

## THE ROLE OF ECONOMIC INCENTIVES IN NUCLEAR WASTE FACILITY SITING

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### ABSTRACT

There is a need to provide some public benefit and/or reward for accepting a "locally unwanted land use" (LULU) facility such as a nuclear waste storage or disposal facility. This paper concludes that DOE, Congress and the states should immediately quantify an economic incentive for consideration "up front" by society on siting decisions for nuclear waste storage and disposal facilities.

### INTRODUCTION

Since the first European monarch planted a flag on American soil and began carving up the continent to reward political allies and promote commercial development, governments have as a primary function had a hand in divying up the opportunities and benefits of society. As this country matured and prospered, it has become more humanitarian and conscientious--if far from perfect--in distributing the benefits. Only recently, however, has it been forced to develop a national capability to distribute the burdens of social activity. It is the intention of this paper to consider the need to achieve equity in the siting of high-level radioactive waste repositories and other hazardous facilities, and to help advance the legitimacy of using economic incentives as a means to achieve this goal.

In discussing the use of economic incentives in repository siting, it is crucial first to clearly establish that economic incentives are relevant to safety issues only because such care must be taken not to confuse the two. It is assumed here that no package of economic incentives will create public acceptance of a facility that is unsafe. It is also assumed that economic incentives poorly defined or inappropriately presented may have serious adverse consequences for public acceptability of hazardous facilities.

But while the final assessment of the level of safety provided by a repository will not be influenced by economic incentives, economic incentives can and should be a factor in public assessment of the cost-benefit balance presented by such a project. This is the case because, as a matter of equity, the public which accepts a "locally unwanted land use"--or LULU, as the term has been coined--bears costs which can not be compensated for entirely in direct impact assistance, and which provides a service to society at large for which the sited community should be rewarded.

Once again, it is appropriate to distinguish between compensation for providing a public benefit, and reward for making a siting job easier by not raising rough questions or accepting a facility without adequate safety protection. Economic incentives should be de-coupled from the siting process except to the extent that those affected by the facility will play a role in determining the appropriate level of compensation.

Another fundamental reason for separating incentives from siting procedures is that incentives can, if made clear at the front end of siting,

reduce the uncertainties with which the affected public will be expected to cope. Howard Kunreuther, Director of the Wharton Risk and Decision Process Center of the University of Pennsylvania, recently pointed out in a Wall Street Journal article that "research by psychologists indicates that people focus on risks that they dread, feel are not controllable, and that are unfamiliar..." He suggests that anxiety and uncertainty are appropriate responses to new technologies with unknown effects, and that the challenge in dealing with these problems is "to develop policy tools so that individuals and communities can more explicitly compare the expected benefits and costs of alternative actions."

On the technical side, a credible consensus must be achieved regarding the risks of a repository. The public can then consider that risk in the context of other impacts of the facility on their social and economic life. These important concerns and information needs form the basis for the siting process as it is carried out at individual locations. The Nuclear Waste Policy Act (NWPA) recognized these basic issues, and set out procedures for public participation in risk analysis, and in assessment and mitigation of a repository's quantifiable social and economic effects.

But the Congress did not address an essential fact: that after all the technical risks and general economic benefits and impact assistance are totalled up, even if we have mitigated every risk or impact to the greatest extent possible, there will remain the incontrovertible fact that the repository will generally be regarded as a LULU. There will never be enough people in a state who will benefit to outweigh those who simply do not want this thing, and consider it a burden.

In order to make the most of the process provided in the NWPA, and to develop an economic incentive policy, it is necessary to distinguish and realistically assess those things that are safety risks, economic benefits, mitigation of social and economic impacts, and possible economic incentives. Leave aside for current purposes the issue of risk assessment. If the objective is to even out the mitigable impacts of a repository, then add compensation for those costs not addressed. It is appropriate to ask first, what must be mitigated and next, who should be compensated? To see how these factors sort out in actual situations, look at some areas currently affected by siting.

Hanford, Washington and Oak Ridge, Tennessee are communities with some useful similarities. Hanford is, of course, being studied for siting of a high-level waste repository, and Oak Ridge has been nominated for location of a monitored retrievable storage facility, or MRS. Both cities have economic bases relatively compatible with the development of a facility in

question, in terms of availability of labor pools and services; both are quite familiar--for better or for worse--with the Department of Energy activities, which are an important part of their economic base; both have generally healthy economies but are threatened by some degree of economic recession resulting from reduced Federal spending and completion or termination of large construction projects. For further comparison, briefly consider the remote and less developed Davis Canyon repository site in Utah, and the response of Tennessee to the new Saturn automobile plant to be located there by General Motors.

What are the direct economic benefits of these facilities, and what do they mean to the local and state communities? Preliminary socio-economic impact analyses are available for repository sites in the Department of Energy's draft environmental assessments. With an estimated \$7 billion price tag, the repository is an apparent economic boon. But consider carefully, as the NWPA requires, the benefits and impacts from the local perspective.

Hanford is perhaps a good "high" case. The draft environmental assessment indicated that 60 percent of the labor force for the project is available locally. Many of those jobs will compensate for the end of construction of a Washington Public Power Supply generating station. The total number of jobs averages 450 over the first 8 years, and 815 over the next 16 years, peaking at 1,100 during construction. But 20 to 30 percent of the workers will be migratory miners, who will greatly impact available government services and infrastructures like housing, sewer and electric supply, without bringing a permanent commitment or contribution to the community. The likely total population increase of 1,700 people by the year 1995 will presumably have indirect benefits to the local service economy, and direct costs in education, transportation and other government services.

As the Davis Canyon site, only 20 percent of the labor force is available locally. With up to 30 percent of all jobs again going to migratory miners, the number of people now living in the state who will benefit by direct employment is small, even if the proportion of local beneficiaries is assumed to be large. Given the less developed infrastructure of the area, the potential impacts of a repository project on state and local resources will be severe. The cost-benefit balance will be critically affected by the confidence or anxiety people feel regarding whether the necessary services will actually be provided by the Federal government. And the enormous cost of necessary mitigation measures in terms of schools, recreation facilities, roads and rail lines could understandably require early assurance that these needs will be met.

Assessing these costs and impacts is relatively straightforward on a local level. But the decision on the facility will be primarily influenced at the state level. And the extent to which perceptions change is particularly demonstratable in Tennessee. At Oak Ridge, there is a local balance comparable to Hanford's, where direct employment benefits will be substantial for the existing population, and service and economic impacts can, without making great leaps of faith, be assumed mitigable. On a state level, however, the 600 jobs at the MRS pale in comparison to the 6,000 jobs the Saturn plant will bring; jobs at a facility that does not promise to scale down to fences and million-year warning monuments in the anticipated future. The governor and people of Tennessee want more facilities like Saturn, and

perceive the MRS as a socially unattractive facility that will overshadow the gleam Tennessee took on when it was chosen for the auto plant.

In its proposal for the MRS project at Tennessee with the assistance of a progressive public involvement program, the Department of Energy showed that economic benefits, impact mitigation, and economic incentives are distinct parts of a public acceptance package. The DOE also provided certainty up front as to what such a package would include.

A local steering committee is set up to sort out the benefits from the impacts, and impact mitigation is guaranteed. There is specific reference, for example, to Federal commitment to upgrade the state roads impacted by MRS transportation.

Although the NWPA does not require financial assistance to states for an MRS, the DOE concludes such financial assistance is appropriate, and specifies a proposed \$12.5 million annually for 10 years in direct grants to state and local governments. This is in addition to a commitment to "fully reimburse the state for reasonable and direct expenses incurred" as a result of the MRS facility.

The DOE proposal does not overtly distinguish between impact mitigation and economic incentive, but the clear fact is that incentives have been included to appeal to those who will not directly benefit from the project but who must share the burden. DOE commits to "take appropriate action to encourage the diversification of the local industrial base and thus contribute to greater stability in the socio-economic environment." The proposal also commits to an employment and training program for local labor not currently qualified to enjoy the employment benefits. Most significantly, DOE promises a plum only remotely related to MRS needs at that site; a new Transportation Operations and Research Center in Oak Ridge area, for management of all civilian waste shipments, to include a training center and, if available, new state-of-the-art satellite-based shipment tracking technology.

The current state of cost-benefit assessment for repository sites is by comparison primitive and to some extent counter-productive. Halting progress in the consultation and concurrence process, through which detailed analyses of costs, benefits and impact mitigation needs are intended by the NWPA to be developed, leaves local and state communities without a concrete basis for assessment of these costs or of the likelihood the impacts will be mitigated to their satisfaction.

As a general matter, the Department has not clearly pronounced or promoted a policy of complete impact mitigation. And it has not established a policy of compensation for those who bear the burden but do not share direct benefits. Repository states cannot be encouraged by the Department's careful disclaimer of the MRS proposal as a precedent for other DOE facilities, despite widespread assumptions that the proposal should indeed be just so taken.

Again, economic incentives should be provided not as a matter of strategy, but as a matter of fairness. It would be disingenuous to deny, however, that we will ask the question, does it help our ability to site unwanted facilities?

The probable answer is, it will not always mean the facility will be accepted as on balance a net

benefit. Governor Lamar Alexander of Tennessee has already indicated that he does not accept the MRS as a benefit to his state, despite the generous incentives in the DOE proposal. The governor indicated that the package may be a better balance if a less healthy economic area were nominated for the site. And it is possible that other states, less fortunate in their recent economic development efforts, may weigh the costs and benefits and find the MRS tipping toward the favorable end of the scale. From a political perspective, it is probably the case the the governor's carefully weighed and non-volatile final judgement on the facility was considerably affected by the early identification of impacts and benefits, and that this measured response leaves chances for acceptance of a different location in Tennessee, or of a location in a different state, much improved.

If a guaranteed economic incentive package is accepted for repository siting, certain questions arise which should be examined. These questions relate to cost and equity. Assuming that an incentive is compensation for societal value, should that value be determined by the Department of Energy, or should it

be set by a representative body such as the Congress? Should direct beneficiaries of the repository who will also ultimately bear the cost of the incentive-- nuclear utilities and their ratepayers--have a prominent role in determining this value? How can the value of accepting this facility to the affected state be determined and integrated into the assessment?

It is concluded that the DOE, the Congress and the states should immediately begin to quantify an economic incentive, distinguished from but with consideration of facility benefits and impacts, to be guaranteed up front to all states and localities being considered for siting of repositories. A specific "bonus" facility like the transportation R&D center might not be appropriate in all cases. But the nature and financial extent of the commitment, whether in diverse economic opportunity or in cash grants, should be clear. With these incentives up front, it will increase the equity of the distribution of society's burdens, and assist the ability of the affected population to weigh the consequences of facility siting.