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Changing perspectives on the facility siting process

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It has become increasingly difficult to build regionally necessary but locally noxious facilities such as power plants, landfills, waste incinerators, and prisons. The most obvious source of difficulty is popular opposition. The opponents of such facilities are generally more effective than their proponents. "Not-in-My-Backyard" (or NIMBY) is the typical characterization of the such opposition, but "NIMBY" is an unfairly pejorative characterization. There are, typically, individuals or groups who actually stand to lose more than they will gain if such facilities are built. Their opposition may be an appropriate response to the distribution of benefits and costs, a "closed" decision process, or poorly thought-through technical decisions. Thus the actions of such opponents may be justified, even if the overall effect (*i.e.* postponing action) is undesirable from the standpoint of the broader community.

The temptation to view NIMBY as the heart of the problem also fails to acknowledge other difficulties typically associated with siting decisions. Indeed, if the energy and efficacy of local resistance were to fade, siting problems would probably still not fade away. We might (especially in the absence of local resistance) end up with the wrong types of facilities in the wrong places, or too many facilities of a particular kind, or mismanaged facilities likely to become a burden in the future.

Most jurisdictions have not yet figured out how to ensure a fair distribution of benefits and costs or how to manage siting processes so that they produce wise decisions. Most are still stymied by a fundamental lack of trust in government. Unless residents in potential "host" communities are treated as knowledgeable individuals who can make an important contribution, and unless their concerns are treated as legitimate, most siting processes will fail.

From our standpoint, a siting process must begin by addressing the question of need. It must then ensure that the public has faith in the choice of technology, the selection of a site, proposed strategies for mitigating impacts, and the proposed plans for facility operation and management. In the pages that follow, we review these key steps in the siting process, offer a "Facility Siting Credo" for public officials to consider, and show how its principles are being applied in practice.

A siting chronology

The question of need

New facilities must respond to real social needs. If they do not, we can probably do without them. The link to need is the fulcrum upon which all siting processes rest. If people accept the argument that there is a need for a facility (and they accept some of the responsibility for responding to that need), then the siting process has a chance of succeeding. Lingered doubts about need, or concern that the method of defining need was inadequate, will, in turn, tip the balance the other way.

Consider a community faced with the question of what to do with its solid waste. Its desire to build a new waste disposal facility is only partly determined by the volume of waste currently produced. A more complete assessment of need must also take account of the likelihood of success in future waste minimization and recycling efforts. This community will consider who produces waste now, how much they produce, what their disposal costs are, what the costs would be of taking no action, and how these costs would be distributed. Finally, we would want to know the risks associated with current methods of waste disposal, and the possible shifts in the risk burden associated with new waste disposal strategies. All of these factors must be taken into account in assessing need.

It is not simple to analyze these alternatives because a great many uncertainties will inevitably arise. Forecasts of future need depend on population projections, on what we estimate each person and firm will consume, and on the quality of life standards that we specify. Needs assessments hinge on assumptions about the ways people will spend their time in the future and how much waste they will generate doing it. While hydrologists, chemical and civil engineers, demographers, and others are ready to offer expert advice on such matters, it should also be obvious that they must make judgments that will go beyond facts. Assessments of need are unlikely to emerge from objective analysis and disinterested expertise alone.

Need forecasts also depend on judgments about birth rate, migration, and consumption patterns. In many instances these "non-objective" judgments can swamp the outcome of any analysis. Using a high birth rate may make sense to the person who performs the analysis, but just slight variations in such a key operating assumption can overwhelm all other factors. Moreover, judgments about matters such as the potential success of new recycling programs must be informed by "local knowledge," which is usually unavailable to outside experts.

The "Not-In-Anybody's-Backyard" movement can be seen as a criticism of the way in which choices about need are made (Christup and Schaeffer 1990; Heiman 1990). This movement presumes that local groups ought to block the siting of waste disposal facilities, not just to displace construction to other locations, but because there is no underlying need for most facilities. We should, instead, find ways of producing less (or no) waste. The pressure to do this will be diminished if we allow new facilities to be built. The investment in new "no-waste" production methods will be undermined if we keep providing more disposal facilities, or so this group argues.

Finally, the issue of need is tied to growing distrust of government and popular ambivalence about the benefits of new technology. Closed decision making and corruption have fed this mistrust. Highly publicized accidents or technological failures (like the Challenger disaster) have undermined what used to be unquestioned faith in technological advancement.

Choice of technology

Suppose that the parties involved in a solid waste disposal decision can reach agreement on the scope of the problem. Such agreement might include stipulations regarding mandated reductions in the future volume of waste, as well as targets for recycling. These will influence the waste disposal technology that they choose. Should they expand their existing landfill, build an incinerator, or commit to a new high-tech recycling plant?

It is, once again, tempting to treat this choice as a technical question, governed principally by economic and engineering considerations. Given a reliable forecast of the composition and volume of waste, likely fiscal constraints, and public health and safety standards that must be met, analysts might be expected to select the "best" answer. But, the choice of a technology, like the assessment of need, also rests on a great many non-objective judgments. The definition of acceptable levels of risk and impact, the willingness of residents to accept the financial burden, assumptions about future levels of population and economic growth, the availability of markets for recycled materials, and other factors will influence the choice of technology. How each is "weighted" will drastically affect this choice. The best an analyst can hope to do, is to describe these alternatives and to spell out the tradeoffs.

Different technologies are likely to put different groups at risk. Choices about a technology, therefore, depend on how individuals and groups judge its likely effects on them. For example, we are likely to be more concerned about air pollution (which affects everyone) than water pollution (which affects only those whose water supplies might be contaminated), if an incinerator is to be built nearby. A landfill might not seem as inexpensive if we are faced with the prospect of constant truck traffic in front of our house. Individuals and groups are likely to attach more weight to the effects of a technology that they anticipate will affect them personally.

Site selection

The selection of a site is often tied closely to the choice of a technology. Indeed, many characteristics of a site can only be evaluated relative to a specific technology. What we are really asking when we try to select a site is, "How appropriate is this location for the activity we have in mind?" This question can be framed in other ways as well. At one extreme, people are often tempted to ask, "What is the best site?" and look to technical analysis to narrow the field to a single choice. At another extreme, citizens can ask, "Which sites are inappropriate?" and seek to identify areas that can be excluded on technical grounds.

Transportation access, soil capability, adjacent land uses, cost, and ownership patterns are among the factors that often influence site selection. Some of these pertain, however, only if the site is being considered for a particular use like a prison, a refinery, or a landfill. Depending on the nature of the facility, specific attributes ought to come into play. A community looking to build a

solid waste disposal facility will want to consider hydrology and topography. Air circulation patterns need to be added if incineration is the technology of choice. Depending on what exists on the site, impacts on flora and fauna (especially endangered species) might be significant. There is no all-purpose list of factors that must always (or exclusively) be considered in site selection.

It is easy to continue to add factors. But, as the list becomes longer, it becomes increasingly difficult to reach a decision. It becomes tougher to amalgamate or integrate all the various considerations. The range of legitimate inferences that can be drawn from an increasingly complex analysis is large. Paradoxically, we may gain a clearer understanding of the trade-offs involved as we increase the number of factors, but we will make the final decision harder to justify. There is no definitive way to determine the relative importance that should be attached to each consideration. Individuals and groups are likely to have conflicting views, and no one is correct.

There is also no generally agreed upon technique for synthesizing judgments when so many technical and non-technical considerations are involved (Hopkins 1977; Elliot 1980). This makes it hard to compare sites. Indeed, overall site comparisons are unlikely to be conclusive since it is almost impossible to get agreement on how to produce a composite ranking. While it may be tempting to try to collapse these different measures into an overall rating, such attempts are easily undercut on basic mathematical grounds. A commitment to a single ranking of sites, therefore, or to efforts to name the best site, is likely to lead to a faulty conclusion. At best, a site selection process can illuminate tradeoffs.

The process of site selection is also haunted by the polarizing act of identifying suitable or preferred sites. Once such a determination has been announced, everybody else breathes a sigh of relief. At that point, though, the process takes on an "us versus them" quality. Siting efforts always run the risk of becoming a contest of political will in which the participants perceive (and not without reason) that the facility will be put in the community that offers the least resistance or musters the fewest political resources. Such political escalation often undermines the legitimacy of the whole siting process, since a willingness to act reasonably is often viewed as evidence of weakness or a lack of political will.

Assessing and mitigating impacts

Impact assessment should really begin at the same time as site selection. In examining the attributes of potential sites, impacts should be compared. Such assessments, however, tend to be undertaken only after a "favorite" site has been selected. The assessments (required by law) are typically ex post rationalizations for decisions that have already been made. While the law requires that environmental impact assessments review all possible means of mitigating the impacts that cannot be avoided, these options tend to be focused narrowly - in a way that will cast favorable light on the site and technology favored by facility proponents. (See, for example, Susskind 1978 and Borzok 1986.)

In an impact assessment, we want to compare site-technology combinations with each other. For all the reasons we have already discussed, however, such comparisons are often spurious.

Substantial uncertainties cloud such forecasts, and at best, we can offer probabilistic statements (e.g., there is a sixty percent chance that water quality measured in a certain way is likely to deteriorate). The models available for making such forecasts are often based on data and assumptions for one time and location that are not easily recalibrated. At the very least, such "refitting" of these models is very expensive and time consuming.

We must also compare (because the law requires it) possible courses of action with what will happen if nothing is done (i.e., the "no-build" option.) Since neither the site nor the need will remain static, it does not make sense to use the status quo as the basis for a no-build comparison. Yet, if we try to extrapolate from the present, we encounter the "moving baseline" problem. Not only are we uncertain about what the impacts of various contemplated actions are likely to be, but we are unclear about what will happen if the proposed project is not built. Something else is likely to occur. But what? In sum, impact assessment can give us a richer and more detailed understanding of the trade-offs we face, but it is unlikely to provide a definitive basis for choosing a course of action. Non-objective judgments must come into play. And these can often overwhelm the contribution of purely technical (or expert) analysis.

Another concern is how to think about mitigation. Is compensation an acceptable form of mitigation? If there is a risk that a new landfill might contaminate groundwater, we can require that it be constructed with a liner, that leachate be collected and treated, that groundwater be monitored, and - if contamination occurs - that groundwater be pumped and treated (Zeiss 1991). But, is it legitimate to introduce compensation as a form of mitigation if impacts cannot be avoided? This can include guaranteeing the resale value of houses, providing alternative sources of service if drinking water has become polluted, or promising to construct a new wetland of equivalent size if an old wetland is inadvertently damaged. Such compensatory measures do have the effect of offsetting potential damages, but are they equivalent to mitigation measures that seek to reduce or avoid impacts all together?

There is no clear way, in our view, to judge the equivalence of such compensatory steps. Wetlands, for instance, are incredibly complicated and their internal functioning as well as their role in the larger ecosystem are not fully understood. Thus, the promise to build an artificial wetland cannot guarantee that all ecological functions will be sustained. In light of such uncertainties, it is difficult to make judgments about the appropriateness or sufficiency of compensation.

Management

Decisions about the acceptability of impact mitigation and compensation are often a function of the perceptions that interest groups have about how a facility is likely to be operated and managed. If a host community does not trust the government or a private company to do the right thing (or even what they promised), it may set much more exacting impact mitigation and compensation requirements. Thus, attitudes toward the acceptability of certain emission controls are shaped by confidence in the facility operator. A host community might well be concerned about how operating standards and management practices will be revised as new information and technology become available. Indeed, will the knowledge gained through operation of the facility be used to ensure improved performance?

Distrust will often be expressed through resistance at the earliest stages of the siting process. It must be acknowledged and addressed at every step, especially in the specification of management practices and organizational arrangements. Until it is, siting is likely to be blocked.

Summary

At each stage in the siting process there are choices, and there are numerous considerations. Throughout the siting process, there is an important role for technical analysis and expert judgment, but these cannot be definitive. Uncertainty, non-objective judgments, a lack of agreement on priorities, and an inability to make conclusive comparisons must all be acknowledged.

Approaches to the siting problem

In practice, new facilities are usually proposed by government agencies, although private corporations are often the prime movers behind such efforts. The staffs of these organizations must respond to internal (*i.e.*, political or institutional) pressures that create time and cost limitations. If agency and corporate staff are adept, they will realize that they must operate in a political context which limits what they can do. The most common response to such constraints is to adopt a "decide-announce-defend" strategy (Duscik 1978; O'Hare *et al.* 1983).

The agency relies on a small set of professionals with pertinent expertise. This group draws heavily on current ideas about best practice, responds to current legal requirements (like health and safety regulations), and tries to take account of "political realities." They often provide no opportunity for public comment prior to deciding what they think ought to be done. Opening up the decision process before the experts have announced their proposed strategy is tantamount, in the eyes of many elected and appointed officials, to admitting that political considerations are more important than technical factors. This is viewed as an unwise admission (even if it is true!). Once the agency and its experts (in consultation with industry) reach a decision about a site and a technology, they may well allow hearings or some other occasions for groups that are unhappy to "sound off." Proposals are typically presented as the technically best way of meeting a need or responding to a crisis (*i.e.*, an incinerator for Bloomsbury, or a landfill for Brownnton.) Once the announcement has been made, agency personnel shift into a defensive mode. Thereafter, interactions with angry or dissatisfied groups are likely to be characterized by legalistic exchanges as everyone prepares for the eventuality of a lawsuit.

The proponents of a new facility usually have tried to act responsibly. Indeed, they may be angered or personally offended by protests claiming that they behaved inappropriately. They may wonder why the host community, or "the best location," is unwilling to accept the agency's technical justification, or why residents won't accept their social responsibility. "NIMBY" offers a "sore loser" explanation for resistance that is consistent with such perceptions. "NIMBY" also suggests that the proponents must stand firmly behind their decisions, deflect all criticism using the shield of "objective" analysis, and hope that others in positions of authority will rally around.

As our review of the siting process has shown, however, most siting decisions are impossible to justify on technical grounds alone. At each stage, from the determination of need, through the selection of a technology and a site, to the specification of impact mitigation strategies and management practices, many non-objective judgments can and should come into play. The key is to acknowledge this and involve representatives of all "stakeholding groups" in open discussions about these tradeoffs.

It is not difficult to see why a community selected as a host site is likely to fight back. Invariably the costs to those residents outweigh the benefits that they will personally derive from the facility, even if the benefits to the state or region far outweigh these costs. This is especially true if a host community already provides a location for other locally noxious facilities. Why should one community bear such disproportionate burdens? Fairness, more than the adequacy of technical judgments, may be at the core of their complaints. If legitimate differences in perspective have been dismissed without public discussion, if questions about acceptable levels of risk were not addressed, if judgments about the validity or appropriateness of information and modeling assumptions could not be called into question, it is no wonder that host communities gain support when they claim that they have been treated unfairly. While it may seem strange (and irrational) to the proponents, a majority of prospective beneficiaries often side with opponents in blocking a new facility. This occurs, especially, when claims of unfairness ring true.

An alternative approach to facility siting

It is possible to make siting decisions that reflect and respond to the concerns of potential host communities. This can be accomplished without compromising the technical input into these decisions or the authority of those with statutory mandates to take action.

The "Facility Siting Credo" outlined below offers what we think is the best possible advice.¹ It was distilled from the experience of dozens of siting experts and practitioners who participated in the 1989-90 National Workshop on Facility Siting sponsored by MIT and the University of Pennsylvania's Wharton School of Business. The elements of the Credo must be adopted as a package to realize the benefits that this approach offers.

1. *Seek consensus* - It is important to seek the active involvement of all groups who may be affected by a siting decision. Active participation is the appropriate antidote to uncertainty, ambiguity, and legitimate differences of opinion. Representatives of stakeholding groups should participate in determining need, developing criteria for selecting a technology and a site, assessing impacts and developing mitigation strategies, determining satisfactory compensation when impacts cannot be avoided, and specifying monitoring agreements and other management practices. They should be consulted before key decisions are made.

The technical aspects of siting can be treated as occasions for joint inquiry, involving experts acceptable to representatives of all stakeholding groups (including the agencies responsible for making the siting decisions.) In a consensus-building process, expertise should be augmented by local knowledge, and subjected to vigorous public debate. Differences can be addressed by searching for new ways of framing questions or different ways of packaging trade-offs.

A facility siting process that provides opportunities for participation and seeks consensus is likely to blunt charges of unfairness. While parties that actively participate may not become advocates of a final siting decision, an open process enhances credibility and legitimacy. This can help avoid subsequent legal and political challenges.

Any consensus must also reflect the substantive concerns of the parties who have the responsibility for making a decision. Indeed, they should have the equivalent of a veto power. It is possible, though, for decision-makers to meet all their statutory requirements as well as the interests of all affected parties.

The burden of running a consensus-building process may be too much for an agency with other responsibilities. Indeed, the management of consensus-building requires skills and experience that key actors often lack. Moreover, stakeholders may be suspicious of a process run by a proponent. Responsible agencies may, therefore, need to seek the help of a mediator or facilitator to manage a consensus-building process. A neutral professional can help to guarantee that a process will be perceived as fair. Neutrals should also have the skills to handle disruptions along the way.

2. *Work to develop trust* - Lack of trust is perhaps the major barrier to reaching consensus. A major source of mistrust is the assumption that affected communities must accept siting decisions if the technical justification is sufficient and procedural requirements have been met. Ambiguity over benefits and risks will give rise to doubts regardless of the weight of the technical evidence. A failure to acknowledge these ambiguities leads to mistrust. Locating multiple facilities in poor or otherwise disadvantaged areas (regardless of the compensation required or the openness of the process) is another source of mistrust.

Building trust is hard because it must be approached indirectly. Trust is basically a by-product of action that is viewed as trustworthy. Being open about the difficulties of decision making and acknowledging past mistakes can help to rebuild trust. Attempts to hide problems, conceal uncertainties, or ignore the legitimate concerns of opponents will further undermine trust.

3. *Set realistic timetables* - Building consensus takes time. The time commitments involved, however, should be compared to realistic assessments of the time involved in fighting legal and political battles when consensus is not reached. Attempts to rush consensus building are likely to be unsuccessful in the long-run, and to undermine trust in the short-run. On the other hand, siting processes need to be constrained by realistic deadlines or the parties involved will have no way of gauging progress or allocating adequate resources to cover the costs of participation. Deadlines should be sufficient for careful deliberation, but they should require that key decisions be made at specified intervals so that no one can use the consensus building process as a barrier to action.

Several points in the Credo respond to specific difficulties that arise at key steps in the siting process:

4. *Get agreement that the status quo is unacceptable* - A siting process must begin with agreement that a facility is needed. Need must be clearly defined and widely understood. The

implications of doing nothing must be spelled out. The sponsors or proponents of a facility should be able to specify who the beneficiaries will be. If a problem is not considered important, or the status quo is deemed acceptable by many interest groups, it is unlikely that the need for a facility will be established. A siting process that proceeds without agreement on need is unlikely to succeed.

5. *Choose the design that best addresses the problem* - The difficulties of selecting a technology and a site should be addressed through a review of many possible alternatives. The long- and short-term implications of each alternative (including doing nothing) should be analyzed carefully. Since it is unlikely that an indisputably "best" option will emerge, no matter how much technical analysis is done, "best" should be judged relative to the extent to which the interests of all stakeholders are likely to be met. Multiple views of the problem need to be given weight.

6. *Guarantee that stringent safety standards will be met* - No community should be asked to compromise its basic health or safety so that a facility can be built. At a minimum, this means that all new facilities must meet federal and state standards and reflect current thinking about "best practice." Health and safety guarantees cannot be traded away for guarantees of financial or other types of compensation. Acceptable levels of risk should be specified by the stakeholders in light of joint investigations of the risks associated with alternative technologies and possible strategies for minimizing risk. Related risks that are currently accepted by a community, as well as the risks associated with no action, should also be considered. Health and safety cannot be guaranteed unless agreements are made about how on-going monitoring will be handled and what steps will be taken if agreed-upon standards are not met (*i.e.*, "shutdown" provisions.) Host communities should be provided with whatever resources they need to participate in monitoring procedures and in interpreting monitoring results.

7. *Fully compensate all negative impacts of a facility* - When impacts cannot be prevented or mitigated to the satisfaction of the affected parties, various forms of compensation - specified by the stakeholders involved - should be negotiated. Compensation agreements may include property value guarantees, creation of equivalent habitats when loss is unavoidable, and the guarantee of service (such as a water supplies) if contamination occurs. Compensation agreements should specify the conditions under which action will be taken and provide schedules that describe who is to do what (or pay what) by when. Again, compensation should only be used in relation to impacts over and above minimum health and safety standards specified by law.

8. *Use contingent agreements* - Some concerns about the management of facilities can be resolved by contingent agreements that specify what will be done in case of accidents, interruptions of service, changes in standards, or the emergence of new scientific information about risks or impacts. Such agreements should specify the conditions under which the facility must be shut down temporarily or permanently. They should also describe the triggers for action, define responsibilities for taking action, and provide means of guaranteeing that contingent promises will be met. This can be accomplished through the use of "self-fulfilling contracts" (like liquidating bonds) or the use of permits that have to be renewed periodically in light of performance.

Finally, several points in the Credo relate to fairness:

9. *Keep multiple, options on the table at all times* - Host communities sometimes feel stigmatized or discriminated against, particularly if they are the only site being considered. This is true regardless of the thoroughness of the technical analysis that led to the ranking of communities. Conversely, the sponsors of a facility may feel they are being held hostage by a host community in negotiations over compensation or benefit packages if only one community is under consideration. Both problems can be avoided by keeping multiple options open until the very end of a siting process. Parties on both sides are less likely to be suspicious, discussions are less likely to degenerate into confrontations, and the acceptability of the eventual outcome will be enhanced if multiple options remain open. This may seem unduly costly both in political and financial terms, but the costs are likely to be less than those associated with picking one best site and then having to retreat to a second best alternative if the first one does not work out.

10. *Make the host community better off* - If facilities respond to real needs, the magnitude of benefits should be large enough for transfer payments to be made by the region to the host community (Raiffa 1985). A comprehensive package of benefits can include anything from reducing risks unrelated to the new facility, to tax reductions, to amenities such as parks, or even direct cash payments to selected residents or areas. The net effect should be that the community feels it is better off because it has accepted a facility. Incentive payments or promises to take actions of various kinds should be made over and above commitments to mitigate impacts or compensate a community for impacts that cannot be mitigated.

11. *Seek acceptable sites through a volunteer process* - If people understand the need for a facility, and the risks associated with it, if health and safety standards will be met and adverse impacts mitigated or compensated, and if sufficient additional benefits are provided, it may be that communities will compete to host a facility. The chance of finding volunteer communities will be enhanced if an expression of interest in hosting a facility is not viewed as a tacit admission that the attendant risks are acceptable. Such expressions of interest should be viewed as invitations to negotiate, not as commitments. While fairness is difficult to specify objectively, consent provides at least one indicator of perceived fairness. So, it would be best to find a volunteer site from among those that are technically acceptable.

12. *Consider a competitive siting process* - If the level of benefits seems high enough to potential volunteers, they will compete to host a facility. Communities currently compete for new industrial development that creates various adverse impacts but brings in desirable tax revenues. It may be possible to engender a similar competition for regionally necessary but locally noxious facilities. A competitive process must ensure that the level of benefits to a host community is reasonable; the competitive or bidding process should not be used to reduce benefits to a level below that required to compensate for all non-mitigatable impacts.

13. *Work for geographic fairness* - Compensation and incentive payments cannot address all concerns about fairness, even if a community volunteers to host a facility. In addition to a fair distribution of costs and benefits associated with a new facility, there are concerns about cross-facility equity or geographic fairness that ought not be overlooked. No single community or neighborhood should be the site for many noxious facilities. Geographic fairness can be

addressed through a point system for siting different types of locally unwanted land uses (LULUs) or through a preference for smaller, multiple facilities of the same kind, rather than a single centralized facility. Geographic fairness may not emerge as an issue every time a facility is sited, but at some point a threshold will be crossed, and it will have to be addressed.

What guarantees does a consensus building approach offer?

Decisions produced through a consensus-building approach that takes account of the thirteen elements in the Credo may also be questioned. However, if stakeholding groups are given an opportunity to participate in decision making, if their representatives are accountable to the groups they are supposed to represent, if the representatives are provided with the information and assistance they need, if the dialogue is understandable and if ground rules that guarantee equal airing of views are enforced, a siting process is more likely to be accepted as fair.

If stakeholding groups are able to reach consensus on an assessment of need, a choice of (or means of choosing) a technology and site, an assessment of impacts and mitigation measures, and procedures for operating and monitoring a facility, then they are less likely to sue and less likely to win popular support if they do. If a siting agreement reflects the diversity and intensity of concerns and is acceptable to all the affected parties that took the opportunity to participate in the dialogue, public perceptions of fairness are likely to be enhanced.

But are siting decisions reached by consensus likely to be wise? The cultivation of diverse perspectives does more than ensure that proposals are responsive to different groups. It seeks to incorporate the widest possible range of local knowledge and experience into decision making. Consensus-building seeks to ensure that all types of knowledge and experience are applied appropriately when assumptions and judgments must be made. In the face of uncertainty and the lack of a definitive basis for decision making, consensus building assumes that vigorous and extended debate is the source of wisdom.

The wisdom of a siting decision may also be judged relative to the learning that it reflects. Herbert Simon (1981, p. 151) makes the point quite clearly:

"We have usually thought of ... planning as a means whereby the planner's creativity could build a system that would satisfy the needs of a populace. Perhaps we should think of planning as a valuable creative activity in which many members of a community can have the opportunity of participating - if we have the wits to organize the process that way."

If a broad-based dialogue can be sustained, consensus building offers multiple opportunities for learning. Technical consultants and managers need firsthand exposure to public concerns and the benefit of local knowledge, expertise, and on-the-ground experience. Moreover, presenting technical analysis in understandable terms can enhance clarity of thinking. Members of the public are likely to gain a deeper understanding of the issues involved and the choices that must be made if they participate in on-going dialogue.

Discovery is also possible. Discussion among people with diverse experiences and background can lead to new insights, a re-evaluation of priorities, and new relationships. If facilities are

viewed as adaptive responses to problems whose definition and dimensions are always changing, the value of learning is clear. A deeper and broader understanding of the problem and the choices involved may also be invaluable in monitoring a facility over time, and in recognizing related problems in the future. Moreover, when consensus building is successful, it leaves the participants with a clearer sense of how they might respond to problems and disagreements in the future.

Can this approach work in practice?

We can illustrate how the principles contained in the Credo have been applied in practice:

Formulating a city wide policy on LULUs - Like most communities, Jacksonville, Florida (population 700,000) could not get necessary, but locally noxious, facilities sited. The city had been trying to site a new landfill and a resource recovery plant, expand an expressway, build housing for low income and homeless families, and construct residential facilities for developmentally disabled adults, recovering addicts, and AIDS victims. The need for some of these facilities had become critical. Failure to site a new landfill, for instance, had forced the city to spend at least \$55 million to ship its trash out of state.

Frustrated by the resistance to each proposed facility, city officials decided that a new approach was needed. First they met with the Chamber of Commerce and the Community Council (a private, non-profit organization of respected leaders) to propose a collaborative effort to develop a city-wide policy on siting LULUs. These groups agreed to help organize a city-wide effort.

The sponsors decided on a one day, town meeting style event as a forum for developing the LULU policy. The morning session was open to the press and public and was devoted to presentations on the scope of the siting problem and the need for various facilities. The afternoon was limited to official representatives invited by the mayor and the city council. These delegates, with the assistance of trained facilitators, worked, first in small groups and then in a plenary session, to draft a set of principles that they could adopt by consensus and present to the city council.

The delegates invited to the meeting included representatives of each neighborhood as well as environmental organizations, key staff members from city and county agencies, religious leaders, nominees of the business community, and representatives of several "good government" groups. An effort was made to include equal representation of proponents and opponents of the various facilities that the city had already proposed. The gender, ethnic, and racial distribution of the delegates was considered, but these factors were seen as secondary.

Most of the invited delegates chose to attend. The meeting was held, but not without incident. Representatives of the local Rainbow Coalition protested outside the meeting that only two African-American groups and one Hispanic group had been invited. A member of the city council and a number of city department heads expressed concerns about the use of such a group for *ad hoc* policy-making.

Nevertheless, the delegates reached agreement on a set of principles to guide facility siting in the city. These principles included a recommendation that face to face negotiations between stakeholders be used at all times. The delegates suggested that this process should:

- Begin as early as possible and give consideration to multiple sites;
- Use neutral facilitators or conveners where appropriate;
- Engage all stakeholders and ensure that representation is truly grassroots;
- Get agreement on fact-finding methods, including methods for assessing need;
- Search for options that emphasize mutual gain and that include providing compensation to affected neighborhoods;
- Consider the reasonableness of concentrating LULUs in certain neighborhoods;
- Codify all understandings in a written agreement that is contractually binding;
- Make provisions for independent monitoring, and self-enforcing agreements.

The delegates agreed that the new siting process should augment (rather than circumvent) formal, legal decision-making processes, and should be used to provide elected and appointed officials with the best possible advice.

The mayor proclaimed the conference a success and most delegates left feeling enthusiastic. The city council endorsed the siting principles; the role of public involvement in developing a city-wide policy on siting LULUs was applauded by the local press. The city's Department of Transportation made progress on its expressway expansion proposal by acknowledging that they would abide by the siting principles. Staff of several city agencies, however, complained that multiple sitings in the same neighborhood should not be ruled out if technically sound sites were available. The use of compensation was labeled bribery by several members of the chamber of commerce (which refused to formally endorse the LULU policy).

Siting a low level radioactive waste disposal facility - In 1987, Maine passed a Low Level Radioactive Waste (LLRW) Disposal Act in response to federal legislation requiring states to provide a means of disposing of all low level radioactive waste. The state legislature created the Maine Low Level Radioactive Waste Authority, a gubernatorially-appointed body of seven people, and gave it the responsibility for siting, licensing, constructing, and operating a LLRW disposal facility. Maine presently ships its waste out of state, but this arrangement is likely to end soon. State officials know that Maine faces the prospect of assuming responsibility for all the LLRW it generates and paying stiff fines if it cannot find a long term waste disposal solution by 1993. The governor's office is investigating the possibility of entering into a disposal compact with Texas, but this is a complicated procedure that depends on a great many factors beyond the state's control.

Maine has discretion under the federal legislation to define site suitability requirements above and beyond those mandated by the Nuclear Regulatory Commission. A variety of disposal and storage technologies are possible, but there is disagreement about the risks associated with them. The Maine disposal act places an added requirement on the Low Level Radioactive Waste Authority - sixty percent of the voters in a community selected to host a facility must approve the siting decision.

The authority has hired a full-time staff and several nationally recognized consultants. Consulting engineers are completing a state-wide site screening effort aimed at identifying technically appropriate sites. A firm that offers mediation and facilitation services has been hired to assist in the process of building a state-wide consensus on criteria for site selection and the design of the disposal facility. This firm is assisting a Citizens Advisory Group (CAG) in its attempt to advise the authority on how best to meet the interests and concerns of all affected parties. Every effort has been made to include all stakeholding interests in the work of the CAG. More than eighty-five groups and individuals have indicated a desire to participate. Members include a cross-section of environmental organizations, waste generators, business groups, governmental agencies, political interest groups, and concerned citizens, as well as members and staff of the authority. The CAG has adopted protocols to ensure that all views in this diverse group are heard.

Some of the individuals invited to join the CAG faced a difficult choice. The issues involved in LLRW disposal are highly technical and no scientific consensus exists on many of them. The CAG itself was criticized, almost immediately, by anti-nuclear groups for including too many government officials and too many waste generators, and for not giving anti-nuclear views a fair hearing. Charges were also made that participation in the CAG might legitimize the continued production of radioactive waste and constitute an endorsement of the continued use of nuclear power in Maine. More-over, the CAG is only an advisory board and there is no guarantee that any of its recommendations will be followed by the authority. On other hand, several referenda aimed at closing the state's nuclear power plant have failed, and, even without an active power plant, Maine will still face the task of disposing of its low level nuclear waste.

Those who joined the CAG faced several difficult tasks. They were asked by the authority for specific advice on (1) developing technical criteria for eliminating inappropriate sites, (2) ranking qualified sites and suggesting guidelines for negotiating compensation agreements with potential host communities, (3) scoping the environmental assessments that must be done for "finalist" sites, (4) formulating mitigation and joint management proposals, and (5) strategies for involving the public throughout the siting process. They have reviewed all siting criteria proposed by the engineering consultants, and suggested choices that have been adopted by the authority. They have helped to design a "volunteer process" for sites.

The authority has purchased options on at lease ten sites volunteered in various locations. By early 1992, the authority hopes to have a very short list of candidate sites. It must then conduct detailed "site characterization" studies and secure a sixty percent favorable vote in one of these communities, as well as majority support in the state legislature. Thus far, the CAG has played a key role at every step in the siting process. Whether this will make it easier to gain the necessary support later remains to be seen. Whether the reliance on a volunteer process will produce an acceptable site more readily than in states that have selected "technically best" sites and threatened to pre-empt local decision making also remains to be seen. Finally, it is too soon to tell whether the authority's willingness to offer compensatory and incentive payments will be seen as guaranteeing greater fairness.

Conclusions

These cases do not prove that the approach to facility siting described in the Credo will succeed. They do show, though, that these concepts can be applied in practice. In both Jacksonville and Maine, diverse groups have come close to agreeing on general facility-siting principles.

The composition of both the Jacksonville and Maine groups was challenged. It may be impossible to avoid such challenges altogether. Every effort must be made to elicit the widest possible participation of stake-holding groups—even if this means actively reaching out to assist groups that might not be aware that they have a stake in siting decisions or do not feel that they have the capacity to participate.

Offers to compensate unmitigated risks are also likely to be a source of contention. It is important to frame compensation as "benefit sharing" (between the wider community of beneficiaries and the host community.) Charges of bribery are inappropriate and can be deflected by ensuring that the siting process is open, that all health and safety standards established by law must be met, and that any compensation or incentive payments benefit everyone in a host community, not just a few individuals. Bribes are secret payments made under the table to a few beneficiaries. Thus compensation is clearly not bribery.

Facility siting is difficult. The opportunities for disagreement are so large that the infrequent success we currently achieve is probably all we can hope for, especially until faith in government is restored. The guidelines in the Credo assume that individuals and groups likely to be affected by siting decisions have legitimate concerns and valuable knowledge, and ought to be consulted. The Credo provides a framework for including these stakeholders in deciding on fair distributions of costs and benefits and in making decisions that will be perceived as wise. While the Credo does not guarantee success, we urge public officials and policymakers to consider formally endorsing these principles.

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End Notes

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