

A Review of the Literature and Programs on Local Recovery from Disaster

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INTRODUCTION

This working paper represents one of the products of a project undertaken in 1998-1999 by the Natural Hazards Research and Applications Information Center with funding from the Public Entity Risk Institute. The purpose of the project was to develop a framework for a program through which small teams of recovery experts would be deployed to disaster-stricken communities to aid their recovery efforts. One of the early tasks of the project was to review the literature to determine what was already known about how communities recover from disaster.

At the outset of this exercise, it was difficult to conceptualize how a traditional review of the literature on community recovery would be of much assistance in the design of a program to deploy postdisaster recovery assistance that included teams of experts. Rather than presenting a series of abstracts of recovery literature, therefore, this working paper reviews both the academic and more informal literature, draws lessons from it, and summarizes the programs that are already in place for providing technical assistance in the postdisaster setting.

Part One directly analyzes and applies the findings in the recovery literature to the task of developing a recovery

assistance program. Admittedly, those sources that are based on direct interaction and experiences rather than an academic review of postdisaster experiences were easier to apply than were theoretical constructs of community recovery. Nevertheless, the range of sources cited throughout this paper all provide some information relevant to the development of a program for deploying community recovery assistance teams (CRATs).

In Part Two, the existing programs for providing technical assistance are described briefly. These range from training courses to the provision of teams of specialized experts to state programs for mitigation. This information was drawn from agency and organizational documents and from contacts with key informants in both the public and private sectors.

During this initial exploration, the conceptual framework for this team technical assistance program must apply to all localities and types of disasters. This initiative's application to specific communities will depend on many factors yet to be determined. Some of these factors can be controlled and will rely on the guidance of the project's advisors (e.g., the pre-existence of community planning), while many others will be uncontrollable (e.g., the whims of Mother Nature during a given year and the receptivity of the impacted local governments to outside assistance).

Because of these unknowns, there is comfort in finding a thread of common themes and lessons, despite the dissimilarity of communities and events studied. This review explores those findings on community recovery only as they relate and apply to the design of a program of technical assistance that will help communities plan and implement a long-term, sustainable recovery after a natural disaster.

* This literature review was conducted while the author was a member of the staff of the Natural Hazards Center, 1998-1999.

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PART ONE

Theoretical and Applied Literature

OVERVIEW OF RECOVERY

Over the years, researchers studying community recovery have recognized that it is difficult to generalize about communities' experiences because both the communities impacted and the events themselves are unique. Cities and towns are of varying sizes, in different states or territories, with different economic bases and community and cultural values. The communities are impacted by different types of natural hazards, experience different types and extents of losses, and have recovery periods unique in nature and timing. In addition, the recovery and reconstruction experiences of these communities are heavily influenced by the current forms of federal disaster assistance, of which the amounts, types, and procedures have changed significantly over the years (Hegenbarth and Brower, 1985; Spangle, 1991).

Nevertheless, there are a number of similar trends and recovery lessons that can be learned from the experiences of these communities. Common themes and issues that run through the accounts of community recovery and redevelopment can be identified. These lessons are important to the potential development of a community recovery assistance team (CRAT) program.

Dynamic Nature of Community Recovery

The ability to conceptualize recovery and understand its nature would appear to be a critical prerequisite to developing a framework for postdisaster community recovery assistance. This task, however, is far from simple. A review of the literature confirms the difficulty in creating a definite, static picture of the recovery process.

Perhaps the most common research finding over the years, which emphasizes the varying nature of each community's disaster recovery experience, is the shift in the research from conceptualizing disaster recovery from a linear, static phenomenon with specific set stages to an understanding of recovery as a dynamic, interactive, and decision-making process (Mileti, 1999). More than two decades ago, Haas and others (1977) described recovery as "ordered, knowable and predictable" and outlined a uniformly sequential four-stage model of recovery that included emergency, restoration, replacement, and development. Since that time, many others have discovered more fluid, dynamic stages of recovery rather than a straightforward linear process. (Berke and Beatley, 1997; Berke et al., 1993; Rubin, 1995).

This more chaotic, less uniform view of the stages and sequence of recovery hampers the delineation of specific time frames for the entry and deployment of a CRAT. Because of recovery's dynamic nature, it is questionable whether a community's recovery process and, in turn, a team technical assistance approach to that recovery process, can be standardized. Technical assistance issues, timing, and approaches will vary according to the magnitude and nature of the event and size and nature of the community.

In one of the earliest studies, community recovery is described as a continuum of sorts. During the reconstruction period, "the central issues and decisions are value choices that give varying emphasis to the early return to normalcy, the reduction of future vulnerability, or to opportunities for improved efficiency, equity and amenity" (Haas et al., 1977). This balancing concept and related forms of recovery have been used in subsequent research. Rubin, for example, proposes a similar simple conceptual model of three forms of recovery, with varying degrees of mitigation incorporated (although not specified) that require differing levels of effort and commitment: 1) minimalist/restoration, 2) foresight/mitigation, and 3) visionary/community betterment. Each stage is progressively more difficult to achieve. The first two stages can be enabled by a number of factors, including education/training, technical information, professional technical assistance, specialized training, peer assistance, and consultants and experts.

The Context of Community Recovery

Not only is the sequence of community recovery varied and unpredictable, community recovery cannot be examined, studied, or understood in isolation without considering three broad scales of influence: 1) overall pre-existing

community conditions, 2) prior attention to other phases of emergency management, and 3) the interdependence of specific stages of the recovery phase itself.

At the broadest level, the long-standing approaches to growth and development of a community prior to being impacted by a disaster affect the nature of recovery. Recovery has been found to be a complex process, dependent on the material conditions rendered by the disaster and social forces existing in the community before and after the disaster (Rolfe and Britton, 1995).

Nor can recovery be examined in isolation from the other phases of emergency management. At the macro level, the quality of the recovery effort is likely to be affected by previous preparations for, and the immediate response to, the disaster. The different phases of emergency management, including preparedness, response, recovery, and mitigation, are interrelated. The effectiveness of one phase affects and is affected by the others (Rolfe and Britton, 1995). Mitigation has appropriately taken center stage over the last decade and is promoted as permeating all other phases of emergency management.

Implications for the CRAT Framework

In summary, it may be difficult to design a standardized technical assistance approach applicable to all types of disasters and communities. Given that they affect the nature of a community's recovery, factors such as overall pre-existing community conditions and prior attention to other phases of emergency management may need to be considered in the selection of communities for technical assistance. It would be wise to establish an overall goal for providing technical assistance, for example, moving a community from making minimal effort to pursuing more advanced mitigation and "community betterment" objectives.

RECOVERY PLANNING

Value of Pre-existing Recovery Plans

One of the major assumptions of this project is that communities are simply not planning for recovery from the natural disasters that they face. Although some progress in "pre-event planning for post-event recovery" has been made in particular states such as California, Florida, and North Carolina, most communities are unprepared for the most basic challenges of disaster recovery such as restoration of infrastructure and immediate housing needs. More importantly, the majority of communities have not contemplated steps that could be outlined ahead of time to ensure that community development and infrastructure is rebuilt to withstand similar future events or other hazards the community might face. In a further stretch, it is even less common for communities to think through scenarios regarding how their approach to redevelopment might be consistent with, and support and further, other community comprehensive planning goals.

Ideally, recovery planning should be a pre-event, ongoing process. Virtually every study on community recovery emphasizes the value of planning for these events ahead of time. Local officials that have faced disasters emphasize that recovery planning should be an ongoing, organization-wide process that has the full support and involvement of top officials (Wilson, 1991).

Experienced local officials warn that if long-term recovery plans have not been prepared in advance, there will not be time to consider how steps and activities undertaken during the immediate response will affect long-term recovery. It is possible to design response measures that might contribute to recovery if a local organization has prepared long-term recovery plans in advance (Wilson, 1991). For example, if a community's pre-event planning for recovery has included consideration of concepts such as strengthening building codes and land-use regulations or deciding how a main street should be rebuilt, it might then be possible for the community to shape immediate response and short-term recovery activities with those longer-term objectives in mind.

Again, the more recovery issues can be thought through in advance, perhaps by means of disaster scenarios, the better

the efficiency and "quality" of post-event decision making (Geis, 1996). It also has been recommended that recovery scenarios be used that are aimed at the first several years after the disaster rather than simply the first several days (National Academy of Sciences, 1990).

Los Angeles and other California communities are at the cutting edge of pre-event planning. The California legislature recently adopted legislation that requires communities to incorporate pre-event planning into their response and recovery plans (Geis, 1996). While no community can be expected to identify all of the potential rebuilding and recovery issues and opportunities that might arise ahead of time, a framework can be established to identify and contemplate the most likely losses a disaster might bring and the recovery activities most likely to meet with success (Wilson, 1991).

Researchers in various after-action reports and case studies have noted the absence of recovery plans and the resultant ad hoc decision making (Rubin, 1995). Conflicts over possible paths for recovery, and a lack of local organizational preparation and capacity, can severely hinder a community's recovery process (Rolfe and Britton, 1995). The prioritization of the recovery issues that a community must resolve and timely decision making become extremely difficult in the duress and confusion of a postdisaster environment. Realistic and carefully conceived plans and regulations can reduce the number of land-use decisions to be made in this high-pressure, postdisaster period. (Spangle, 1991).

Plan Failure or Non-existence

Research has documented that most local disaster plans need to be extended to explicitly address recovery and reconstruction issues (Mileti, 1999). Studies have found that many plans in place suffer from several basic flaws: 1) most plans focus heavily on emergency response and preparedness issues and do not give adequate attention, if any, to recovery and reconstruction; 2) plans are often "paper" plans—they exist on paper but are not referred to or acknowledged during postdisaster decision making; 3) many public officials are not aware of the content of the plans and are not taking actions or making decisions based on them; and 4) plans tend to be viewed as end products rather than as dynamic instruments and the basis for ongoing dialogue and processes (Berke and Beatley, 1997).

Part of the reason for the failure to adequately plan rests on the separation of responsibilities and priorities within local government. The local emergency management community, responsible for disaster response and immediate recovery planning, has lacked a mandate to pay attention to mitigation and long-term community redevelopment. At the same time, the bells and whistles of emergency planning have not been on the radar screens of local planners. Ideally, these areas of local government would work together like integrated parts of one machine. CRAT participants would have a cohesive, comprehensive group of local individuals to assist who work well together and are sensitive to each player's goals and concerns.

Post-event Planning for Community Recovery

Existing recovery plans can rarely provide complete guidance for rebuilding damaged areas. A disaster can change the planning slate and provide new opportunities that can only be captured through a deliberate post-event planning effort (Spangle, 1991). Some post-event planning (or adapted recovery strategies) will still be necessary for all communities.

Extracting from lessons learned after a California earthquake, some generalizations can be made about how postdisaster planning differs from pre-event recovery or conventional planning.

- After a disaster, planning for rebuilding is a high-speed version of normal planning, as well as a dynamic cyclical process. Local communities faced with disaster recovery will not have the luxury of following normal procedures for development review and approval.
- After a disaster, planning for rebuilding is more sharply focused. This is not the time to begin a regional planning process.
- After a disaster, planning for rebuilding is more realistic. Planners must avoid raising false expectations by unrealistic planning schemes and, instead, strive to build public consensus behind appropriate redevelopment approaches. Comprehensive evaluation of funding sources for implementation is essential (Spangle, 1991).

Activities while Planning is Underway

Many different activities can and should take place while recovery planning is underway. After a disaster, essential lifelines and services must be restored quickly; critical facilities must be quickly repaired or replaced; and temporary space may need to be identified for public services. The resumption of regular school and community activities after a disaster is very important to help families resume normal life (Spangle, 1991). The immediate recovery needs of displaced businesses and residents must be taken care of in order to fully attend to long-term recovery. Early development proposals may need to be accommodated and encouraged before a long-range plan is completed (Eadie, 1991).

The following are lessons to keep in mind during the provision of technical assistance for recovery planning:

- Planning and rebuilding can occur simultaneously; some rebuilding takes place before master plans are completed. Although building moratoria may be appropriate after a disaster, streamlined decision-making procedures for those land-use questions that can be resolved quickly might help demonstrate good faith on the part of local officials. As soon as possible, local officials need to determine areas of the community that can be rebuilt under existing plans and regulations and provide for rapid processing of permits for repairs and rebuilding in those areas. In the other, more problematic areas, clear procedures and time schedules for planning, making decisions, and getting information are needed. In this higher-speed version of normal planning, decisions might be phased so that planning and rebuilding can proceed in tandem (Spangle, 1991).
- Defining urban expansion areas helps. After an earthquake, planners usually have the information needed to plan for urban expansion while avoiding clearly unsafe ground. By quickly defining such areas, planners can speed up the relocation of people and businesses from heavily damaged areas that may be a long time in rebuilding (Spangle, 1991).

Linking Recovery Planning with Existing Efforts

Recovery planning may be viewed as having possible advantages in that it is a higher-speed, more focused version of normal planning. A community could strategically utilize suddenly available resources to further long-range plans, such as planning for capital improvements.

Practitioners caution that following a disaster is not the time to start over (Spangle, 1991). Even with extreme damage, most rebuilding can be guided by existing plans and regulations. Keeping a handle on and ensuring that redevelopment remains consistent with predefined comprehensive plans and objectives can be a challenge, especially given the number of players (e.g., federal, state and local) and variety of assistance (e.g., housing, economic development, disaster relief) that may become available through existing and supplemental agency appropriations.

Some experienced disaster officials also have warned that linking recovery planning with other planning (e.g., the general plan) may expose inadequacies in those other plans—in some cases they may be incomplete or undergoing revisions. In those instances, instead of being helpful and providing guidance and direction to recovery efforts, linking recovery planning with other planning efforts may make for additional complications (Eadie, 1991).

Besides exposing weaknesses in the actual plans themselves, planning to rebuild also can enhance attention to long-standing problems and issues, such as appropriate levels of growth or economic development, location of new infrastructure, and problematic political environments (Eadie, 1991). A community's various challenges in managing growth and development and the issues important to the look, feel, makeup, and soul of a community all may be further exposed, become more pressing, and be complicated by the recovery process.

Although the postdisaster environment may not be the most appropriate time to address larger issues, it may force needed decision making. The pressure can cause the wheels of politics to spin somewhat faster and serve either to ignite support behind a particular community comprehensive planning scheme or, more narrowly, to plant the seeds for future directions. In fact, redevelopment should be viewed as preparation for the future rather than recovery from the past. Thus, taking a reasonable amount of time to address the complex issues can only be a good investment.

It may be possible for technical expertise to gently lead community minds along the path to addressing larger issues, if such prodding from outside advisors is welcome. There is a potential to help local officials understand how recovery can be a process for addressing long-standing community problems. Such an effort likely would require a highly specialized and competent set of experts, as well as a community interested in possible solutions.

Implications for the CRAT Framework

Given the importance researchers attach to planning for postdisaster recovery, either a pre-event or post-event recovery plan may be a reasonable requirement for a community to be selected for technical assistance. Technical assistance then could focus on assisting the community in quickly developing a recovery strategy. Responses from many key informants indicate that the communities most in need are those that are inexperienced and have done little planning for any phase of a disaster. It may be possible for quick assessments and recovery/reconstruction strategies to be formulated post-event to assist these communities. However, it will be difficult in that time frame to make such strategies meaningful in terms of public participation and to obtain endorsements from local political leadership. If it is determined that CRAT teams will be geared towards assisting a community in using disaster recovery to address long-term development objectives, are there experts to provide such assistance?

POLITICS, TIMING, AND PERCEPTION

Politics after a Disaster

The importance of recovery as an ongoing process becomes even more evident when considering the difficult political environment in which postdisaster policy making takes place. The political world after a disaster has been described as one featuring high media interest and a more calculated desire on the part of local officials to be perceived as doing something (Rolfe and Britton, 1995). In this environment there is a much greater likelihood that decisions on recovery policy will be skewed towards immediate and visible issues.

Although there are certainly no guarantees, there is a better chance that decisions will reflect long-term issues if a community has addressed recovery planning ahead of time. As researchers have pointed out, disaster plans can be useful in 1) identifying in advance the postdisaster recovery and reconstruction needs; 2) coordinating the various agencies and organizations involved in recovery and reconstruction; and 3) establishing response and recovery priorities and procedures in advance. The existence of a detailed recovery plan that outlines actions, responsibilities, and recovery and reconstruction criteria may minimize the role of politics (Berke and Beatley, 1997). The trick would seem to be to get attention to disaster policies moved to the front burner long enough to be "cooked," before the actual occurrence of a disaster.

Differences in Pre- and Postdisaster Politics

The political situation in a community may be significantly changed by the occurrence of a disaster. After the Loma Prieta earthquake occurred, the City of Santa Cruz found that old interest groups were strengthened and new ones formed; neighborhood groups organized and developed strength; the downtown business community became more important to the political process; and most importantly, an entirely new political agenda was created—an agenda of recovery where debate centered around how to do it, not whether to do it (Wilson, 1991). After a disaster, new political interests (such as property owners associations) may coalesce and need time to organize. Rebuilding may require shifts in political and/or institutional patterns and habits (Eadie, 1991).

A changing political climate, in combination with a recovery agenda, raises some important considerations for technical assistance. Local leaders may be slightly overwhelmed and stretching to adapt to this changing climate, and the introduction of a team of outsiders may exacerbate the challenges of this adaptation period. Technical assistance could focus on how to manage changing politics in a recovery agenda. A balance may need to be found between providing guidance on managing the changing political scene, while not adding additional perceived "change threats."

Rebuilding Opportunities Take Time

Many researchers and practitioners have documented that pursuing rebuilding opportunities takes significant effort—it is more difficult and time consuming than simply rebuilding what was there. Sustainability and sustainable development call for the adoption of a much longer decision-making time frame. There are few shortcuts in such progressive initiatives as implementing new code requirements in retrofitting and new construction, increasing retail trade in a declining downtown area, relocating and/or elevating residences, and upgrading critical infrastructure. Unless waivers are provided, procedural and legal requirements must be met, including environmental reviews and appropriate cost-benefit analyses (Eadie, 1991).

In a recovery setting, however, the short-term needs of the impacted population are frequently given priority, but recovery actions that satisfy a short-term goal or need may make little sense when community sustainability is a goal (Berke and Beatley, 1997). The considerable additional effort required to resolve these short-term vs. long-term conflicts could dampen a community's enthusiasm for changes and improvements.

Planning also may proceed in fits and starts because the perception of what is necessary changes over time. People are impatient. The pressure to move quickly can result in hasty decisions not fully thought through (Eadie, 1991).

Getting Around the "Return to Normalcy"

One of the most common trends of local recovery is the community's desire to rebuild as quickly as possible in an attempt to return to "normal." Two decades ago, community recovery researchers noted that the strongest pressure of all for a prompt return to normalcy comes from the existence of impacted and displaced families and businesses, and these pressures do not create a positive environment for orderly, well-planned reconstruction processes (Haas et al., 1977).

Some repairs will begin immediately, such as those to public water and sewer, electricity, and the road system. Unless plans have been made before a disaster to relocate or redesign these facilities, the sense of urgency to replace them may well preclude hazard mitigation opportunities, as evidenced by events in Gulf Shores after Hurricane Frederick in 1979 (Hegenbarth and Brower, 1985). While restoration of critical infrastructure is a priority, housing for displaced residents also becomes a conspicuous issue as homeowners living in temporary housing understandably want to repair their homes and move back to their more familiar living environment as soon as possible.

Some attention must be given to how technical assistance provided by teams of experts can short circuit this tendency to try to return to normal as quickly as possible.

Long-term Community Perceptions as Obstacles to Mitigation

Responsible recovery planning can become stymied by old perceptions and mental pictures of the community as it was before the disaster. In 1978, this phenomenon was documented in a small town in Ohio (Francaviglia, 1978). In what would have been considered a praiseworthy, responsible effort, the town implemented a building moratorium and went through the process of developing a detailed comprehensive redevelopment plan that addressed past mistakes and stressed downtown revitalization, housing reconstruction, and floodplain zoning. But mental images of the old town led to a natural collective perpetuation of what the town had been before. Three years after the disaster, the elements of the old town began appearing in renewed strip development (much of it in the floodplain), continued downtown decline, and identical separated housing patterns with lower-income units located in the same areas that were viewed as "undesirable" before the flood (Francaviglia, 1978).

The disaster events themselves also can produce long-term community perceptions that work as obstacles to mitigation and sustainable redevelopment. Researchers studying Gulf Shores, Alabama, after Hurricane Frederick found perceptions that coastal storm damage was a function of substandard construction. The reality is that, while building codes and elevation requirements will help reduce damage, they should not be regarded as a panacea for safe shoreline

development (Hegenbarth and Brower, 1985).

An even stronger obstacle to mitigation and sustainable redevelopment that resulted from Hurricane Frederick in Gulf Shores was the perception that the storm contributed to an economic revitalization and development boom. Once the stress and tension of the immediate recovery period had passed, the post-storm impressions of community inhabitants seemed to concentrate on positive economic impacts that the storm initiated. The large influx of non-local funds from federal and insurance sources created a heady, almost "boomtown" atmosphere. Hurricane Frederick was partly credited with initiating a lucrative development boom that began while reconstruction was still underway. Local realtors suggest that development pressure had been growing in the Gulf Shores area and that the storm created an opportunity for developers to acquire beachfront property with the older structures conveniently removed. Although the hurricane did not produce the economic boom, the storm appeared to have stimulated the processes and shortened the time span over which development might have otherwise taken place (Hegenbarth and Brower, 1985).

Understanding and acknowledging underlying perceptions and trends that may act as obstacles to hazard mitigation and sustainable redevelopment during recovery will be important in providing technical assistance. To move ahead without recognizing the local climate may well prove fruitless.

Timing the Initial Intervention

The timing of technical assistance for recovery has been the subject of some controversy. On the one hand, being part of the disaster response and immediate recovery could help a team of experts gain credibility with the community. On the other, if the team arrives later, local officials would be more likely to have time to give attention to outsiders and think about long-term recovery.

For their mission supporting longer-term redevelopment of the community, the consultants of the U.S. Department of Housing and Urban Development (HUD) acknowledge that it may make more sense to let some time elapse before the technical assistance consultant team arrives. This allows the community to get to a point where local staff are not consumed by dozens of emergencies and can begin to focus on recovery. For future technical assistance activities, the HUD team recommended that technical assistance intervention be scheduled "to coincide with the community's capacity to begin addressing longer-term recovery planning" (U.S. Department of Housing and Urban Development, 1997).

Although the timing of a team's arrival will ultimately depend on the purpose of the technical assistance for a particular community's disaster, arguments can be made that being there early is important for many reasons. Most notably, many experienced disaster experts have stressed the very real sentiment that if local officials are not able to effectively address the immediate needs of their citizens, other opportunities to advance responsible redevelopment agendas will be lost. In addition, short-term recovery aid and activities can contribute to, or impede, other broader redevelopment goals, including mitigation (Berke and Beatley, 1997). Important decisions are made during the early stages of recovery, and this must be taken into account in providing assistance.

Movement from the more crisis-oriented first phase of recovery to longer-term recovery and redevelopment activities can also be awkward for communities. One researcher provides a poignant description of where a community stood four weeks after an earthquake:

Emergency response is complete and emergency life support systems and services have been restored; damage to major infrastructure has been assessed; an overall reconstruction plan defined and the procurement process initiated; the general public is anxious to begin long-term reconstruction activities. At this point . . . the sense of community that was so important in bringing people together immediately after the quake is beginning to fade and a consensus on what to do next is noticeably absent. (Washburn, 1995)

Being there during the transition between response and recovery with guidance for communities on next steps may also be important and of much value to communities.

To make the matter of technical assistance timing even more complex, the timing of recovery and rebuilding is

different for every disaster. After the Coalinga earthquake, for example, rebuilding began almost as soon as the dust had settled (French et al., 1984). In many floods, on the other hand, disaster impacts and rebuilding occur within much slower time frames.

LOCAL VISION, COORDINATION, AND PARTICIPATION

Shared Long-term Vision for Community

Ideally, all recovery efforts should concentrate on identifying the needs of the affected community and be guided by a community's vision of itself as sustainable and resilient in the face of future disaster. Federal and state officials, however, are rarely familiar with a community's long-term vision, if one even exists. The need for achieving consistency between a community's recovery and its long-term vision is perhaps one of the biggest reasons for placing management of the recovery process in the hands of local government (Rolfe and Britton, 1995).

Placing this responsibility into local hands unfamiliar with the disaster recovery process argues for the need for technical assistance to aid communities in quickly adapting to manage the recovery process. This assistance could include instruction on how the recovery process works and how this process relates to a community vision of long-term sustainability.

In order to successfully recover from a disaster, a reasonable amount of shared community vision is necessary. If that vision has not been shaped before a disaster, appropriate processes should be used to generate such a vision early in the recovery period. "Design charettes" have been used in many instances for a variety of community visioning and consensus-building efforts, both in ongoing community planning and in postdisaster situations.

The local political system may have difficulty reaching agreement on key planning issues after a disaster. Any prior local adversaries or long-standing jurisdictional disputes will likely be in play after a disaster. Recovery and redevelopment issues, when reviewed and assessed, also will reveal certain local philosophical preferences about the proper roles and powers of the private and public sectors in rebuilding a community.

While resolution is preferable, local recovery strategies may have to move forward within such constraints. The city manager of Santa Cruz warns that communities cannot afford to let natural divisions block recovery. He advises that "in situations where it is difficult or impossible to achieve consensus about postdisaster goals, it is necessary to 'agree to disagree' about some things, but proceed with recovery anyway" (Wilson, 1991). An attempt to find common understanding, however, should be made before moving forward (Eadie, 1991).

At a minimum, recovery experts arriving to help local officials should identify and examine these local factors, assess how they may affect the decision-making environment during recovery, and determine how negative forces may be minimized. Team members must remember that political imperatives may be at odds with what makes sense from a planning or administrative perspective. Unexpected or time-consuming political battles—for example, a historic preservation fight—can command much of the time and attention of key actors and hold up other decisions (Eadie, 1991).

Locally Based Efforts are Best

Consistent with the literature on sustainability, many community recovery studies have found that locally based, bottom-up recovery approaches are most effective. This is not surprising since the local level bears responsibility for public health, safety, and welfare and feels the effects of natural disasters more keenly than any other level. The local planning and development decision-making processes are the foundation for any approach to disaster recovery (Geis, 1996). In characterizing recovery, others have noted that planning for rebuilding is a local function. "Although federal, state and regional organizations may be involved, the context for planning is local and the key planning interactions are with local decision makers, staff, victims, property owners, employees and residents" (Spangle, 1991).

When disaster-stricken people are allowed the opportunity to find their own solutions through bottom-up community approaches to recovery, the results are more effective than traditional top-down approaches. Studies of top-down approaches to recovery suggest that these efforts fail to deliver assistance that matches local needs, and more importantly, they severely neglect and short-circuit the development of local capacity to handle current and future challenges (Berke and Beatley, 1997).

A disaster may provide direct attention to problems that are normally obscure, and if a bottom-up, local approach is used in recovery, the disaster recovery experience can leave the community with organizations, networks, awareness, and political mechanisms that will serve as a foundation for the pursuit of community sustainability (Berke and Beatley, 1997).

LaPlante and others (1989) argue that local governments are often the forgotten partners in disaster recovery, a process that itself is very often neglected in favor of the apparently more "obvious" need to ensure that effective impact response actions are in place (Rolfe and Britton, 1995). Whether there is an actual element of competition between levels of government for control of the recovery process is debatable. What has been documented is that full local control over recovery is much more likely if a local government can demonstrate that it either has the process for recovery management in place or has a set of policies and procedures that have been agreed upon by relevant local interest groups and that can be implemented without abnormal central assistance (Rolfe and Britton, 1995).

Particularly in presidentially declared disasters, where the nation's tax dollars are at work, there will always be more than one level of government with a legitimate interest in elements of the recovery process. Although a local government may not have full control over essential resources for the effective management of recovery, it can and should have policy, procedures, and guidelines that can steer the recovery process through its various manifestations (Rolfe and Britton, 1995). This is one area where outside assistance in ensuring the development of such important procedures and guidelines may be most critical.

These findings emphasize that great care must be taken that technical assistance from outside the community be supplementary. Primary responsibility and authority must reside with leaders and organizers within the community. In addition, the local political process must take ownership of the recovery planning effort. An overriding goal of a recovery assistance program should be the effort to help local communities take advantage of the postdisaster recovery period to build local capacity for addressing sustainable development and redevelopment, as well as immediate concerns.

Coordination

It is essential that the community as a whole—businesses, neighborhood associations, builders, the media—be involved in developing and implementing mitigation and sustainable redevelopment programs (Geis, 1996). Recovery is best managed at the local level, but there is a need for strong cooperation and coordination among and within levels of government. An important function is coordinating the efforts of other public agencies operating within the jurisdiction. In addition to coordination with other local entities, the community must interact with regional, state, and federal agencies in terms of programs, funds, and requirements that affect redevelopment.

When disaster recovery efforts are tightly knit and well organized and involve frequent and sustained interaction, the capacity of organizations to communicate, adapt, and implement coordinated and consistent recovery programs is high. Locals have a greater chance of communicating to external organizations their needs and capacities for recovery. Without substantial coordination and interaction among relevant players, the recovery aid is less likely to meet local needs.

Much of the research, either explicitly or inherently, refers to the importance of vertical and horizontal arrangement and responsibilities in community recovery from a disaster. A conceptual model for viewing community recovery has been proposed based on concepts of horizontal and vertical integration. In this model, the strength of predisaster horizontal and vertical ties can have a substantial impact on the ability of a community to influence postdisaster recovery.

This notion of integrated management has been applied to many disciplines and fields, and provides a useful framework for providing technical assistance—namely being aware of, examining, and facilitating these arrangements in the postdisaster setting.

A community with a high degree of horizontal integration has a tightly knit network among local organizations. This type of community is a true system of interdependent parts, and is a viable, locally based problem-solving entity (Berke et al., 1993). A community with a low degree of horizontal integration has a weakly knit social network, and interaction is infrequent among local government agencies and social subgroups with an interest in public policy initiatives. The community lacks the ability to act with collective unity to solve problems. After a disaster, such a community fragments, and is unable to mount a unified effort to control its own affairs. Consequently, the fit between redevelopment programs and the needs and capacities of citizens is likely to be poor (Berke et al., 1993).

A community with a high degree of vertical integration has a relatively large number of ties with larger political, social, and economic institutions. Vertical integration helps to expand the resources (funds, influence, etc.) potentially available to the community. Moreover, issues of local concern have a greater chance of being communicated to central authorities. A community with a low degree of vertical integration suffers from a lack of knowledge about, interaction with, and access to important external resources. Berke and others (1993) maintain that while significant alterations to institutional ties occur during the immediate postdisaster phase, the normal institutionalized horizontal and vertical linkages tend to be re-established during long-term recovery.

Vertical integration can be more effective at meeting local needs when activities that strengthen horizontal integration before and during recovery are present (Berke et al., 1993). Based on this information, it may be that technical assistance would best be provided to communities that have strong horizontal integration, but need assistance in understanding and developing vertical linkages to outside resources. It may be assumed that these types of communities are efficient at solving local recovery problems and that full public support is behind recovery initiatives, but help is needed to implement those solutions.

Building Local Capacity

Beyond the physical aspects of rebuilding, the recovery period also offers an opportunity for communities to strengthen local organizational capacity to facilitate economic, social, and physical development long after a disaster—that is, to build its own sustainability. In this area communities could use assistance in helping them evolve into stronger entities able to pursue appropriate development directions. As many researchers theorize, "external aid can be used to build and support local organizations to be more effective in undertaking self-directed sustainable development initiatives. The community can assume the role of active participants, rather than helpless victims. Local people can define goals, control resources, and direct redevelopment initiatives with long-term economic and social benefits" (Berke et al., 1993). The development and strengthening of this organizational capacity is an extremely important, though less visible, area for technical assistance.

During disaster recovery, this technical assistance goal may be described as improving the process of government decision making, and could be viewed to be as important as specific physical outcomes. As certain researchers assert, a large mistake of international humanitarian aid programs has been to place the measure of success on outputs (e.g., homes rebuilt) rather than on strengthening local organizational capacity (Berke and Beatley, 1997). Expert assistance in sustainable recovery should focus on process as well as specific physical outputs.

Public Participation

Another important theme in the findings on community recovery is that citizen involvement is critical to the recovery process. For example, local officials in California have found that after an earthquake, when people are suffering from a strong sense of powerlessness, it is even more important for the public to be involved in the recovery process (Eadie, 1991). The importance of public participation highlights a unique point that recovery is not just a built environment outcome, but a social process that includes decision making about restoration and reconstruction activities (Nigg, 1995).

A number of lessons about the value of public participation were learned through the redevelopment project in Soldiers Grove, Wisconsin. These public participation benefits would apply in any community recovery effort: 1) recovery activities and projects that the citizenry has helped conceive and guide are much more likely to enjoy broad public support; 2) ownership and responsibility for the success or failure of the recovery effort falls on the entire community; 3) state and federal agencies view the effort as more stable thus increasing likelihood of support; 4) plans are more realistic because they reflect the concerns and goals of the people affected; and 5) local efforts avoid misinformation (including false rumors) (Becker and Stauffer, 1994).

Local planners found that design details become important to everyone after an earthquake. All rebuilding requires some blending of new buildings with old and decisions affecting how the new urban environment will look. It is worthwhile to take time to reach public consensus on major urban design issues, before options are lost by reconstruction (Spangle, 1991). The reliance on plans developed by outside experts does not induce public participation because it eliminates the need for disaster-stricken people to come together and solve their problems in a cooperative spirit (Berke and Beatley, 1997).

Based on all of these findings, a public participation element will be critical to a technical assistance program for community recovery.

Community Recovery Groups

Another lesson is the need to restructure a local government's organization to provide some kind of centralized postdisaster locus for all the recovery activities. In fact, a recent review of the recovery literature found that there appears to be a need to organize a community participant recovery group to conduct the recovery assessment and planning and retain leadership over long-term implementation (Mileti, 1999).

The National Academy of Sciences study on "practical lessons" from the Loma Prieta earthquake found that after an event, "the organizational structure needed to guide intensive rebuilding efforts needs to be defined and the rules for its operation established. Also, staff needs for the body need to be considered and met" (National Academy of Sciences, 1990). The organizational structure may be entirely new or an existing organization can be assigned new powers and responsibilities. An existing or newly-formed redevelopment agency often directs rebuilding after an earthquake. In the city of Santa Cruz after Loma Prieta, the redevelopment department served this purpose (Wilson, 1991). Other communities have used an elected body, ad hoc reconstruction commissions, public-private partnerships, and committees to oversee rebuilding (Spangle, 1991). Researchers investigating restoration and short-term reconstruction after the Coalinga earthquake in 1983 found that the existence of a redevelopment agency in place before the earthquake seemed to have facilitated the rebuilding of the downtown business district (French et al., 1984).

The city of Grand Forks also provides an interesting example in which the city council appointed a Flood Response Committee to serve as a focal point for the council on all flood-related matters. The city council also appointed three key staff department heads the "tri-chairs for recovery" to manage the city's recovery resources: the Director of Housing and Urban Development, the City Engineer and Public Works Director, and the Finance Director and City Auditor. The mayor and city council also established a separate Business Redevelopment Task Force in order to more directly involve the business community in recovery efforts (U.S. Department of Housing and Urban Development, 1997).

A community network of post-event players could include local officials, planners, emergency managers, public works directors, and others. Whatever the form of organization, it usually operates to make decisions more quickly than normal. The best organization for planning is streamlined and accountable. To do this, the organization needs well-defined authority and a clear structure for making decisions (Spangle, 1991).

One experienced, forward-thinking practitioner has drafted ordinances for the establishment of such community recovery groups. According to this source, "You can plan, set in place, and adopt an ordinance that would automatically authorize by the governing body a recovery organization that would run parallel with the emergency organization. It would extend well beyond the emergency period, through the years that it takes to reconstruct a community. This is fundamental to the major change that is needed in this area of recovery and reconstruction

planning. We have seen some form of ad hoc reconstruction organization emerge in every major catastrophic situation. If we have learned nothing else, a reconstruction organization must be planned for so that it can be activated by the declaration of the emergency" (National Academy of Sciences, 1990).

Recovery groups can serve a number of valuable extensive functions. For example, after Hurricane Alicia in 1983, the city of Galveston, Texas, created a recovery task force comprising a number of subcommittees, staffed by community leaders and "expert" citizens, covering a range of issues from insurance problems to building code modifications. The work of these subcommittees was found to divert pressure away from the overworked city council and provide the sense that community concerns were being addressed and that local government was responsive despite the postdisaster confusion. Volunteers to these committees provided an excellent mechanism for channeling local expertise, such as architects, builders, and mental health experts (Hegenbarth and Brower, 1985). The fact that these groups, if utilized properly, can provide such valuable functions, including the ability to capture and utilize local resources, should be stressed to community officials in guiding them to establish a recovery group framework.

The value of recovery groups in addressing short-term issues is clear; their effectiveness in long-term implementation remains in question. After Hurricane Alicia, the most effective subcommittees found were those that addressed immediate concerns such as insurance problems, or short-term housing needs. The longer-range subcommittees, such as the one for redevelopment of the west end of the island, were less effective in determining recommendations, and members indicated that interest flagged in the months after the storm as the most pressing issues were resolved (Hegenbarth and Brower, 1985). Some attention also may be given to what mechanisms can help maintain the momentum and activity of the identified local group(s) to continue to address long-term redevelopment.

One function of technical assistance could be to help the community organize to implement existing plans and procedures for post-recovery groups or to help the community quickly determine and design the organization and procedures and then proceed. Either way, the value of post-event community recovery groups has been established. Ideally, these groups would exist in an ongoing capacity. Their role and post-event activities should be determined before the disaster.

Local Leadership

As one city manager who has been through a number of disasters put it, "Disasters bring out the best and worst in communities. If the best is to prevail, it will require ongoing leadership. If there is existing and active leadership, it will perform; if there is potential leadership, it will emerge. If there is not leadership, it will prove difficult to organize and recover after a disaster" (Wilson, 1991).

Although a leader cannot be magically created within a community, an individual may be more willing to step forward and fill such a role if technical and moral support is offered by both community officials and outside experts. During early reconnaissance, organizers should keep an eye out for individuals within the community that may take on a leadership role during recovery.

Some communities have officially designated a single individual as recovery coordinator. For example, in planning its relocation project and its solar component, Soldiers Grove, Wisconsin, created a full-time position and assigned one individual (a local architect) responsibility for coordination. The clear identification of a particular person allowed citizens of the village and agencies from outside to know exactly where to go with concerns, questions, or ideas. In looking back at that experience, it is thought that many headaches and potential confusion were avoided by appointing and publicizing the role of this central coordinator. In fact, government officials analyzing the success of Soldiers Grove's major relocation project cited the appointment of a competent central coordinator as a key factor (Becker and Stauffer, 1994).

The importance of local leadership cannot be ignored. Berke and Beatley (1997) list local leadership as a necessary ingredient for integrating recovery and concepts of sustainable development. Local leaders should have the necessary expertise, political skill, persistence, and creative and flexible styles of problem solving and decision making to participate in the recovery and development process. These local leaders should be willing to give their time and energy to ensure particular issues are placed on public agendas and are given priority.

Neighborhood Groups

Particularly after a disaster, people usually will fight to preserve the network of personal and business associations and structures that constitute a neighborhood. Planners need to understand the heightened power of neighborhood ties after an earthquake and plan for minimum disruption consistent with safety (Spangle, 1991). The formation of organized neighborhood groups is also an important factor for local governments to support during the recovery and rebuilding phase after a disaster.

POSTDISASTER ASSISTANCE

Information Needs

One area in which teams may provide assistance is in the range and amount of information necessary for community recovery to move forward. As the city of Santa Cruz found, decisions may be delayed because of the need to get information and learn more about such issues as the regional economic situation, financial options, trends, development economics and potentials, geologic conditions, construction and design issues, and lender requirements. Jurisdictions may have to generate substantial amounts of information and statistical data to meet the demands of the media, the public, and grantors, and to begin planning and receiving assistance (Eadie, 1991).

Damage Assessment and Hazard Evaluation

For a variety of important reasons, one of the primary essential information needs for a community is an accurate assessment of damage. Initial information about the pattern, type, and severity of damage helps define the areas that will need planning attention and where outside financial recovery resources will likely be necessary. Particular types of hazards may also require special information needs, e.g., post-earthquake planning requires geologic and engineering studies to delineate where ground failure occurred. Building damage must also be evaluated in order to relocate or rebuild to proper design standards.

General comprehensive vulnerability studies are also useful to pinpoint future problems and to guide appropriate recovery and redevelopment decisions. Hazard evaluation is also critical to certain postdisaster recovery activities, such as permitting. Permitting should be scrutinized in areas where, because of risk and vulnerability, future development may be inappropriate (National Academy of Sciences, 1990).

Postdisaster Personnel

Communities must be prepared for, or made immediately aware of, the unprecedented personnel challenges of a disaster. The Loma Prieta earthquake revealed the necessity to make immediate arrangements for obtaining additional personnel and expertise to handle the large increase in applications for repairing and replacing structures (National Academy of Sciences, 1990).

As many involved in managing the local recovery process have found, a jurisdiction may have to add new administrative capacity, which involves both hiring time and learning time (Eadie, 1991). Pointing out that postdisaster circumstances may exacerbate a personnel shortage, Santa Cruz city manager Richard Wilson warns that key people may experience burnout and move on before disaster work is done and that there will not be time to recruit and train new people. Because of this phenomenon, offering competitive salaries and benefits will be very important after a disaster. The personnel needs within a postdisaster setting are real and very serious and can have a significant impact on the quality of recovery.

In Grand Forks, the tri-chairs for disaster recovery identified personnel needs as something they wished they had addressed earlier in the recovery. It can be expected that a disaster site will require additional staff but that it may take some time for the full extent of the needs to emerge. The consultant follow-up report for Grand Forks recommends that

in the future, "The team should encourage the city to focus on its needs for additional staff as soon as possible and should assist the city to quantify that need and to develop procedures for meeting it." This may not be as straightforward as it sounds because "recruiting and hiring this staff may require changes to personnel policies, or even waivers of state and local law" (U.S. Department of Housing and Urban Development, 1997).

A service provided by a technical assistance team may be to assist communities in immediately outlining personnel needs and forming a hiring strategy to meet those needs. However, team members should not themselves try to make up what will likely be a shortfall in local personnel needed to manage community recovery. Guidance in all areas of recovery, including personnel needs, is the purpose of CRAT assistance, but team members should not undertake the actual implementation and coordination of recovery activities.

Roles and Responsibilities of Local Officials

Local officials in a stricken community likely will not be knowledgeable about the roles they may play in community recovery. Another service of the team may be to provide guidance and to coach local officials on their public roles after a disaster.

According to one experienced local official, it is almost impossible to overstate the importance of the mayor after a disaster. The mayor's words, deeds, and demeanor will define the disaster for the public and will establish the context for response and recovery (Wilson, 1991). The CRAT team could serve a valuable coaching role to a disaster-impacted community's mayor, advising that person how to let the community know what is happening, what the local government is doing about it, and that the local government will play a leading role in the community's recovery (Wilson, 1991).

Members of city councils also experience new demands and assume new roles in a postdisaster setting. For example, there is little time for the deliberation that normally occurs within councils (Wilson, 1991). Council meetings must deal with a range of business including the conduct of recovery "business," hearing from the affected public, and holding sessions to consider threatened litigation and provide direction to the staff on such matters (Wilson, 1991).

Economic Impacts, Finances, and Outside Assistance

In a 1979 study, researchers examined the economic impacts of floods in Yuba City, California; a hurricane in Galveston, Texas; a tornado in Conway, Arkansas; and a tornado in Topeka, Kansas. Findings revealed that each community exhibited a pattern of rather rapid recovery and very little economic change occurred. However, researchers concluded that these outcomes did not mean that costs did not occur but rather that most of the local economic costs of natural disasters in this country are externalized to the larger society.

One of the earliest recovery concerns for local communities is to maintain the best possible financial position. It is generally recognized that access to outside resources and assistance, whether state, federal, or nonprofit, is extremely important in determining the nature and quality of a community's recovery. Communities must consider a range of sources for dealing with response, recovery, and long-term redevelopment. Management of disaster expenditures and a local government's financial position will go a long way toward determining subsequent capability to deal with the future (Wilson, 1991).

Managing complex recovery funding programs is a significant challenge for local communities. In 1990, after the Loma Prieta earthquake, a study by the National Academy of Sciences highlighted the financial problems facing communities after disasters and found that federal and state funding programs needed to be simplified. This same study concluded that local jurisdictions need to have in-house experts in federal and state funding programs to help work through the complex funding programs while the city is in postdisaster disarray (National Academy of Sciences, 1990).

These findings point out that determining how to access financial resources for both emergency and recovery expenses is a potentially important area for technical assistance.

Philosophical and Equity Concerns—Providing technical assistance specifically on accessing financial resources becomes complicated due to the perception—accurate or imagined—that the primary purpose of outside advice is to help the community to "get every dollar possible" for recovery.

Helping local communities obtain recovery resources is troubling on a number of levels. Much of the current philosophical national deliberation on how to reduce future losses and promote mitigation principles within the daily activities of local governments has centered on the availability of disaster relief. Many believe that until local governments are asked to manage a greater share of the costs of the disasters they experience (especially if they have been negligent in taking steps before such events), the primary incentive to accept and pursue mitigation will not exist. The creation of a technical assistance team program to help guide communities (especially those that are unprepared) through the assistance maze in pursuit of outside resources may well draw criticism from much of the hazards community. Instead, many believe we should be moving communities towards taking responsibility for their own disaster impacts and losses. In other words, why help communities become further dependent on outside assistance?

Although technical assistance on accessing financial resources would likely improve the efficiency and speed of recovery, it would not necessarily ensure improved quality. Careful consideration should be given to whether the former is a legitimate purpose for team assistance.

There is also a serious problem regarding equity in the choice of communities to which team-based technical assistance would be provided. As an example, the Federal Emergency Management Agency's desire to help Project Impact communities in disaster recovery has been controversial because states have been concerned about the unfair advantage this gives selected communities in accessing outside financial assistance compared to other affected localities.

Equity considerations could perhaps be resolved based on expectations of such communities in return for such assistance. It would be necessary for teams to provide advice on resources to implement responsible recovery and redevelopment actions that further mitigation and longer-term community sustainability objectives. The assistance may focus on use of resources for the most beneficial, effective, and efficient uses. There appears to be a sensitive balance, however, between helping with resources for implementation of quality recovery actions and shifting the financial burden for past mistakes onto state, federal, and outside shoulders. In addition, more than one community may, in theory, agree to a more "advanced" recovery agenda in return for technical assistance. Finally, it may be quite difficult to obtain solid agreements on specific recovery activities, especially those that further mitigation and sustainable development objectives, early in the disaster response and recovery process.

Relations among Federal, State, and Local Officials—Providing assistance to communities in accessing resources also raises a significant political consideration: whether such outside assistance to a community would interfere with relations among federal, state, and local officials. This concern applies, for example, to the working relationship between representatives of the Federal Emergency Management Agency (FEMA) and the local community. Under the Stafford Act legislative mandate, FEMA considers that it is the agency's responsibility to work with state and local officials directly on the provision and distribution of various disaster relief program funds (categories of public assistance, individual assistance, etc).

The experience of some outside consultants brought in to assist communities in past disasters is that the involvement of an intermediary third party can cause problems and damage the working relationships and lines of communication between local, state, and federal officials. Part of this problem has been due to inconsistency among FEMA regions in the implementation of disaster relief programs. Outside consultants often can identify these discrepancies, especially if they are to the disadvantage of the local community by whom they have been hired. FEMA, however, would prefer to resolve inconsistencies and conflicts itself by working directly with state and local officials.

Guidance on Other Financial Resources—Team expertise should perhaps incorporate experience and knowledge on broader postdisaster community needs related to housing, economic recovery, and other complex issues (Wilson, 1991). Researchers found after the Coalinga earthquake in 1983 that private sources, particularly insurance payments and loans from local banks, seem to have fueled the initial stages of recovery. Of the public aid programs, the Small Business Administration's loan program, because of delays, appeared to have been the least helpful to Coalinga

businesses and residents. Conversely, the Economic Development Administration, through a grant to a local redevelopment agency, played a central role in the rebuilding of the downtown area (French et al., 1984). Of course, the role of federal relief programs in each disaster will vary, especially given the wide range of differing supplemental appropriations to the various disaster relief programs. Teams should be savvy enough to help local governments assess available resources and link those resources to desired recovery efforts and activities.

Local governments should also be knowledgeable of the various innovative local financial tools available to generate resources for recovery. Tax measures, special tax and/or redevelopment districts, tax increment financing, and replanning the use of capital improvement funds to leverage other resources all may be of use to community recovery. Special time, effort, and knowledge may be required to set up these financial rebuilding resources (Eadie, 1991). Familiarity with the use of these local government financial mechanisms would be useful expertise that the team could share.

Private Relief—During recovery, local governments will have their hands full managing public costs and likely will be unable to help with private party relief. Local officials can, however, be guided to draw upon local resources and take steps such as enrolling the Chamber of Commerce in assisting business owners (Wilson, 1991). Some have noted that government relief funding is not enough; the economy of a damaged area must be strong enough to attract significant private investment for full recovery to occur. In addition, recovery and rebuilding plans do not necessarily guide public and private investments. To the extent that a locality can work with the local business community on recovery issues, a pooling of resources and efforts will result in a more consistently successful recovery effort.

Need for Priorities in Recovery

Local government must expect the going to be slow. Outside assistance may not be immediately forthcoming and may not appear at all. An important lesson learned from past disasters is that it is of utmost importance to prioritize the assistance measures sought from other levels of government. They must be the right ones in terms of long-term local interests (Wilson, 1991). A valuable service may be provided by the team in the form of assistance in helping localities to establish their priorities for recovery. Such organization is critical if a local government is to drive the recovery process. Strategies to provide such priority-setting assistance should be explored.

MITIGATION

Integrating Mitigation into Recovery

During recovery from a disaster, a community enjoys unique opportunities to enact policies to mitigate future disasters. A range of mitigation measures can be incorporated during recovery, including improved building codes and construction standards, more effective land-use and community planning, and environmental management that reduces vulnerability (Berke and Beatley, 1997). Not only is hazard mitigation at an unaccustomed spot near the top of the public priority list during this period, but also opportunities for innovation are broadened due to disaster-created changes in existing land-use patterns and an influx of funds for rebuilding (Godschalk, 1985).

Perhaps the most engaging reason for a CRAT program is to assist communities in seizing these opportunities to recover and rebuild after a disaster in a way that reduces community losses from future events. Despite local officials' and the public's desire to rethink development goals during the recovery period, opportunity is limited by a pervasive community sentiment to "get back to normal" as soon as possible. This desire often results in calls for relaxing restrictive development standards and allowing rebuilding of damaged areas back to their original patterns, despite future risk (Godschalk, 1985).

Realism

In considering urban design and form after earthquakes, many have concluded that cities and towns are almost never relocated. Planners should be aware that starting from scratch and "doing it right," although inherently appealing,

almost never happens. After earthquakes, for example, 1) safer sites are hard to find nearby; 2) substantial infrastructure is still intact or repairable; 3) the cost to relocate is usually higher than the cost to rebuild; and 4) people have strong associations with "place." Instead, to be a wise planner, one must recognize the durability of the existing city and look for more realistic opportunities for post-earthquake improvements at the original site (Spangle, 1991).

In some instances, few policy adjustments to mitigate hazards will be available during recovery. For instance, in terms of land-use adjustments after the Coalinga earthquake, there was no variation in vulnerability, and there did not seem to be any particular areas that were more hazardous than others. Short of moving the entire town, land-use adjustments did not seem applicable in this case. Because damage was concentrated among structures built under less stringent codes, and because structures built to current codes incurred only minor damage despite severe ground motion, current building codes seemed to be adequate and stronger standards were deemed not to be needed (French et al., 1984).

The point made by these researchers on the importance of realism is well taken. While not wanting to stymie creative thinking and possibilities, technical assistance for communities on seizing mitigation opportunities after disasters must be based on a certain degree of plausibility and feasibility. Obviously, a balance is necessary between supporting communities as they pursue mitigation opportunities and recognizing political and practical constraints.

The instances in which there is a lack of opportunity for any improvement, however, are rare. More frequently, opportunities for mitigation during recovery are missed. For example, a study of the recovery aid distribution systems after hurricanes Gilbert and Hugo revealed a lack of priority on and inadequate procedures for monitoring mitigation measures. Much of the housing reconstruction occurred with little adherence to official building codes. Opportunities to relocate people and structures out of the floodplain and high-risk locations were generally not taken (Berke and Beatley, 1997).

Mitigation as a Criterion for Team Effectiveness

One important measure of the success of a CRAT program may be whether people and property within a community are safer than they were before an event. As previously mentioned, this improvement may include physical opportunities to rebuild and reconstruct with more attention to safety (as well as other objectives) through more stringent building codes or altered land development patterns.

Beyond these physical outputs, however, mitigation has also been appropriately described, first and foremost, as a process of the decisions made and actions taken at the local level. Perhaps a more interesting and longer-term gauge of effectiveness would be whether, as a result of outside CRAT assistance, there has been an improvement in the process of mitigation at the community level—the desire of the community to use and integrate the principles and techniques of mitigation into its day-to-day planning and development functions (Geis, 1996). While specific redevelopment opportunities are critical and shameful to miss during community recovery, improving ongoing government decision making may provide more significant long-term results. Measurement of these outcomes, however, may prove difficult.

Mitigation during Two Stages of Recovery

Postdisaster mitigation occurs during two general stages of recovery. The first stage, just after the disaster, involves more immediate decisions about rebuilding damaged private homes and businesses and restoring damaged public streets and utilities. Mitigation in this earlier stage is embodied in specific physical redevelopment decisions. Because such actions are taken early in the recovery process, a CRAT team should arrive early and provide guidance on these decisions from the start. In Gulf Shores, for example, this first stage included decisions about a building moratorium, utility rebuilding, highway relocation, determination of the extent of damage to individual structures, and hazard area property acquisition (Godschalk, 1985).

The second stage, which occurs after some semblance of normalcy has been achieved, may involve decisions about rewriting plans, policies, and regulations affecting future development in hazard areas. This reflects an orientation towards improvements in long-term decision making on the part of a local community. In Gulf Shores, during the five years after the disaster, decisions regarding a side setback, a new zoning ordinance and building code supplement, and

a coastal construction setback line were made (Godschalk, 1985). Improvements in local regulations, developed and passed as a result of a disaster and designed to guide appropriate future development over the long-term, are also significant accomplishments.

If assistance in mitigation is deemed a primary goal of the CRAT program, further decisions may need to be made regarding which area the program should focus: 1) improvement within the immediate physical redevelopment; or 2) longer-term measures to build local decision-making capacity to implement mitigation on an ongoing basis.

Beyond Codes to Community Design

Although an emphasis on vulnerable buildings is important, it is also important for local government officials and related professionals to look beyond individual buildings to consider the entire built environment—the block, the neighborhood, and the community as a whole; the streets, parks, and other infrastructure that connect them; and other elements that unify and define this complex system. All the physical components and systems of a community are impacted to some degree by the forces of extreme natural events and therefore have an important role to play individually and as a part of the larger whole. How these components and systems are planned and developed can make a significant difference in a community's overall capacity to resist these forces (Geis, 1996).

Part of the long-term solution is for localities to implement disaster-resistant community design. Disaster-resistant community design includes code solutions but moves well beyond them to encompass site and neighborhood design approaches that take into account the more complex interaction of natural hazards with the built environment. Common examples of design practices fostering effective mitigation in flood-, earthquake-, fire-, and landslide-prone areas include:

- Limiting development densities and/or requiring large lot sizes;
- Transferring allowable densities to safer areas on- or off-site;
- Setting buildings back from flood, landslide, and fault hazard zones;
- Requiring adequate minimum paved street widths;
- Limiting street grades to assure fire truck access;
- Requiring second access points into each development in case primary access is blocked during an emergency;
- Restricting the lengths of cul-de-sacs as well as the number of dwelling units on them;
- Developing adequate water supply, maintaining adequate flow to fight fires, and providing redundant storage; and
- Using open space easements for fire breaks, equipment staging, and evacuation areas.

These disaster-resistant community design practices are being used effectively in various states and cities to mitigate hazards during development. Many city governments are engaging in a more sophisticated, multidisciplinary approach to hazard reduction. In such model circumstances, planning departments coordinate with building, fire, police, public works, parks, transportation, and other city staff to bring about a reduced level of risk in relation to recognized hazards (National Academy of Sciences, 1990).

State Legislation

The importance of state legislation to the successful implementation of mitigation after disasters also has been identified in postdisaster studies. After Loma Prieta, it was found that local governments by and large did not adopt seismic safety regulations on their own. Instead, the most successful mitigation efforts were a direct result of state legislation (National Academy of Sciences, 1990). These requirements, however, should be viewed as a minimum safeguard. Even with state-mandated requirements, local jurisdictions should be encouraged to develop programs attuned to their particular needs (National Academy of Sciences, 1990). The regulatory and political climate of the state will be important to the quality of the disaster recovery process.

OTHER RECOVERY ASSISTANCE ISSUES

The breadth and scope of expertise and assistance provided by the CRAT program is an important issue for consideration. After the Grand Forks flood, for example, a large set of tasks was performed under many recovery assistance categories, such as housing and business recovery. Flood hazard mitigation was only one of these tasks. The manner in which an expanded set of recovery assistance categories relates to long-term and sustainable redevelopment must also be explored.

Business Recovery

A community's economic conditions before a disaster shape recovery. Communities that were thriving before tend to recover and rebuild quickly, while communities that were previously stagnating may never fully recover.

Various types of businesses within the same community, impacted by the same disaster, are also affected differently. In many instances, smaller independent local businesses cannot bear the costs of lost inventory, lost business, and possible relocation expenses. Businesses that are a part of a corporation or chain are better able to absorb these costs. As a result, rebuilt business districts often contain new businesses and, as such, provide an opportunity for the community to promote revitalization and economic development opportunities, creating a healthier business climate (Spangle, 1991).

Getting the local economy up and running as quickly as possible is one of the most important concerns for a local community. Due to the influx of money for recovery, business activity is often restored before actual business areas and districts are rebuilt. Opportunities to improve the physical aspects of businesses and the overall district also can be pursued during recovery. Buildings and interiors can be modernized and improved as damage is repaired. Rebuilding after a disaster may also correct business-district-wide design problems, such as those associated with circulation and parking, which also leads to an overall improvement in the business climate (Spangle, 1991).

After the Grand Forks flood, the U.S. Department of Housing and Urban Development team assisted the community on a variety of economic recovery issues and activities. During the initial period, one group began collecting data to analyze the financial and economic impact of the flood and began an intensive study of the downtown commercial area. Overall, the technical assistance in this area included a city-wide business impact analysis; maps of downtown pre-flood conditions; maps of downtown post-flood conditions and structures; an interim downtown plan; an Urban Land Institute briefing booklet and assistance with a related meeting; assistance in negotiations for downtown office building; architectural guidelines for a downtown office building; a commercial rehabilitation program; design guidelines for the downtown business district; and design of city-financed public recreation space (U.S. Department of Housing and Urban Development, 1997).

As is evident, the scope of this assistance was quite extensive and may be well beyond the capacity of the CRAT program. Rather than assuming this conclusion, however, the issue should be discussed further.

Housing

Managing post-event community housing needs is critically important and can strongly affect the overall success of a recovery effort. One effective strategy has been to identify residential areas that can move ahead without engineering evaluations or area vulnerability assessments and to streamline building permit procedures for these areas (Spangle, 1991). This strategy can alleviate some of the need for temporary housing and provide some sense of progress while other housing rebuilding issues are deliberated.

Residential losses after all types of disasters often fall upon low-income households more than others. After hurricanes, tornadoes, and strong winds, manufactured and mobile homes—an affordable form of housing—are greatly impacted. Older development, built in the floodplain before elevation requirements, is generally less expensive than newer development. Low-cost housing is often disproportionately damaged in earthquakes because it tends to be concentrated in older buildings and sections of town. Repairing and rebuilding these buildings to stronger codes often results in higher rents. People displaced by an earthquake may not be able to afford these rents, further increasing the need for affordable housing (Spangle, 1991).

After all disasters there is a need for communities to be prepared to designate temporary housing sites. These sites must be chosen carefully in terms of future use because they sometimes become permanent (Spangle, 1991).

The magnitude and particulars of housing recovery issues will vary with each disaster. Housing was an extremely important issue after the Grand Forks flood, and was a primary impetus for the Department of Housing and Urban Development-sponsored technical assistance team. One area of technical assistance involved support of new construction, including the identification of suitable sites, development of site and neighborhood concept plans, and identification of programs and finance seminars for the purchase of new homes. In addition to an analysis of new housing sites and advice on acquisition, the acquisition of data on rehabilitated housing needs, and an evaluation and assessment of the city's zoning, a review process was established for existing land-use planning and development. Assistance for financing home rehabilitation was provided through a guide to single-family rehabilitation programs, a foundation repair program outline, a rehabilitation feasibility worksheet, and advice on packaging city rehabilitation programs (U.S. Department of Housing and Urban Development, 1997).

Again, the role of the CRAT program in providing technical assistance in housing recovery should be explored.

Historic Preservation

Preservation of historic structures is an issue that can come into sharp focus after disasters. Ideally, a community would be prepared for such issues with policy guidelines on assessing damage and determining demolition needs, as well as standards for repair of damaged historic structures (National Academy of Sciences, 1990). Preserving historic and symbolic buildings is important to retaining community identity, and the value to the community of the structures that survive a disaster is usually enhanced. However, the clash of values can be strong in deciding the fate of historic or symbolic structures. Controversial issues include demolition, standards for repair, extent of preservation, and the effect of retrofit projects on historic building elements (Spangle, 1991). If communities are unprepared, these issues can take require much time and energy from local officials after a disaster.

Community Relations and Media Strategies

It has been found that the success of any disaster recovery program is enhanced when the public is made aware of rebuilding priorities and kept informed of progress. A community relations effort that communicates concern and a sense of positive, real movement to victims, as well as to the general public, has been found to be essential (Washburn, 1995).

Local government managers will not have time to work directly with the media during a crisis. Instead researchers and others have recommended that they select another individual to be the crisis spokesperson, and that there be only one spokesperson.

Suggestions for initial community outreach efforts include:

- An information hotline, such as 1-800-recover, which would provide constantly updated voice mail information selections for callers, as well as live operators for specific questions;
- On-line computer information networks through the Internet or commercial services;
- Production of multilanguage question and answer handouts, fact sheets, and mail pieces, covering the most frequently asked questions about a recovery program;
- Brief weekly "news updates" to communicate a regular sense of movement and success of the recovery effort and to answer new questions that arise;
- An overall media strategy to promote rebuilding efforts and communicate a sense of accomplishment;
- Meetings with property owners to answer questions about rebuilding schedules and the status of specific properties (Washburn, 1995).

Technical assistance on media and community relations strategies could also be an important component of the CRAT program.

SUSTAINABLE DEVELOPMENT AND LONG-TERM RECOVERY

Although mitigation is concerned with incorporating the best hazard-resistant design available into the reconstruction and repair of businesses, housing, and other facilities, it must also ensure that the principles of sustainable development be implemented at the same time (Geis, 1996). Sustainable development in the context of long-term disaster recovery has been described as the extent to which redevelopment initiatives 1) promote economic development; 2) recognize ecological limits; 3) improve distributional equity; 4) prevent or minimize harm to others; and 5) promote participation (Berke and Beatley, 1997).

Concepts of sustainability and sustainable development offer a useful framework for integrating hazard reduction with other social and environmental goals in the recovery effort. A new development project or public investment should be evaluated simultaneously by a number of sustainability criteria:

- Does it allow for a sustainable use of, and relationship to, the environment and natural resources? (e.g., Does it minimize energy consumption; protect renewable resources; support biodiversity?)
- Does it provide for a high quality of life?
- Does it provide for the needs of all social, ethnic, and income groups and for a just and equitable distribution of social resources?
- Does it avoid compromising the needs of future generations?

While addressing short-term needs is important, disaster aid could simultaneously contribute to broader sustainable development goals and to reducing long-term exposure to natural hazards (Berke and Beatley, 1997). Disaster victims can rebuild their communities better than before, taking advantage of reconstruction to fix a variety of problems. For example, after major disasters, reconstruction is an opportunity to replace aging, damaged buildings with new structures; restore the local tax base and boost the economy with new jobs; change the character of local businesses to better meet the community's needs; and restore infrastructure. Perhaps most important, communities in areas of predictable disasters can take advantage of reconstruction to reduce or even eliminate the danger of further damage (Becker and Stauffer, 1994).

Sustainable redevelopment also has been described in a growth management context through the question, Is community recovery improving the quality of life for community residents? Sustainable redevelopment in a recovery context would include postdisaster redevelopment projects that are designed to become "multipurpose recovery" projects that solve a variety of problems (Becker and Stauffer, 1994).

The community of Streatham, for example, on Montserrat, an island state of the Caribbean, made efforts to link funding for recovery to other long-term development initiatives, including instituting new agricultural production practices, building a new community center, and improving the community's water distribution system. Postdisaster recovery funding and activities were explicitly linked to these long-term development projects. However, researchers have found such linkages to be much the exception, rather than the rule (Berke and Beatley, 1997).

Disaster Aid/Mitigation and Community Goals

Some practitioners assert, and many would agree, that we have barely begun to approach the goal of minimizing the effects of natural hazards on communities, whether through ongoing measures or within the development process. In order to truly progress toward this goal, mitigation needs to be considered as part of a larger picture, in a broader context, instead of as a subject in and of itself (Geis, 1996). Linking mitigation to other important community goals, such as reduced environmental degradation, improved housing and living conditions, and improved community and public services such as transportation, would greatly enhance the political importance and feasibility of disaster reduction programs (Berke and Beatley, 1997).

Incorporating mitigation into a comprehensive recovery process has also been somewhat of an isolated activity. The pursuit of post-storm mitigation, therefore, has perhaps been weakened by a lack of connection to other community

objectives. The Federal Emergency Management Agency's Project Impact initiative is a step in the direction of linking ongoing disaster mitigation to broader community objectives.

The recovery period may well provide an opportunity to connect a wide range of community improvements. If recovery funding is short, the need to base community recovery and redevelopment decisions on multiple objectives in order to maximize resources may become explicit (Geis, 1996). A solution may be for granting institutions to require that recovery projects demonstrate concern for and apply to a broad community picture and context.

Much of the difficulty in connecting community recovery mitigation objectives with other community goals lies in the challenge this process poses to communities. Such communities can be hard pressed and unprepared, during a time of confusion and upheaval, to design redevelopment actions that meet a variety of community goals at once. The Stafford Act Hazard Mitigation Grant Program requires, as a project eligibility criterion, a review of whether the project meets multiple community objectives. While compliance with this goal is not an absolute requirement, in theory it results in a more favorable project review. The ability to conceptualize such projects, however, can be difficult given the number of other eligibility constraints (e.g., cost-effectiveness, environmental reviews).

Experiences and Tools

In the aftermath of the 1993 Midwest floods, a movement began toward "sustainable redevelopment"—the practice of recovering from disasters in ways that improve the quality of people's lives, the durability of their communities, and the prospects of their children. A White House Task Force called for profound reforms in the nation's disaster recovery policies, including the use of sustainable redevelopment practices as communities rebuild. "Relocations, in particular, offer a unique opportunity to start from scratch in planning and constructing to assure that sustainable development becomes an integral part of the entire community," the Task Force concluded. "A team of federal experts would work through state agencies to provide communities and individuals technical assistance and information on the use of more innovative technologies" (Becker and Stauffer, 1994).

The Soldiers Grove experience shows that communities should carefully inventory their sustainable development needs and resources. A "quality of life" inventory, for example, determines what features residents most want to retain from their old community as it is redeveloped and what new features—social, recreational, cultural—they most want to acquire. An "economic development" inventory might poll local consumers on what new commercial services they want to see in their reconstructed community. It could also poll local business owners to find out what they need to improve their business health (Becker and Stauffer, 1994). These tools could be included in a disaster recovery guide for use by team members and provided to a local community to help them shape recovery and redevelopment.

ORGANIZING TO PROVIDE TECHNICAL ASSISTANCE

This section summarizes lessons and experiences of researchers and prior technical assistance teams about how to organize a CRAT program to provide technical assistance.

Customizing Assistance to Each Community

Many researchers have found that little attention has been given to customizing community assistance based on local roles and capacities and the diverse social, economic, and cultural conditions of individual communities. Studies have found that these variations require flexible responses rather than the conventional, standardized aid delivery strategies of state and federal governments (Anderson and Woodrow, 1989). An inventory of policy tools for guiding redevelopment and existing partnerships is crucial to the design of appropriate recovery strategies based on variations in local capacities and experience (Berke et al., 1993).

The need to customize team technical assistance for each individual community argues against the notion of predefining a technical assistance program for all disasters. A standardized detailed operations manual and field guide would likely result in the same criticism due to a lack of recognition of specific local conditions and specific issues

related to a single disaster event. Consideration should be given to how a national CRAT approach could be adapted to meet individual community needs. It may be wise to structure and conduct a quick needs assessment to gauge adequate approaches for technical assistance and areas for focus.

Beginning Approach to Postdisaster Technical Assistance

Experience involving the U.S. Department of Housing and Urban Development's National Community Development Block Grant Technical Assistance Contract with ICF Incorporated raises a number of important considerations for the development of a CRAT program. Although the agency used an existing technical assistance contract, the magnitude of the technical assistance required after the Grand Forks flood dictated the development of new procedures for determining the scope of assistance.

HUD had early conversations with community officials at which five technical assistance issues were identified: residential, commercial, and industrial loss assessment; interim housing action plan development; interim business action plan development; establishment of a long-term planning framework; and flood mitigation alternative assessments and associated benefit/costs analyses. The result was the formation of a specialized team with experts in housing, financial and economic development, land-use planning and urban design, and disaster recovery.

Although it was suggested that this work should begin immediately, it took six weeks to negotiate agreements for the level of services to be provided by the team. A flexible process for establishing an ongoing scope of work was established. Toward the end of each month, team members caucused and outlined the scope of services to be proposed for the next month. The team then reviewed the list with the tri-chairs for recovery and with HUD staff at one of the daily meetings and obtained their "authorization" to proceed. If priorities changed during the month, these changes could be incorporated in the final scope and budget for that month.

Depending on the nature of CRAT assistance and member participation, the precision of the scope of work, payment, and time frames will vary. For example, if part of the team involves an exchange program among city managers, payment may be less important than time away from existing duties. However, the willingness of private contractors to participate in the program will ultimately hinge on payment based on scope of services at significant hourly rates.

Determining Technical Assistance Needs

Care must be taken not to yield to pressure to provide technical assistance too early, before determining what specifically is needed in relation to a particular community's disaster recovery. As those involved in the U.S. Department of Housing and Urban Development's technical assistance to Grand Forks discovered, successful technical assistance requires developing an accurate diagnosis of the fit between client needs and provider skills and building trust between the client and the provider.

In looking toward developing a technical assistance program, approaching each disaster on an independent basis would be fairly intensive. At the same time, a cookie-cutter technical assistance format could quickly become irrelevant. The challenge will be to find a balance between constant "creation" and a static approach. Ideally, a general framework would be developed that could be tailored to each community's needs.

Identifying the Client

There are many players on the disaster scene and therefore many potential audiences for the CRAT program. In the Grand Forks situation, ambiguity in defining the "client" for technical services was one of the most frustrating aspects of the project. There were at least three "clients" on the Grand Forks project: U.S. Department of Housing and Urban Development headquarters staff who provided contract oversight, budget, and work approval; HUD staff in the disaster relief office who provided on-site management and guidance; and the city of Grand Forks. Team members who subcontracted under ICF also considered ICF a fourth customer. The situation was further complicated by a tendency to view the city's Urban Development Office as the primary "client" since this agency had a long-standing relationship and familiarity with HUD staff and programs. However the city council, the mayor, the council's Flood Response

Committee, and the tri-chairs for recovery all had major roles in the city's recovery management structure. Over time, the team, HUD local staff, and the city came to view the tri-chairs as the representative of the city and the primary client of the team (U.S. Department of Housing and Urban Development, 1997).

In a future CRAT program there may be a number of middle people, including the sponsoring/funding organization and the administrative body. This may result in frustration among participants in the CRAT program. The existence of middle parties may interfere with trust between community officials and team members. Communities may prefer to organize and hire outside experts of their own choosing. Greater effectiveness may be found in a more direct client relationship with the community being served. Alternatively, these issues may be determined based on each specific disaster.

Building Trust

The issue of building trust between the selected locality and the team is a significant one. A trusting working relationship is not guaranteed. The on-site visits of team members need to be of sufficient length to develop and establish working relationships and develop trust and personal relationships (U.S. Department of Housing and Urban Development, 1997). Indeed, it may be even more challenging to develop trust between a CRAT team and a community/client than in the earlier situations cited, especially considering that community representatives may have little, if any, say in the selection of team members.

In the Grand Forks experience, the full cost for one set of technical assistance teams was borne by a federal agency (HUD). Even so, one of the major clients believed that the city had not been provided "with an adequate voice in the selection of the team." The client suggested an alternative process in which the city would review the resumes of qualified providers, conduct interviews with some of them, and communicate its preferences. Through this process it was felt that there would be a stronger sense of ownership by the city of the consultants. If a community is paying for even a small part of a CRAT's costs, they likely will desire some say in the choice of team members.

In its final report, the U.S. Department of Housing and Urban Development noted another approach to involving the city in procurement. Under that approach, HUD would provide a list of contractors and offer guidance to the city in the hiring process. The entity that administers the CRAT may limit its role to one of assistance and managing the hiring process. In any case, at least some input on the part of the community will have to be accommodated in the choice of team members.

Composition of Team

The team's composition is one of the most critical aspects of the technical assistance process. Multidisciplinary skills and experience, as well as local- and disaster-specific experience are important considerations. Multidisciplinary teams require an investment of time to build working relationships among team members and to coordinate team activities. The types of representatives and/or disciplines that may best be represented on these teams will depend on the types of technical assistance most needed in each situation.

The HUD recommends organizing disaster assessment teams ahead of time with expertise in disaster recovery; information systems; and community development. The recovery specialist(s) would be responsible for assessing federal and state agency involvement and commitment, the political environment, and business and community participation. The information specialist(s) would focus on assessing the status of disaster information collection and processing (e.g., federal, state, local and private efforts) and associated problems. The community development specialist would focus on housing and community impacts (U.S. Department of Housing and Urban Development, 1997).

Scope of Work and Establishing Protocols

Disaster recovery is a dynamic process and there are many uncertainties, but establishing some general guidelines and approaches will be necessary to develop and advertise the CRAT program, determine a general operations plan, and

develop an operations manual.

The CRAT's workload will be difficult to predict more than a few weeks in advance. The process used by HUD in Grand Forks, developed through trial and error, was reported to work well:

1. HUD headquarters set an overall spending limit at the project's outset;
2. The general scope of the technical assistance was established in the city's recovery plan, which set out the major work areas;
3. The team, the city, and on-site HUD staff agreed to a set of tasks each month; and
4. The project manager used the task list to write a detailed scope of services and budget for review and approval by HUD headquarters.

This process should remain flexible enough to function in the changing environment of the aftermath of a disaster. These are important lessons to remember in developing a procedure and process for defining a CRAT scope of work for a particular disaster.

External Interactions

It will be necessary for team members to interact with many players in the disaster recovery, including local organizations and entities, and state and federal representatives. Inevitably, there will be a significant number of meetings related to disaster recovery issues and coordination. The extent of external interactions will depend on the particular roles and assistance being provided by the team. If the CRAT program is more of an advisory, creative problem-solving activity, the potential conflicts regarding this issue will likely be few. However, if team members are actively involved as advocates for the community in dealing with other players, there contentious issues may arise. For example, some city and on-site federal staff in Grand Forks thought that HUD team interaction with the media, the business community, the city council, other federal agencies, and the congressional delegation was inappropriate unless HUD and/or city staff were also present.

These important working relationships need to be clarified early in the recovery process. Consideration should be given to establishing clear guidelines for the external interaction of team members. This may or may not be possible before the event, but instead should perhaps be determined based on the dynamics of each individual disaster.

Critical First Tasks

Any technical assistance provided will be more successful sooner if it is based on a knowledgeable assessment of the type of assistance the community will need. In order to lay this foundation, the HUD team recommends establishing a procedure for determining involvement in recovery through the use of disaster assessment teams. These teams would be sent to a designated disaster community for a short time (2-3 days) to conduct an initial damage assessment. Based on this assessment, a decision would be made whether or not to provide additional technical assistance and the extent and type of assistance would be determined.

Another crucial early task would be to help the community establish a short-term recovery plan and a weekly action planning process, thus providing a framework within which team assistance could be structured according to the city's priorities and needs.

Closure

It may be difficult to determine when to end a technical assistance project. In the instance of the HUD project in North Dakota, there was conflict between HUD's view that at some point the city should begin to be responsible for procuring and paying for consulting services and the city's view that its needs were ongoing (U.S. Department of Housing and Urban Development, 1997).

The problem remains of defining which part of the multi-stage recovery process should be the focus of team

assistance. If technical assistance can be defined as support for a particular phase of a community's recovery, then it may allow for a smoother transition between the CRAT and the locality. Another option would be to arrange that the CRAT be on site for a pre-specified period of time and simply do as much as possible during that interval. A date for close-out should be agreed upon by all parties, with time built in for an evaluation process and exit interviews.

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PART TWO

Existing Programs, Plans, and Ideas

INSTITUTIONAL CONTEXT

The institutional context in which community disaster recovery occurs is necessary background to the operation of a Community Recovery Assistance Team (CRAT) program. It helps explain the various roles of other governmental players and the range of disaster assistance streams flowing into stricken communities. The following recovery components should be taken into consideration in developing any recovery teams program.

Recovery Annex to the Federal Response Plan

In the past, some state and local governments have been overwhelmed by the broad array of federal recovery assistance and lack of continuity between response and recovery. As recently as 1998, a "Recovery Annex" was added to the Federal Response Plan as an attempt to both formalize and smooth the transition from emergency response to short-term recovery to long-term recovery and the various players and programs in each of these phases. The addition to the FRP has two purposes: 1) to separately describe the coordination and implementation of recovery programs that occur outside the FRP emergency support function structure; and 2) to document and describe the linkages that exist among response, recovery, and mitigation activities. The fundamental assumption is that recovery is a cooperative effort among federal, state, voluntary, and other local agencies in partnership.

Early Implementation Strategies for Mitigation

In recognition that the traditional Interagency Hazard Mitigation Team process took too long and opportunities were missed, the Recovery Annex notes a new early implementation strategy for mitigation. As the human services and infrastructure branches of the Federal Emergency Management Agency are beginning early assessment of needs during response, it is also critical that the mitigation organization assemble and coordinate relevant federal and state agencies to assess needs and match federal and state resources to meet them. This early implementation strategy sets goals for all mitigation partnership players and provides a platform for ongoing coordination and revision of the strategy as necessary.

President's Action Plans for Long-term Recovery and Redevelopment

Federal Long-Term Recovery Task Forces were established initially in response to the extraordinary flooding in the upper Midwest in 1993. More recently, they were prescribed for flooding and hurricanes in Alabama, Georgia, Florida, and Puerto Rico, and now appear to be protocol after disasters with long-term impacts and a repetitive nature.

A presidential comment at the beginning of each Federal Long-Term Recovery Task Force states, "The repetitive nature of this disaster provides an ideal opportunity to establish a Federal, State and local partnership for long-term

recovery, and especially to focus on the critical role of mitigation in the long-term recovery process. While long-term recovery from a disaster is a challenge encompassing the full range of a community's concerns, the integration of mitigation into the long-term recovery ensures that the community will be a safer, more economically viable, disaster-resistant place after the disaster than it was before."

For each disaster for which a Task Force has been activated, the president has directed that:

- All departments and agencies look, within the scope of their missions and authorities, for opportunities to incorporate mitigation in the delivery of all their programs and projects affecting the long-term recovery effort;
- All departments and agencies use the discretion and flexibility that exists within their authorities to expedite the delivery of their disaster recovery programs to disaster victims, the state, and local government affected by the flood;
- All departments and agencies with applicable authorities support the state in implementing a combination of property acquisition, elevation and floodproofing throughout the state;
- The Federal Emergency Management Agency (FEMA) ensure coordination among the federal departments and agencies in the delivery of their assistance programs, so that each agency's policies and approaches to recovery are consistent with one another; and assist the State or communities in obtaining a resolution when inconsistencies arise;
- FEMA assist the state or communities in obtaining a resolution when policy inconsistencies arise;
- FEMA provide technical assistance as needed to assist communities to conduct a long-term recovery planning effort;
- The Small Business Administration use all the flexibility possible to assist individuals or businesses with outstanding loans to take advantage of property acquisition programs or other mitigation actions;
- The U.S. Department of Housing and Urban Development assist communities to develop projects that combine the objectives of natural hazard mitigation and affordable housing;
- The U.S. Army Corps of Engineers (USACE) and FEMA partner to help the state and local communities better understand the relationship between structural and non-structural measures for solving flood problems;
- USACE share available information with local communities and expedite completion of the feasibility studies currently underway on levee repair and replacement in the affected areas; and
- All departments and agencies enable local communities, as appropriate, to build on previous mitigation successes by taking advantage of the opportunities presented by these disasters to recover and rebuild more safely.

The president's Long-Term Recovery Action Plans for various disasters have specified several purposes designed to involve all levels of government:

- To accurately identify the needs of the states and territories and the federal programs available to meet those needs;
- To establish a partnership between the state or territory and the federal government;
- To foster a long-term mitigation planning process as a vital tool in identifying, planning and implementing actions that will protect each community from experiencing repeated damages; and
- To increase public awareness of recovery and mitigation planning and thereby engage communities and local governments in the long-term mitigation planning process.

PREDISASTER RECOVERY TRAINING AND ASSISTANCE

Local Recovery Team Training

FEMA's Emergency Management Institute has developed and field tested a course designed for local recovery teams. The target audience consists of elected officials, city/county administrators, emergency management coordinators, community planners, public works directors, building inspectors, and health and safety officials. The four-day course was offered at the Emergency Management Institute in 1999 and will be delivered in selected states.

The course provides guidance to local recovery teams on typical recovery issues, with or without federal disaster assistance. It builds on experiences of communities from many parts of the United States and includes electronic files of ordinances, policies, and other documents used by communities to plan and execute their recovery activities.

Guidance on Planning for Recovery and Reconstruction

The American Planning Association and FEMA recently released *Planning for Post-Disaster Recovery and Reconstruction*. The first section of this report relates practical guidance including the following sections: the role of planners in postdisaster reconstruction; a primer in disaster operations; policies for guiding planning for postdisaster recovery and reconstruction; the planning process; a planners' tool kit; and legal and financial issues.

The second section incorporates background and case studies, including hazard identification and risk assessment for eight types of natural hazards, and case studies for a flood in Arnold, Missouri; a tornado in Plainfield, Illinois; Hurricane Opal in the Florida panhandle; a wildfire in Oakland, California; and the Loma Prieta earthquake in Santa Cruz and Watsonville, California. FEMA expects to use this volume to conduct a national training program.

SHORT-TERM RESPONSE AND RECOVERY ACTIVITIES

Public Assistance Program

Effective for all disasters declared after October 1, 1998, FEMA implemented a "re-engineered" Public Assistance Program. The mechanisms for delivering assistance, the emphasis on partnerships and customer service, and the simplification of paperwork all are new.

The role of the state and the applicant are expanded in this new process. In addition to their roles as administrators for all grants under the Public Assistance Program, states now have pre-declaration duties as well, which include pre-identifying applicants for public assistance, educating potential applicants on the new program, and building capacity within local units of government to perform preliminary damage assessments.

FEMA has also added a public assistance coordinator, who serves as the applicant's primary liaison with the agency and provides consistency and continuity by working with the applicant from declaration until funding approval. The federal coordinator provides information to the state and applicant on activities related to their public assistance claims. The services provided by the public assistance coordinator include:

- Assisting the applicant in all areas of eligibility, cost estimation, and special considerations;
- Coordinating all aspects of the Public Assistance Program;
- Educating the applicant on the Public Assistance Program; and
- Providing up-to-date applicant status.

When necessary, the coordinator will assist in documenting damage; determining eligible repairs; developing cost estimates and work projects; and identifying special considerations, such as environmental compliance, historic preservation, and mitigation opportunities.

Community Emergency Response Teams

The Community Emergency Response Teams (CERT) concept was developed and implemented by the City of Los Angeles Fire Department (LAFD) in 1985. The LAFD recognized that citizens would very likely be on their own during the early stages of a catastrophic disaster and identified the need for training civilians to meet immediate emergency needs. The LAFD created a Disaster Preparedness Division with the purpose of training citizens in the CERT concept. The training program proved to be so beneficial that FEMA sought to make it available to communities nationwide. FEMA's Emergency Management Institute, in cooperation with the LAFD, has expanded the CERT materials to make them applicable to all hazards.

Emergency Management Assistance Contract Program

The Emergency Management Assistance Compact (EMAC) is an interstate mutual aid agreement that provides additional resources to supplement individual state, local, and federal response during natural or technological disasters. Since its approval by Congress in 1996 (P.L. 81-920), 23 states and one territory have ratified EMAC, and several other states are in the process. States are not required to assist other states unless they are able.

EMAC provides another way for states to receive interstate mutual aid in a disaster. Even when federal assistance is merited, EMAC assistance may be more readily available or cheaper. EMAC assistance may supplement federal assistance when the latter is available or replace federal assistance when unavailable. Most important, EMAC allows for quick response to disasters using the unique resources and expertise possessed by member states.

By agreeing to a standard legal process, member states are guaranteed reimbursement for all eligible assistance provided through EMAC. Under the compact, it is the responsibility of states requesting assistance to pay back the states that provide it. This legal standard also helps to speed the process and reduce the paperwork required. EMAC also establishes an implementation plan, which means that member states all agree to standard operating procedures for requesting and providing assistance. EMAC continues to gain wide acceptance, with key endorsements for the compact from the Southern Governors' Association, the Midwestern Governors' Conference, the Western Governors' Association, the Adjutants General Association of the United States, the Midwestern Legislative Conference, the National Governors' Association, the New England Governors' Conference, and the Federal Emergency Management Agency.

Peer Exchange Program

The American Public Works Association (APWA) has over 20 years of activity and interest in emergency management. APWA has developed training that has been offered at the Emergency Management Institute and has a database of public works directors with disaster experience. APWA participates in mutual aid agreements primarily for east coast hurricanes, as well as California disasters.

States Using In-House Resources

A number of states are setting up their own disaster assistance team programs and individual state mutual aid programs. This trend is consistent with the remarks of a few state informants who, when asked to react to the CRAT concept, thought that participants on the teams should be from other local governments within the impacted state and/or state representatives and that coordination be channeled through state emergency management offices. Examples from Kansas, North Carolina, and California follow.

Kansas Emergency Management Assistance Teams—The Emergency Management Assistance Team Program, mutual aid for emergency managers, was developed in Kansas to respond to the frustrations of emergency managers from fiscally strapped, low-resource counties of rural Kansas who reported that they had almost no capability to respond to large emergencies or disasters,—especially no professional emergency management assistance. With a mutual aid concept in mind, a short set of guidelines were developed to define quick-response teams.

Definition: EMATs are groups of local professional emergency managers (city and county) organized by management areas.

Purpose: To assist a local emergency manager in control of an emergency or disaster.

Concept of Operation: The mission of an EMAT is to arrive as quickly as possible after the call for assistance and to help the local emergency manager through the late response and early recovery periods of crisis in an advisory and supervisory capacity.

Activities: Activities of EMAT members may include establishing a joint information center, serving as the public information officer, serving as a safety officer, assisting in shelter operations, assisting in donations management, supervising emergent volunteers, locating resources, coordinating various

emergency responders, and supervising damage assessment.

Requesting Assistance: When a local emergency manager decides that assistance is needed from an EMAT, that person may request such help by contacting the local dispatch center and asking that the area EMAT be activated. The dispatch center will keep on file the current contact numbers for all members of the area EMAT and all the EMATs across the state.

North Carolina Local Disaster Assistance Teams—The state of North Carolina is designing a program for Local Disaster Assistance Teams (L-Teams) to assist local postdisaster operations by advising local coordinators, supporting emergency staff, and providing technical expertise and liaison with local government. According to the state, local emergency management agencies are more than capable of responding to and recovering from the majority of emergencies. However, there are situations in which the magnitude of disasters overwhelms local, state, and federal capabilities. In such cases, alternative resources may be necessary, including assistance from other local governments.

L-Teams have the benefits of being flexible, self-sufficient, and supported financially by the state of North Carolina. They also strengthen local emergency management by providing training and experience to local personnel. Through interstate agreements, states are able to request North Carolina's highly trained and experienced L-Teams during their own emergencies, including those that do not warrant state or federal disaster declarations.

Technical assistance L-Teams are expected to be flexible in order to fit into local emergency operations structures and to meet the needs of local coordinators. Team members should be experienced in emergency management and local government affairs. Each team consists of a team leader (and possible co-leader) and state liaison and up to seven technical specialists. North Carolina offers certification in seven technical specialties typically needed during emergencies. A technical specialty L-Team may be composed of a single type of technical specialist (a strike team) or multiple types (a task force) of expertise, including specialists in infrastructure, human services, the Public Assistance Program, hazard mitigation, emergency services, logistics, and finance.

Local liaison L-Teams assist local emergency personnel by acting as liaisons to surrounding municipalities. A standard local liaison team is composed of one team leader, one state liaison, and up to seven local liaisons. Each local liaison is stationed at a different municipality and is responsible for working closely with local governments, relaying information and requests, conducting damage assessments, and brokering resources.

Operating procedures are set to ensure smooth L-Team operations, including assembly of teams, deployment, travel, establishment of a workspace, briefing and training by local staff, and demobilization. Ultimate logistical and financial responsibility rests with the state that provides L-Team assistance. If possible, the state should provide logistical support, equipment, and travel arrangements for the L-Team. However, it is assumed that L-Teams will operate self-contained for at least seven days.

California Emergency Managers Mutual Aid Plan—After the 1994 Northridge earthquake, city and county emergency managers developed a coordinated emergency management concept called the California Emergency Managers Mutual Aid System. Its purpose is to support disaster operations in affected jurisdictions by providing professional emergency management personnel. The system can be activated for small, single-jurisdictional emergencies or for large-scale disasters. It incorporates five functions: management, planning/intelligence, operations, logistics, and finance/administration.

INTEGRATING MITIGATION AND RECOVERY

Hazard Mitigation Technical Assistance Program

After Hurricane Andrew in 1992 and the 1993 Midwest floods, FEMA began to realize the need to address long-term recovery issues. Under its new Hazard Mitigation Technical Assistance Program, when disaster-impacted communities are interested in pursuing post-recovery mitigation opportunities, FEMA can issue a task order through Woodward & Clyde, a private firm. Experts are then sent out to work directly with communities.

So far, the program has been activated to provide technical assistance and charette design through universities in the Miami-Dade County area after Hurricane Andrew; technical assistance to the Regional Planning Councils in Illinois to help outline mitigation options after the 1993 floods; and long-term recovery planning in both College Station and Arkadelphia, Arkansas, after the 1997 tornadoes. FEMA hopes that the provision of mitigation/recovery planning assistance to communities through the contract will become institutionalized.

Territorial Acquisition/Relocation/Elevation Teams

Regions I, II, III and IV of FEMA are putting together a cadre of trained Disaster Assistance Employees, full-time employees, and FEMA contractors for deployment to disasters where opportunities exist for acquisition, relocation, and elevation. The teams would develop expeditious options for state and regional consideration. Recognizing that there are a limited number of regional staff with the required expertise, these teams would allow for a sharing of resources and include the skills, experience, and training necessary to plan and implement acquisition, relocation, and elevation strategies. The teams would be quickly mobilized and would be able to stay for a relatively extended period in a particular setting.

The team would identify the scope of damage to residential and commercial structures; make insurance, real estate, and local financial assessments; and investigate legal issues, state requirements, repetitive flood losses, and state historic preservation and National Environmental Policy Act concerns.

Later, the team would identify structures targeted for accelerated mitigation action; define state management and FEMA roles; work on packaging funding; conduct legal, environmental, and historical preservation preparatory work; develop a public affairs, media, and congressional plan of action; and develop an outline of milestones and a state "phase-in" plan. During implementation, the team could provide homeowners with an accelerated buyout plan, conduct buyout seminars, or develop a hand-off package for the state.

A number of concerns over implementing the Eastern Territory Team Concept have been identified, including relationships among the four FEMA Regions and the need for support, leadership, and organizational positioning of teams; integration with states; overall political sensitivity; and sensitivity regarding the role of the team in relation to existing state, FEMA, and local players.

Federal Cultural Heritage Roster

The Federal Emergency Management Agency (FEMA) and the National Task Force on Emergency Response are recruiting conservation and preservation professionals for postdisaster assistance teams and mitigation research. In the event of a major disaster, FEMA can assign employees from other federal agencies or contract with private organizations and individuals to assist in damage assessment, technical assistance, mitigation planning, and other disaster evaluation projects. The agency is seeking persons from both government and the private sector with expertise in various conservation and historic preservation specialties. Candidates must be available for temporary field assignments on short notice. The Federal Cultural Heritage Roster will be managed for FEMA by Greenhorne & O'Mara, Inc., a private firm.

Mitigation Component of the Recovery Annex

As noted above, a major section of the newly developed Recovery Annex to the Federal Response Plan outlines the integration of mitigation into the recovery function. It notes that the Deputy Federal Coordinating Officer for Mitigation leads such activities as:

- Providing coordination among state and federal officials in the implementation and management of mitigation activities;
- Providing technical assistance in execution of the early implementation strategy;
- Accomplishing comprehensive hazard mitigation planning;
- Hazard mapping and performing risk analysis, which may be done on an interagency basis by hazard mitigation

teams;

- Accomplishing benefit/cost analysis and training;
- Developing building codes;
- Developing and delivering training and education;
- Disseminating public awareness and information materials; and
- Establishing Reconstruction Information Centers to offer mitigation and reconstruction information and assistance.

Other Postdisaster Mitigation Assistance

A mobile "mitigation van" was used by the Federal Emergency Management Agency in Alabama during the recovery from Hurricane Georges. The Disaster Rebuilding Information Van traveled throughout Mobile and Baldwin counties, where most of the damage from the rains and winds of Hurricane Georges occurred. The van was staffed with state and federal mitigation specialists who provided tips about techniques people can use to make their property more disaster-resistant. The van also displayed photos from the disaster to illustrate successful mitigation efforts. The van included a model to show how simple and effective wind connectors, storm shutters, and wall bracing can be in protecting against hurricane winds.

Mitigation Opportunities Assessment Tool

A Mitigation Opportunities Assessment Tool is being developed in North Carolina. It is to be used the day after a disaster to quickly identify structures and/or communities that may want to undertake specific mitigation/recovery measures. This tool was used during Hurricane Bonnie and proved to be very useful.

Resolution on Post-flood Mitigation Opportunities

In a 1998 "Resolution on Post-flood Mitigation Opportunities," the Association of State Floodplain Managers (ASFPM) noted that the focus on acquisition and the current Hazard Mitigation Grant Program funding requirements do not encourage comprehensive mitigation planning. Rather it only promotes plans to fulfill funding requirements, rather than encouraging a locally owned planning process. The ASFPM outlined several steps that would address these problems, including monitoring and assisting communities in the effective enforcement of floodplain management regulations; encouraging communities to look at the full range of flood mitigation strategies and measures; and using the multiobjective management planning process to develop a mitigation program that is supported by local officials and the public, that utilizes all resources, and protects the natural and beneficial functions of the floodplain. Several measures to follow up on these steps will be pursued by the ASFPM, in partnership with the National Emergency Management Association and the Federal Emergency Management Agency.

Florida's Local Mitigation Strategies

Through its strong state planning legislation and its Local Mitigation Strategies Program, the state of Florida has provided a stable framework in which effective local and state long-term recovery planning can take place. The state Department of Community Affairs, Division of Emergency Management is promoting community development of local mitigation strategies before disasters. A local mitigation strategy is a plan that a community can develop on a voluntary basis to promote hazard mitigation and manage postdisaster recovery and long-term redevelopment.

The state has made it clear that in an increasingly competitive financial climate having a local strategy will be critical in securing postdisaster redevelopment funding. Florida strategically recognizes that having communities pre-identify a set of potential mitigation initiatives allows the state to more effectively secure additional postdisaster supplemental appropriations from the federal government so that future loss reduction is built into the recovery and redevelopment process.

The state has authorized funding and technical assistance to municipal and county governments across the state in support of this planning activity. Communities that have developed these plans will definitely have already thought

about mitigation and post-event mitigation prior to a disaster. This will support more effective postdisaster decision making, since the complex decisions involved in rebuilding are difficult to make in the confusion following disaster.

Florida's Resource Identification Strategy Database

In a partnership program the Department of Community Affairs and the Florida Public Affairs Center at Florida State University have developed a Resource Identification Strategy database. The database contains information on historical and potential funding sources for disaster preparedness, response, mitigation, recovery, and long-term redevelopment projects, funded by federal, state, and other organizations. The database is designed to be representative, that is, it provides traditional and nontraditional sources and project examples rather than a comprehensive listing of projects. Program and project data will continually be added and updated. The intent of the database is to provide communities with important information on potential assistance before a crisis, when developing a local mitigation strategy, or after a disaster strikes.

LONG-TERM RECOVERY AND SUSTAINABLE REDEVELOPMENT

Economic Development Administration Technical Assistance

After the 1993 Midwest floods, the Economic Development Administration decided to make technical assistance grants to local economic development organizations, with the intent of covering all 532 counties affected by the flood. These grants were designed to fund the hiring of a Flood Recovery Coordinator, who would take on the responsibility of producing both a short-term and a long-term disaster recovery strategy. The coordinator's function was to help local and state government assess damage, plan for recovery, and navigate the local, state, and federal programs and laws affecting disaster assistance.

The recovery coordinators funded by the grants provided a wide range of specialized services. These typically included assessing damage, developing strategies to guide economic development, providing assistance in determining housing needs, developing special recovery projects, and obtaining information on funding programs and requirements.

An independent evaluation determined that the coordinators with strong local knowledge and connections were highly valued and effective and that training is the key to reinforcing their effectiveness.

Housing and Urban Development Technical Assistance Teams

The U.S. Department of Housing and Urban Development funds and sponsors teams that enter a stricken area after a disaster and help the locality cope with its housing problems. After the 1997 floods, such a team was sent to Grand Forks, North Dakota, and helped the city with its effort to support new construction, including identifying suitable sites, developing neighborhood concept plans, and identifying programs and finance seminars for the purchase of new homes. It also helped provide data on rehabilitated housing needs and an evaluation and assessment of the city's zoning, existing land-use plan, and development review process.

Center of Excellence for Sustainable Development

In early 1999, the Federal Emergency Management Agency was in the late stages of developing a "sustainable development desk," which would be used in the aftermath of selected disasters to bring sustainable development expertise into the postdisaster environment. Officials staffing the desk would represent various federal agencies, help identify opportunities for applying sustainable development principles after a disaster, and provide sustainable development information and technical support to communities, the state, and others.

A member of the U.S. Department of Energy's Center of Excellence for Sustainable Development team was deployed to the Ohio and West Virginia floods to explore how best to deliver "sustainable redevelopment" information to flood

victims and local officials. Due to budget constraints and associated lack of human resources, the sustainability desk was expected to be run as a virtual technical assistance program through the Internet during 1999.

Urban Land Institute Advisory Panels

The Urban Land Institute (ULI) helps fund and implement advisory services panels in distressed inner-city or disaster-affected communities. Since 1986, ULI has held 20 inner-city revitalization panels in 14 cities in 13 states, including Oklahoma City after the bombing, Grand Forks after the flood, and Watsonville, California, after the 1989 earthquake.

For example, after the 1989 earthquake, in Santa Cruz ULI convened an advisory panel of 10 real estate professionals from varied fields in different California communities. The panel conducted a week-long, on-site investigation that included tours of the study area, other downtown neighborhoods, competing commercial districts, and the beach area. Panel members then interviewed the sponsor's representatives, public officials, community and neighborhood leaders, university officials, and members of the business community and special advocacy groups.

The city council asked the panel to address specific issues of rebuilding and revitalization of the downtown. The panel was asked to prepare recommendations that could serve as the foundation for public and private efforts to restore a downtown mall, reverse its decline as a prominent destination for residents, and improve its attractiveness for visitors. The decline of the downtown area had been underway for many years before the earthquake hit.

American Institute of Architects Advisory Teams

Beginning with the Coalinga earthquake, the California Chapter of the American Institute of Architects (AIA) has supported deployment of architectural teams approximately 2-3 months after earthquakes to facilitate redesign and redevelopment charettes primarily for downtown central business districts. These charettes have served as idea sessions and improved public morale by letting the community know that opportunities do exist after the event and that effective recovery can occur after a disaster. This assistance has been ad-hoc and dependent primarily on the local AIA chapter, which waits for a request from the local community. Other AIA charettes have occurred after the Loma Prieta earthquake, and disasters in Armenia and Mexico City.

The AIA's Government and Industry Affairs Department has formed Regional Disaster Advisory Teams (REDATs) as a means for architects to offer assistance to AIA members in affected regions. REDATs consist of AIA members representing six geographic regions nationwide and are structured to allow for the number of participants to fluctuate over time. Objectives of the REDAT teams are 1) to allow its volunteers to work in a collaborative effort to promote new ideas for disaster preparedness; 2) to increase the visibility and importance of the architectural profession; and 3) to work with state and local officials to assess structural and planning requirements in support of mitigation during recovery.

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