

“Successful Siting Incentives”

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Mitigation and compensation can overcome the NIMBY syndrome of public opposition to siting hazardous facilities.

SUCCESSFUL SITING INCENTIVES

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Not long ago, industry proposed sites for potentially hazardous facilities, the government approved them, and most people accepted the decision. Today, people are not willing to tolerate health and safety risks from waste facilities. They are concerned about the noise and traffic disruptions inherent to hosting a site, and generally, no community is willing to incur a disproportionate burden posed by hazardous facilities. The acronym NIMBY is part of the language. Opposition to siting these facilities is as widespread as it is problematic.

Incentives to potential host communities can calm the current adversarial situation. Developers and government agencies need to understand new ways to deal with this dramatic change in public attitudes and with the intense public scrutiny of proposed facilities that produce, use or store hazardous materials.

Costs, benefits and risks are the

three outcomes important in siting negotiations; mitigation and compensation are the primary incentives that can be used by negotiators. Mitigation incentives include changes in facility design and monitoring practices. Their focus is on questions of physical or perceived risk. Compensation measures emphasize cost-sharing and the redistribution of gains, which focus on equity and fairness.

At most hazardous facility sites, a disproportionate share of the risks accrue to nearby residents or along key transportation routes, while benefits are shared by waste producers and product users. Risks and benefits vary, depending on the specific community, the social and historical context within which the siting occurs, and the type of planned facility. They also vary with changes in perspective, for example, whether impacts are seen as short- or long-term and whether a local, regional or national point of view is taken. These factors can be critical to community response.

Sometimes trade-offs and im-

pacts are relatively easy to identify. For example, new jobs at a facility may offset an increase in traffic congestion. Assessing other outcomes may prove more difficult. For example, a proposal to construct a storage facility for chemical wastes may increase anxiety about possible ground-water contamination or about long-term changes in the image of the community. This anxiety may result in psychological distress, which is hard to quantify. It's difficult to decide whether an impact merits mitigation or compensation when one cannot define its magnitude or when its existence hinges on future events.

PERCEIVED RISK

There is a distinction between technical measures of risk, as predicted by experts, and perceived measures of risk, as experienced by laypeople. Experts typically think about facility risks in terms of impacts on human health and the natural environment as measured by mortality and morbidity statistics. These concerns are important to the public, but so are a number of additional factors: the anxiety or dread of having the facility in one's "backyard"; patent decreases in property values; possibility of a catastrophic accident; the extent to which exposure is voluntary; and the familiarity of the risk source.

A risk as seen by the public may include dimensions not considered relevant by scientific experts. Assurances about plant safety in terms of probability and severity of likely accidents may fail to address public concerns. People may not only be worried about the number of fatalities from a possible accident but also about how these deaths occur, their geographic incidence or their latency period. If people believe an accident could occur, they may focus on its catastrophic consequences. Being told that the associated probability is statistically low may do little to reduce fears.

The public's idea of risk encompasses both the consequences of hosting a facility and the actual siting process. The tone of negotiations can establish a community's level of trust and confidence in management. How options are defined and how power is shared be-

tween concerned parties may prove as important as the facility's expected physical impacts. For example, Department of Energy negotiators openly shared information and worked closely with Oak Ridge, Tenn., citizens in discussions of a temporary storage site for nuclear wastes. Together, they developed a mutually satisfactory plan designed to counteract the adverse social and economic impacts of nuclear-related stigma.

CONFLICTING PERSPECTIVES

In any siting controversy, there are multiple experts and multiple

ferent groups and to clarify the source of their disagreements.

All parties to a negotiation must understand that there are costs associated with refusing a proposed facility. Maintaining the status quo may entail significant costs, stemming from unsafe exposure levels to hazardous materials or from rapidly escalating fees for waste disposal. The default option—what is likely to happen if agreement is not reached—must be clearly stated.

A decision to oppose the siting of a new waste-storage facility does not mean that health risks or financial payments will remain sta-

tion of the Hanford Reservation in Washington as a candidate for storage of high-level nuclear wastes increased local concern about storage procedures for existing radioactive wastes.

USING INCENTIVES

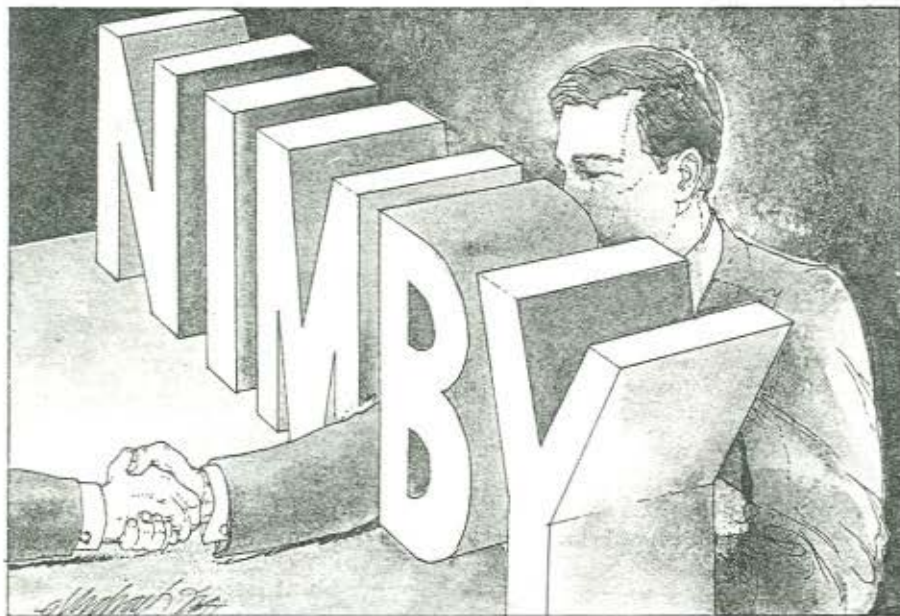
A community, or any group with a stake in the decision, has to judge the net positive benefits of a facility by looking at the default option and at the incentives offered if siting is permitted. Mitigation and compensation are positive tools in this process.

Mitigation measures emphasize reductions in potential risks. Compensation measures emphasize redistribution between predicted winners and losers. The two incentive types are often complementary. For example, until a threshold level of safety is reached through mitigation, discussions about compensation may be viewed as unethical, and any offer of compensation will be unacceptable. Furthermore, what a developer may see as a minor project may be viewed by a community as a threat to its established way of life. Even potential benefits to the community may be viewed as threats. The promise of higher incomes and new jobs, for example, may seem a mixed blessing because it represents change from the familiar and safe status quo.

Both mitigation and compensation can be used in a variety of forms, and careful matching between a specific siting situation and an incentives strategy is a prerequisite for facility acceptance. Parties need to recognize that two sets of concerns are paramount: issues of risk, primarily addressed through mitigation measures, and issues of equity or trust, primarily addressed through compensation.

There are two basic forms of mitigation. Engineering measures, commonly used on many large-scale public projects, are based on physical principles and reflect well-defined probabilities based on the past performance of similar systems. Examples include placing materials in underground storage tanks and installing double liners or clay membranes around wastes.

Institutional mitigation measures place constraints on facility operation, sometimes by directly em-



publics who may agree or disagree with each other. Such disagreement may heighten fears. For new technologies there are often no scientific bases for reconciling these differences, because there is no empirical database and there is limited scientific evidence about the causes of an accident.

Each of the public groups often will view a siting problem from their own perspective. Environmental groups typically focus on the potential consequences of a facility to the surrounding area. Industrial interests may give special attention to economic consequences and to potential risks to human health. It's also important to distinguish between public disagreements based on what parties consider important and expert disagreements about the nature of the risks. A first step toward a siting resolution is to identify these dif-

ferences. The dynamic nature of costs and risks may reveal additional consequences of maintaining the status quo and open the community to new ideas. The initial point of reference for negotiations and expectations for the future is especially important. Local officials are far more likely to recommend a significant change if they perceive the risks of the present situation to be serious and are convinced that the new facility will ameliorate the situation.

What counts is not just the risks to a community from a specific proposed facility but the magnitude of the risks faced by community residents from all sources. Thus, discussions about the health risks of a proposed hazardous facility may increase the salience of other risks and lead to concerns that these other risk sources also be mitigated. For example, selec-

powering local citizens to participate in those operations. Examples include imposing fines for accidental releases, enforcing standards through monitoring and control procedures, or establishing local representation on a facility's governing board.

There are six basic forms of compensation:

- Direct monetary payment. This approach is widely used. However, individuals may refuse an offer of money because they view the payment as a bribe or as a poor substitute for loss of health or peace of mind.
- In-kind awards. These include replacing impacted resources, for example building fish hatcheries to replace lost stock.
- Contingency funds. These set aside funds to assure that a facility

INDIVIDUALS MAY VIEW PAYMENT AS A BRIBE OR AS A POOR SUBSTITUTE FOR HEALTH LOSS.

will meet its future financial obligations if an accident occurs.

- Property value guarantees. This form of compensation protects homeowners and landowners by tying future price changes in the vicinity of a facility to those of a larger region. For example, Kodak has developed a plan to guarantee property values of 200 homes near an industrial complex in Rochester, N.Y., over the next 10 years.
- Benefit assurances. These typically guarantee employment opportunities for community members or tie contracts for services and materials to local suppliers.
- Economic goodwill incentives. This form of compensation includes general nonproject expenditures, such as contributions to charities. These may prove attractive, particularly in cases where local opposition to the siting of a facility is high.

In addition to direct impacts, incentives can have important indirect effects. Providing funds for better educational facilities could attract more individuals and businesses to an area, and modifying

income distributions within a community has important social and economic implications. Another indirect impact is the psychological reaction when a developer is unwilling to provide a contingency fund. This can stimulate fears that an accident is more likely than official statements suggest.

Compensation payments often explicitly recognize this potential for indirect benefits. In France, for example, communities within 50 km of a nuclear power plant used to be given 10% reductions in electricity rates to stimulate community growth (the practice has been stopped, reflecting a decision of the French government that nuclear facilities are as safe as other power-generating plants). Here in the U.S., the Massachusetts Water Resources Authority promised \$24 million in grant money and a job access and job training program to the town of Winthrop for permission to site a sewage treatment facility nearby.

TONE AND TIMING

Timing of incentives can be critical. Different forms of compensation can be provided when a facility is being built, while it is operating smoothly or after an accident. Each option signals a different intent on the developer's part and satisfies a different need of the host community. For example, compensation during planning directly addresses the perceived fairness of the siting process. This is usually important when the host community sees other areas as benefiting from siting the facility in "someone else's backyard."

The procedures followed in siting negotiations are important in their own right. Three factors are often critical. The first is trust, an element difficult to define and normally an issue when it is absent. There is a technical aspect to developing trust, based on a clear and comprehensive statement of the potential risks and uncertainties associated with building and operating the facility to be sited. Acceptable monitoring and detection procedures help develop trust. Other less quantifiable factors might include developer cooperation in allowing public scrutiny of analyses and operations, the opportunities afforded local representatives to take part in decision

making, and the willingness of facility operators to report unplanned emissions and other such incidents.

A second important procedural issue is whether one can achieve "efficiency," meaning that stakeholders should be at least as well-off after a facility is located as they were before. However, it is difficult to decide which types of compensation are promoted, how closely losses and gains should be watched and what constitutes a legitimate claim for compensation. One example of a difficult efficiency consideration is distance from a site. It's not clear what rules should guide claims for facility-related injuries posed by proximity to a site or how to establish geographic bounds on the source or legitimacy of these claims.

Equity is another procedural factor with several dimensions: between locations, between generations and between stakeholders. One good test for equity is whether the key stakeholders in a siting dispute agree during planning stages of a facility to accept the decision-making process without knowing its outcome and maintain that agreement after site selection and facility design. The Southeast Compact, in which eight states have joined to site a low-level radioactive waste repository based on the group's weighting of 10 technical criteria, represents an experiment in siting consideration.

CONCLUSION

The promise of a decrease in societal risks by siting new facilities should lead to exploring reductions in local risks through mitigation initiatives. The offset of compensation can redistribute benefits experienced by owners back to the host community. If all parties pay attention to procedural concerns, such as equity and trust, and to the important link between procedures and outcomes, then the possibility of community acceptance of a hazardous facility can be substantially increased. □

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