primary justification for exceptions, though clearly,
inordinate cost has also played a part in agreements reached among DOE, host states, and EPA—called the Tripartite Agreements—at each of the major DOE sites.

DOE has analyzed alternatives to the strategy embodied in its current course of action, though not the hazard-elimination approach discussed here. In Chapter 6 of the 1996 Baseline Environmental Management Report (4), DOE considered three alternative scenarios. One was structured around alternative land-use outcomes, another around alternative program and project scheduling, and the last, which defined minimum funding to prevent increased risks to human health and the environment over the next seventy-five years. The results, which are too complex to summarize here, demonstrate that substantial variation in cost is associated with plausible differences in approach—differences which, again, do not result in increases in risk to human health and the environment.

Cost containment was clearly not a significant consideration for any of the parties to the Tripartite Agreements. Indeed, from a parochial standpoint, each benefited from an expansionary view of the task of cleanup. Host communities and states, in particular, saw only gains from maximum expenditures to remediate sites because they benefited from the additional funds, the incremental reduction of risk (if any), and the return of more land to unrestricted use. The costs were borne by the nation as a whole, which was seen by the negotiators as willing to accept this burden. State regulatory agencies were given a prominent role in overseeing cleanups and assuring that EM lived up to the letter of every term in the agreements. The more prescriptive, detailed, and “protective” the terms, the larger the role they could play. Moreover, their parochial interest in enhanced numbers of positions (many paid for by DOE) was consistent with the interest of the state and local communities in a strong regulatory presence which would assure that no expense would be spared in dealing with the sites. The EPA Regional Offices shared the perspective of State regulatory authorities. DOE, for its part, was anxious to get the agreements in place so that it could get on with the work. It was also fearful of being seen as not fulfilling its environmental responsibilities. Perhaps, also, DOE did not foresee the full extent of the obligation it was assuming or the budgetary stringency it would face in the future.
The Tripartite Agreements codified a relationship among DOE, the host communities, and the State and Federal regulators that resulted in an important dynamic. The statutes and regulations under which cleanup occurs are implemented by the regulatory authorities. While certainly prescriptive, these regulations are subject to interpretation. Substantial discretion rests with the regulators. With respect to regulated firms in the private sector, regulatory authorities exercise that discretion in the face of resistance from those who pay the bills—as well as of pressure to do more by environmentalists. Host communities and States, for their part, have an interest both in controlling risk and in the continued economic vitality of the regulated enterprises in their jurisdictions. Consequently, a balancing process ensues. The natural inclination of regulators to follow the strictest interpretation of the regulation (as pressed by some environmentalists) is tempered. No such automatic countervailing force exists with respect to DOE sites. As noted above, host communities generally benefit from additional Federal expenditures, as do those on the front lines of negotiations with the regulators—DOE field offices and the private firms who do the remediation work. Further, the inclination of local DOE officials and their contractors, too, is to “play it safe”—in this case to err on the side of more rather than less work than necessary to assure environmental safety. Environmental activists also press them in this direction.

As noted, host communities normally find common cause with the regulators. Exceptions occur, of course, sometimes because proposed remediation actions may have impacts that run counter to other community values. Further, the prescriptions of the regulators may offend public sensibility as leading to excessive expenditures for the scanty incremental protection, if any, afforded. Finally, host communities may resist some actions because they perceive that other actions that could be taken with the same money would be of greater benefit. (This perception has gained salience as budget constraints have become more pressing.) The point is that host communities generally need not take a proactive position encouraging more stringent regulation; the system is tilted in that direction anyway. On the other hand, host communities can be a powerful force to hold down costs when it is in their interests to do so. The regulators will listen to them. There are examples of this. The Oak Ridge community

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11 The primary statutes that affect cleanup decisions are Superfund Amendments and Reauthorization Act of 1986 (SARA) and the Resource Conservation and Recovery Act (RCRA), but the full range of national and
successfully opposed the initial, very expensive East Poplar Creek remediation plan which would have had a disruptive effect on the community with questionable overall risk reduction benefits. The Savannah River Site community supported designating the center of the site for industrial use rather than residential use, substantially reducing the residual contamination targets for cleanup.

Notwithstanding these examples, the way the host community interest generally plays out in practice is important to understanding the assertion later in this paper that host communities have an incentive to distort and perhaps exaggerate their just demands for a healthy and ecologically secure environment. This is the only way they have to forestall economic decline under the present situation. Affirmation of the regulator’s natural preferences is often all that is required.

The discussion above describes two polar strategies for cleaning up DOE sites and notes the significantly higher costs that are incurred if the hazard-elimination approach is followed. It further suggests reasons why the choices made in the EM program have tended to fall at the more expensive end of the spectrum. With this background, it is possible now to move to an examination of the goals of the host communities and of the nation at large to determine how well the EM program meets them as it has evolved.

**HOST COMMUNITY GOALS FOR CLEANUP**

Interests of host community stakeholders can usefully be considered in two categories: those related to the risks from the site and those related to achieving sustainable economic vitality.

With respect to risks, local citizens are concerned that health risks be minimized in the period before remediation takes place, during remediation, and for the long term. Both off-site risks and worker risks are at issue. In addition, the host community desires that ecological risk and the ecological footprint from the installation be minimized. If such ecological services, like the ability to hunt and fish on the site and its environs, are compromised there could be direct state environmental statutes and regulations are also operative.
and immediate harmful effects on a community’s quality of life. In addition, individuals value the security and health of ecological systems in their neighborhoods even if those individuals do not personally derive any direct recreational or other services from the natural system.

These stakeholder risk-based interests may be summarized in a series of desirable goals for cleanup. These goals include:

1. Minimize, and at least hold to an acceptable level, current risks.
2. Minimize, and at least hold to an acceptable level, worker and off-site risks during remediation activities.
3. Achieve the maximum amount of “permanence” in the cleanup, subject only to the need to consider the incremental increase in current remediation risk from actions to achieve permanent solutions.
4. Achieve the minimum, and at least acceptable, health and environmental risk end state as early as possible.

When these goals are mapped onto the two approaches to remediation identified above, several points become clear. The risk-control approach, which incorporates restricting access to land and facilities as a feasible option, fails the “permanence” test of item three. The hazard-elimination approach, which would lead to maximum restoration of land and facilities, would take longer to achieve an acceptable end state. Both approaches could keep worker and off-site risks to a minimum during remediation. However, the more intensive and extensive measures required under the hazard-elimination approach would inevitably lead to greater total current risk than would the other option because it would require more elaborate and extensive excavation and treatment of contaminated soils and materials. Other than this effect, however, in principle both approaches would seem to meet the basic objective of the host community for health and environmental safety.

As noted earlier, host community stakeholders are also interested in achieving sustainable economic vitality for their regions. While maintaining current employment levels is certainly
one aspect of sustainable economic vitality, much more is involved. Another element is maintaining capital values of local investments in homes and businesses by retaining expectations of long-term employment from a secure economic base. Yet another is maintaining jobs utilizing roughly the same mix of skills and paying comparable wages so that the daily lives of current residents will not be disrupted. Another element, associated with the previous point, is to prevent the community from shrinking in order to sustain public services that otherwise would be lost or become more expensive because of lost economies of scale. Associated with this is continued development of new opportunities for future generations, which would stem out-migration, separation of families and neighbors, the “graying” of the population, and social disruption and loss of community and family amenities. Above all, the host community’s interest in sustainable economic vitality seeks to maintain the essential character of place—a value for which there is no substitute.

Obviously, in a dynamic economy such as that of the United States, communities are in constant flux; individuals and families must adjust to those changes. Communities grow, usually, but sometimes shrink. When it comes to the DOE host communities, the difference is that the change can be sudden. The community is eviscerated, not shrunk. Further, change is not driven by faceless economic forces but by a decision of the Federal Government. Such a decision is made even more troublesome because the communities themselves were created or greatly expanded, and personal commitments of individuals made, at the behest of that same government.

As noted before, the EM program by default took on the Federal Government’s obligation to assist host communities in achieving sustainable economic vitality. Its statutory authority and direct mission, however, is to remediate sites. Its instrument for assisting communities therefore is limited, in the main, to the expenditures it makes in site cleanup. In this context, the question is what attributes of cleanup would serve communities’ interests in achieving sustainable economic vitality. These attributes include:

1. Maximizing cleanup expenditures to sustain the current economic base.
2. Maintaining the current level of expenditures over the long term—stretching out cleanup to avoid fluctuations in activity level.

3. Assuring that the cleanup is as complete and permanent as possible to remove any “stigma”—perceived potential for health or environmental risk—that may harm efforts to attract new activities and new employment opportunities.

4. Converting land and facilities to reusable status to the greatest extent possible, and then making them available for redevelopment on attractive terms.

It is clear from a comparison of the requirements for sustainable economic vitality and the actions involved in cleanup that remediation activities can not meet host community goals by themselves. Direct expenditures, however large, will come to an end once the cleanup is complete. While the residual condition of the site can be left so that redevelopment is possible, redevelopment cannot be assured; there is nothing cleanup can do to assure that new enterprises will replace the DOE contribution to the community. Firms may not move into a building released for civilian use, and if they do, there is no assurance they would not have moved to the community anyway. Replacement jobs that match the skill profile and wages of the remediation task cannot be attracted solely by EM action. Consequently, while the risk-based goals of host communities can be met by cleanup, long-term sustainable economic vitality will not be unless other activities occur.

Limitations on the ability of cleanup projects to provide for the future of host communities apply to both the hazard-elimination and the risk-control approaches to the task. But there are some differences. The hazard-elimination approach leads to greater short-term expenditures, and would also likely maintain expenditures over a longer period. This is a major advantage to host communities and accounts for much of their support of it. Further, the end state sought would be less likely to leave a stigma that might lessen attractiveness to prospective developers. Because this approach would lead to greater conversion of land and facilities to reuse, it would also offer more opportunities for redevelopment. The risk-control approach likely provides for earlier completion of cleanup activities, but it also requires longer-term
monitoring and surveillance. The bottom line is that sustainable economic vitality is not assured by either remediation approach.

**NATIONAL INTEREST IN THE FUTURE OF DOE SITES**

The DOE sites were created in the midst of World War II when the very existence of the nation was in doubt. The sites were increased in number and expanded during the Cold War. They provided the nuclear shield that helped avoid direct confrontation with the Soviet Union. Along the way, activities at the sites provided scientific and technological advances and materials that have made additional major contributions to national well being. Some continue to serve a defense mission, much diminished, and continue to make contributions to civilian goals. However, the mission of many sites has been completed. The critical question for the nation is how to deal with the environmental and economic legacy that remains.

There is ample precedent for the Federal Government to act to mitigate risks and to assist communities and individuals facing major economic shifts. For example, workers in the 1970s who mined high-sulfur coal received assistance when demand for their product declined due to environmental restrictions. Farmers have received assistance for more than sixty years to cushion the economic dislocations that accompanied rising productivity and declining prices. More recently, loggers and communities in the Pacific Northwest were assisted in adjusting to reduced access to old-growth forests brought on by actions to protect the habitat of the spotted owl. In a directly related program, assistance is provided to communities where military bases are closed. In another context, Federal programs have been adopted to assist the redevelopment of inner cities devastated by the growth of suburbs and the flight of jobs. Specific regions such as Appalachia have been targeted for special treatment and increased Federal expenditures. On the risk side, the Superfund program is designed to address hazardous waste sites that may pose risks to surrounding populations. For reasons both of direct obligation and general policy, then, it is incumbent upon the Federal Government to act to help DOE host communities, and if precedent holds, such action would have the general approval of the citizens as a whole.
It is established national policy that inordinate health risks from hazardous materials should not be imposed on any of the nation’s citizens. From a national perspective, the target risks above which mitigation is required must take into account all circumstances in which such risks threaten citizens. In this context, the concept of acceptable risk is appropriate because the nation as a whole must balance risk reduction everywhere against other priorities for public expenditures. In contrast, host communities are interested in minimizing any risks imposed from DOE sites, and have no reason to take into account risks imposed elsewhere or competition for resource use. There is, therefore, some basis for differences between the national and the local target health risk goals; the host community will favor more stringent limits than the national consensus could be expected to support.

With respect to ecological risks and the security of ecological systems, differences also may arise. The national interest is in sustaining the ecological integrity of all natural areas, but the importance of a given area in the context of the entire nation may differ from the importance ascribed to it by the host community. This may cut both ways. A host community has a special interest in the recreational and other ecological amenities in its neighborhood. The national interest is more for the totality of systems, and therefore the value it places on a particular site may be discounted given that other areas are ready substitutes for it. On the other hand, some natural areas may have a national or regional benefit that is not valued particularly highly by their immediate neighbors. For example, the DOE Savannah River Site is one of the largest contiguous protected areas in the southeastern part of the country, and as such has important ecological and scientific value to the nation as a whole. This value was recognized early by its designation in 1972 as the first National Environmental Research Park. Similar ecological study areas have been established in other localities, including the important Walker Branch Watershed on the Oak Ridge Reservation (10). These attributes may have little value to many local citizens.

The national interest is in achieving health and ecological risk targets at the lowest cost. Competing demands for limited resources make this inevitable. In contrast, host communities have no such constraints. While it is in the national interest to protect people and ecological systems from harm from DOE sites, the level of protection acceptable to the nation may
differ from that preferred by the local community, and the level of expenditures seen to be optimal will usually be less.

The special consideration due to host communities with respect to sustainable economic vitality arises from the fact that these communities were created by government action. A further point is relevant. Not only were these host communities created at the behest of the government, but the stimulus for their decline is the “good news” for the nation as a whole that the dangers of the Cold War have passed. The resulting reductions in necessary military expenditures, not to mention the diminished risk of nuclear confrontation, are a blessing for the rest of the nation, but the source of economic distress for the host communities. Thus, the Federal Government has an obligation to cushion the transition of the affected communities that goes further than the usual concern for avoiding economic distress. This obligation extends beyond the provision of compensatory payments for those directly affected, and relates to the larger impacts on the community as a whole. The extent of that obligation, and how it might be met, are by no means clear.

There is an efficiency component as well to the sustainable economic vitality issue. Social disruption and costs follow any shift in economic activity, even if that shift, on net, results in improved conditions for the nation. The private costs are found in unemployment, psychological distress, and overall decline in local output. The non-private social costs are seen in increased welfare payments and other social services, and in the usual signs of economic turmoil including crime, alcoholism, and increased violence that seem to follow community disruption. Temporary unemployment means a loss of national output that mirrors the losses to individuals. “Stranded” capital is another element of social cost. The physical assets left unusable due to shifts in the locus of economic activity cannot themselves be taken as a social loss, but replacement of those assets elsewhere represents a drain on the economy that must be taken into account. For example, having to construct new houses and schools when jobs shift—leaving old facilities idle—is a cost to the economy as a whole. Finally, there is a social cost involved in the loss of human capital as persons with productive skills allow those skills to deteriorate or lie unused because they are unwilling or unable to migrate to where they can be utilized. Often, too, such persons choose to take early
retirement or to develop new skills suitable for the changed economic base rather than move. While transition assistance may largely be viewed as a matter of equity and special obligation, some portion of that assistance can properly be counted as a national investment in future economic growth and welfare.

While the host communities have the natural desire to be made whole, the national interest would usually end substantially short of that point. The question, then, is the extent of the transition assistance that is warranted, its purpose, and its form. The extent is ultimately a value question answered by the political process, but something meaningful can be said about the goals of transition assistance and the form it takes.

The national goals for transition assistance are two. First, it seeks to relieve immediate distress and allow persons the opportunity to adjust their private lives to changed circumstance. Second, it seeks to cushion the community and set it on the road to sustainable economic vitality, perhaps at a reduced scale. The latter point requires further discussion. Transition assistance cannot be expected in all cases to lead to an economic base that maintains the level of population and community income that existed when the DOE production mission was at full strength. Objective conditions—for example, location, resources, or markets—may not exist to make this possible. On the other hand, it may be possible for assistance to enable communities to shrink to a size that the prospective economic base can support effectively, and then move on with undiminished vitality. They can remain good places to live and work with reasonable prospects on which to build a future. However, it is imperative that communities avoid falling into a cycle of decline where diminished resources lead to a culture of poverty that drives away the employers who could sustain a smaller, but still vigorous, economy. This is most likely to occur when a host community remains mired in the past, does not make needed adjustments, sees itself as a victim, postures itself as a supplicant for a continued flow of Federal funds that do not materialize, and does not capitalize on its strengths and opportunities. The national interest is in transition assistance, not in guaranteeing continued prosperity at the old level, and certainly not in fostering a debilitating mentality of entitlement.
The DOE sites where the production mission has diminished present a conflicted situation for both DOE’s EM and for the host communities. EM has dual missions to perform—cleaning up the sites and assisting communities toward sustainable economic vitality. The host communities have dual goals as well. They want excessive risks from the legacy of DOE operations eliminated and also want to maintain the long-term economic viability of their communities. Only one instrument is available to meet these multiple goals—expenditures on remediation. This section discusses the contradictions that are created by this situation. The essence of the EM cleanup task can be expressed simply:

1. Make the sites and surrounding area safe by meeting health and environmental risk targets (as defined by the national interest) before, during, and after the remediation process.
2. Allocate available financial and other resources across all cleanup responsibilities in such a way that the most risks are reduced as quickly as possible.
3. Accomplish this task at the lowest possible cost by using the most efficient and effective combination of technologies and management mechanisms available.

Using the remediation process to assist communities in the wake of loss of DOE’s production mission has different criteria for success. While the whole job cannot be achieved in any event through remediation expenditures, to the extent they can contribute, the goals would be:

1. To maintain stable, high levels of funding at each site.
2. To maintain employment of the existing workforce.
3. To create conditions where redevelopment of land and facilities for other uses is both feasible and attractive.

The conflict among these goals is obvious. EM cannot redirect resources among sites to address the greatest risk-reduction opportunities first and also maintain stable levels of funding at each site. It cannot utilize the least-cost combination of technologies and minimize expenditures while also maintaining a high level of expenditures at each location. It cannot choose least-cost technologies and use innovative management and also keep the employment structure the same and guarantee employment to the existing work force. It cannot control risks in some situations through containment rather than waste detoxification or removal and also leave a maximum amount of land and facilities available for redevelopment. It cannot make land and facilities available for early redevelopment and also achieve perfection and permanence in cleanup. It cannot select target risk levels based on the national interest and also increase expenditures to achieve otherwise unwarranted incremental risk reductions at each site. In brief, implementation of the mission of the EM program is not congruent with the use of remediation expenditures to promote sustainable economic vitality.

The contradictions are similarly evident when one considers the host community’s perspective. To retain environmental remediation expenditures, the community must assert that otherwise risk would be excessive, which reinforces the stigma effect. In turn, this can hamper recruitment of new enterprises. Success in increasing remediation expenditures also stretches out the cleanup and delays the long-term transition and reuse of land and facilities. Success in getting more funds contributes to the sense that social and economic adjustment can be forestalled indefinitely and provides a false and debilitating signal that the future will be like the present. Emphasis on distress and vulnerability helps sustain additional

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12 Recent legislation (Section 3161 of the National Defense Authorization Act for FY 1993) has authorized DOE to fund citizen’s groups within host communities and to sponsor activities supporting transition—characterized as reuse of DOE facilities. DOE has directed its contractors to participate as part of the overall remediation task. These activities, however worthy in intent, are small scale and are conducted within the context of remediation, not as ends in themselves. Therefore the main point holds: The primary instrument that
expenditures, but reinforces the sense of powerlessness and fatalism that hinders local citizens in their efforts to take charge of their future and move on to the post-DOE era. It also conflicts with any positive message about real opportunities and discourages investment. To the extent people and resources are devoted to continuation of old tasks, their energy is diverted from the ultimate transition, and they are not available to new employers and for new pursuits. To the extent that waste treatment and removal are pursued when containment would meet risk-based remediation goals, current risks to workers and off-site citizens and the environment may increase. In brief, what host communities must do to maintain the flow of remediation funds into their regions (beyond the levels needed for the risk-based cleanup) exacts a significant toll on long-term economic sustainability in exchange for short-term benefits.

The EM program that resulted from the Tripartite Agreements as implemented under the direction of regulatory authorities attempted to span these basic contradictions and respond to the conflicting political forces to which it was subjected. While much has been accomplished by the program, its systemic flaws are evident in the experience to date and in the prospects that can reasonably be foreseen. These can be summarized in the following assertions:

1. The EM program will spend more money on remediation than is necessary to meet the national goal of reducing and then controlling legacy risks to an acceptable level.
2. Host communities will often exaggerate their perceptions of existing risks and their desires for additional action in order to sustain remediation expenditures. Such expenditures are effectively the only mechanism they have to sustain their economic base in the short run.
3. Regulatory authorities, in response to their own interests and in support of host communities, will interpret regulatory requirements strictly even if risk gains are negligible, and this will not be resisted effectively by DOE and its contractors.

DOE has to meet both cleanup and community transition goals is expenditures on remediation, and its institutional mechanism is through the EM program.
4. Host communities will not adjust to the prospective decline in EM program expenditures in an optimal way—a way that would allow them to achieve sustainable economic vitality, which may require some reduction in the scale of the economic base.

5. The EM program will take on activities only loosely related to cleanup in order to promote the transition goal. These activities will be flawed because they must be conducted outside the mainstream of cleanup activities, must be packaged as related to remediation and reuse functions, are conducted by organizations that do not see them at the core of their mission and for which these are not core competencies, and are often created in response to idiosyncratic political pressures.

6. Host community goals for cleanup will not be satisfied in an optimal manner, and goals for transition to sustainable economic vitality will likely be unmet, certainly in the long run, when EM expenditures decline.

7. The national interest in fulfilling the obligation to assist communities in transition to a satisfactory post-DOE condition will not be met.

8. The national interest in an equitable and efficient allocation of resources to control all risks will be violated by expenditures unrelated to risk priorities within the DOE Complex.

9. The national response will be one of frustration and discontent. This will arise from the apparent waste or misallocation of resources in EM operations. The reason: Expenditure levels (and sometimes specific projects) are not commensurate with their purported purpose of rectifying the risks associated with the previous DOE production mission.

10. The possibility exists that the nation will lose confidence in the EM program. This could be translated into a loss of support for its mission. If this happens, the result could be a reduction of resources available for cleanup and for transition, leaving risks at excessive levels if critical tasks are not funded and leaving communities to wither without appropriate assistance.
Such are the consequences of using one institution, DOE EM, and one policy instrument, remediation expenditures, to satisfy two distinct goals. The problem is systemic and fundamental—good people trying harder or working smarter cannot solve it. The obvious solution is to separate the tasks and to develop mutually supportive but independent programs to pursue each to completion.

**IMPLICATIONS OF SEPARATING CLEANUP FROM TRANSITION ASSISTANCE**

Separating the remediation task away from the transition task would free the EM program from the pressure to maintain high and stable expenditures at each site. Most directly, relaxing this constraint would allow EM to reallocate resources around the DOE Complex to address the most pressing and cost-effective risk reductions first. While prioritization would necessarily consider such site-oriented matters as long-term scheduling and work force stability, the goal would be optimization of the Complex-wide enterprise.

The separation of tasks would also allow EM to move away from the hazard-elimination approach to remediation and toward the risk-control end of the spectrum. This would occur because the presence of effective transition assistance would lower the justification for, and the political salience of, the greater expenditures that the hazard-elimination approach entails. While local citizens would retain strong views on the suitability of proposed measures, their concerns for the outcomes could be legitimately limited to their risk implications. In turn, defense of lower cost measures that would yield effectively equal or superior total risk outcomes could be pressed with greater vigor. The incentives to increase local remediation expenditures would certainly remain, as would the tendency for regulators to interpret requirements strictly. What would change would be the intensity of these incentives and the political ability, willingness, and moral authority of the Federal Government in resisting these pressures. Institutional reform of the EM program would also probably be required. With its mission limited to cleanup, the EM program could be reorganized into a slimmer, more goal-oriented institution focused on the more technical aspects of cleanup. It would lose some of its “governmental” functions and might more appropriately be organized along the lines of a government corporation with strict accountability.
The savings achieved would, in the first instance, be considered as the “dividend” to support economic transition. A method for sharing these savings explicitly with host communities would strengthen the case. This would discipline the regulators with balance in the pressure to require what is necessary, but not more, and not inefficiently. Savings beyond those associated with doing different things could also be expected. With the separation of these two tasks, the pressure for stability in institutional arrangements, management practices and work force structure would decline. (The losses to those affected would be cushioned directly, making them less resistant to change and authorities more willing and able to impose it.) Greater freedom for innovation in the way things were done would be the source of further cost reductions and increases in speed of delivery of cleanup services. In short, incentives would be more closely aligned with both national and host community goals.

The separation of the two tasks does not mean that they would proceed in isolation or ignorance of one another. Specifically, there would be opportunities where incremental changes in the direction or timing of remediation tasks could substantially reduce the transition problems of host communities. This would surely be taken into consideration.

Some things would not change. For example, the importance of stakeholder involvement in shaping local actions to control risks would remain. There would continue to be disagreements about the target levels of risk and certainty, and about the efficacy of measures considered. There would also be controversies over the remediation plans for specific areas: for example, whether an area was to be contained with permanent access restrictions or returned to unrestricted use. But the issue of achieving sustainable economic vitality would not complicate these differences—the possibility of acceptable compromise would consequently be increased. In addition, the potential for use of transition assistance to fill the gaps might lead to other opportunities for win-win tradeoffs acceptable to both the national interest and the local stakeholders. A “bargaining” situation would continue to exist. The host community would seek “more” and the national interest, as embodied in EM, would seek “enough.” The balance of moral authority would swing, however, once cleanup could be pursued unencumbered with responsibility for the future viability of host communities.
Implications of separation for the transition mission are as significant. The most important difference is that such assistance would be freed from the constraints of fitting into the remediation context. The question would switch from what remediation can accomplish for transition to what would be the most effective action to take. The starting place would be the goals of the community in the context of the realistic opportunities and constraints that exist.

Host communities would be free to consider their strengths and to choose the adjustments that would capitalize on them to provide for the future. The needs will differ in each community. While in some the key requirements might be worker retraining, in others priority might be given to infrastructure. Too, in some instances communities must face the practical impossibility of sustaining pre-existing levels of activity. In this case, transition to a lower but sustainable size means assistance for those who would choose to leave and help for those who opt to stay. In particular, attention should be paid to the reduced local tax base. This might be accomplished, for example, through a Federal “buy-out” of local debt resulting from the infrastructure expansion that was necessary to meet the needs of the larger population attracted to serve the DOE installation. Resulting tax relief would help sustain capital values, encourage new enterprises, and reduce the burden on citizens remaining.

It is not possible here to describe the course such assistance should take. However, when transition assistance is considered as an end unconnected with environmental remediation, an array of options emerges. The choice of which to pursue must rest on deliberative processes within the community. Local citizens know best how available funds should be allocated to achieve their realistic goals. It can confidently be stated that the benefits received will be far larger when funds are devoted directly to tasks determined by local citizens than if they are devoted to “add on” remediation activities designed and conducted by others.

The savings associated with the redirection of the EM program toward cost-effective risk-control would provide a substantial dividend to support a meaningful and effective transition program. Taken in broad terms, there would be only “winners” in such a Grand Agreement,
though some individuals and enterprises might be made worse off. The difficulty comes in moving from the flawed and wasteful system that exists today.

IMPLEMENTING THE SEPARATION OF TASKS

The supreme advantage of the present system is that it exists, and at least for the present, it meets minimal requirements for political support. Piecemeal reform is doomed to failure. It would run counter to powerful political forces that are geared to protect those interests that benefit from the current system and do not see individual gains from change. Yet gains are possible from separation of the tasks. The key to realizing these gains is to orchestrate a Grand Agreement that provides real gains to the preponderance of the stakeholders, both local and national, and losses for few.

Execution of such Grand Agreements is always difficult. It requires action by multiple committees of Congress, each of which is understandably protective of its jurisdiction. The parties have every reason to behave strategically and to misrepresent their true interest to gain the most, and are thus inclined to hold up agreement. Even positive-sum games have parties that win relatively more than others, and for that reason they sometimes fail to be consummated. Further, some narrow interests inevitably will be harmed, and parties in a position to block an agreement may be among those interests. Finally, all parties must be sure of the good faith of the others. They must be confident that the whole agreement will go through before they are willing to take the risk of sacrificing current benefits in the expectation of greater dividends in the future.

Notwithstanding all of these difficulties, this may be an appropriate time to pursue the Grand Agreement for these reasons:

1. Budgetary pressures are high. It is commonly believed that continuation of the previous level and pattern of remediation expenditures is not possible. Further, the sense of obligation to host communities has a finite life, and political
support for transition assistance has passed its peak. The status quo is likely not an option.

2. With a shrinking budget, previous allocation patterns of funds among sites in the Complex will come under pressure. The ensuing reallocation process will be troublesome for DOE, for congressional delegations, and for host communities unless there is an objective, principled, basis for decision. No one will emerge a political winner when the game involves defending a lower allocation in a shrinking budget.

3. With shrinking budgets, cleanup priorities take on more importance because it is clear that everything previously planned will not be done. This means that it is important that tasks critical for health and ecological integrity don’t get sacrificed because the money available is spent for trivial gains. Risk-based decision making is a means for host communities to assure that funds will not run out before critical work gets done.

4. The remediation program has progressed to the point that the Complex-wide set of problems is reasonably well characterized and remedial options are reasonably well understood. A first cut at a risk-based, least-cost program that meets objective criteria can now be devised, recognizing that adjustments will be needed over time.

5. Host communities now have organized and knowledgeable stakeholder groups that can participate as full partners in decisions on cleanup priorities and processes. Such groups can judge for themselves when basic health and ecological criteria are met, and can communicate effectively with others in the community. The issue of trust—or its absence—may be less of an impediment to action than it was in the past.

6. Broad experience has been gained in understanding and using mechanisms that allow citizens to participate effectively in deciding about the future course of their communities and to assure accountability on the part of those implementing the vision chosen.

7. Research and practical experience have reached the point where effectiveness of transition assistance and economic development efforts is reasonably
understood. Meaningful programs to meet community desires—in so far as those desires are practical and feasible—can be devised.

In sum, even parties that see themselves as doing well under the current situation recognize that the status quo is at risk. Attempting to continue on the current course jeopardizes important goals. Standing pat is not a comfortable position. At the same time, potential gains are obvious. Parties are frustrated because there is no mechanism to trade off things they value little in exchange for things they value more. They are trapped in positions they don’t like to defend but which they must cling to for tactical reasons.

But so far there has been no way out. No party is willing to take the first step. To do so puts its position at risk. The only practical way to proceed to a win-win-win outcome is through a Grand Agreement that puts together the desired elements of each party along with assurances that each element will be carried out fully. Then the risk to each is minimized.

It is not the purpose of this paper to describe the process by which the Grand Agreement can be brought about. Needless to say, however, a predicate for such a bargain is broad understanding of its benefits by parties at interest, including the general public. This paper succeeds on its own terms if it contributes to that understanding. To this end, it is possible to outline necessary elements that the agreement must contain. They are:

1. A national commitment to remediate former DOE production sites to the point that they present no more than an acceptable health risk and threat to ecological integrity, with “acceptability” defined as meeting the common goals of the nation as a whole. This would be implemented at the sites through a deliberative process that engages affected parties.

2. Creation of an institution with the sole purpose of cleaning up the DOE sites at the lowest cost, subject to the constraint of meeting acceptable health risk and ecological protection targets for the periods before, during, and after action is taken, in perpetuity.
3. A national commitment to provide adequate transition assistance to persons and host communities to allow them to adjust to changed conditions. Such assistance must facilitate the redevelopment of the host communities to, but not beyond, a level sustainable by the natural attributes of the community following the decline of DOE’s presence.

4. Creation of a small institution with the sole purpose of providing resources to communities as described in the previous bullet.

5. A national commitment to conduct these activities in full partnership with the affected communities, respecting their wishes to the extent that they are not inconsistent with the broad mandates and principles in the previous items.

6. A Federal Government commitment to achieve the above results at as low a cost as possible, and in any event, at lower cost than the projected realistic present value cost of continuation of the EM program as it is now constituted.

CONCLUSIONS

At root there are two main parties involved in dealing with the legacy of World War II and the Cold War as seen in former DOE production facilities. These are the host communities and the nation as a whole. Both parties share the same two classes of goals: to prevent harm to human health and the environment and to prevent unreasonable harm to people and host communities from the elimination of the DOE production mission. More by accident than by design, the EM program has been tasked to achieve both these goals. The instrument available to the EM program is remediation expenditures. The effort to use this one instrument to achieve two distinct goals has led to inefficiency and ineffectiveness in achieving each. The result has been waste, frustration, failed promises, political acrimony, and a decline in the respect for government and its ability to serve the people. The solution cannot be found in incremental change or reform, nor in administrative or operational fixes, because the problem is built into the system. Only systemic change can bring real and lasting improvement.
The change required is to separate the task of controlling risks at DOE sites from the task of moving host communities to sustainable economic vitality in the post-DOE production era. Doing this involves a Grand Agreement in which host communities agree to a least-cost cleanup program that guarantees acceptable health and ecological outcomes. In turn, it requires the nation to commit to assisting the communities and their citizens in the transition to sustainable economic vitality and to ease the burden on those affected. The payoff from this agreement would be swifter conclusion of the task of dealing with the DOE legacy, lower costs to the taxpayers, and sustainable economic vitality for the host communities. The potential gains are substantial in each regard.

Achieving this agreement will be immensely difficult. It involves changes in attitudes and beliefs deeply engrained and enshrined in rhetoric and regulation. It involves surrender of political positions and alliances that have served the parties well. It involves giving up parochial advantages to gain greater ones. It involves trust on the part of multiple parties that all will bargain in good faith. Most important, it involves sufficient belief that the agreement will come to pass that the risk of negotiation to that end seems worthwhile to take.

Placed against these difficulties is the growing recognition that all parties have much to gain from basic reform even as they have much to lose from the status quo. The comfortable future envisioned a few years ago is no longer realistic. The issue is no longer only what might be gained by taking a risk; it is now what might be lost from doing nothing.
Literature Cited


