

## Public Participation in Natural Hazard Mitigation Policy Formation: Challenges for Comprehensive Planning

DAVID R. GODSCHALK\*, SAMUEL BRODY<sup>†</sup> & RAYMOND BURBY\*

\*Department of City and Regional Planning, University of North Carolina, Chapel Hill, NC 27599-3140, USA. E-mail: [dgod@email.unc.edu](mailto:dgod@email.unc.edu)

<sup>†</sup>Department of Landscape Architecture and Planning, Texas A & M University, College Station, TX 77843, USA

(Received November 2002; revised April 2003)

**ABSTRACT** *Democratic theory holds that active participation in governmental planning and decision making is critical to furthering the public interest. As a result, public participation in urban planning in the US is arguably the most extensive and intensive in the world. Required by federal, state and local laws, citizen involvement is a staple of local plan making. However, as this paper shows, citizen interest in participating in the formulation of hazard mitigation policies in comprehensive plans is low, despite mounting evidence of perils to life and property from floods, hurricanes and earthquakes. Using evidence from case studies in Florida and Washington, the causes of disinterest are dissected and ways to increase public input to hazard mitigation policies in local comprehensive plans are recommended.*

### Introduction

A sustainable community selects mitigation strategies that evolve from full participation among all public and private stakeholders. The participatory process itself may be as important as the outcome. (Mileti, 1999, p. 6)

Traditional democratic theory assumes that the public interest will be hammered out through participation of citizens in government decision making (Pateman, 1970; Fagence, 1977; Berry *et al.*, 1993). This assumption has been built into the laws, regulation and practice norms governing city and regional planning in the US, resulting in widespread participation in community plans and project reviews (Day, 1997; Lowry *et al.*, 1997). The Code of Ethics and Professional Conduct of the American Institute of Certified Planners states that the planner's primary obligation is to serve the public interest.

But beneath the theoretical assumption is the disquieting reality that citizens are not always interested in participating, and that some types of plans fail to receive public attention. Involving the public in technical decision making poses a formidable challenge to governmental institutions (Williams *et al.*, 2001). Tension between bureaucracy and democracy is seen as one explanation of the

lukewarm interest in participation by many citizens and even some public planners (Day, 1997). It has been particularly difficult to generate high levels of public participation in making plans to reduce the dangers of natural hazards. Despite mounting evidence of the perils to life and property from floods, hurricanes and earthquakes, planners have had difficulty attracting substantial public involvement in hazard mitigation planning (Birkland, 1996; Burby, 2003).

Why are citizens not greatly interested in participating in hazard mitigation planning? How do we ensure that the public interest is adequately addressed in hazard mitigation planning if the public is not interested? In order to examine these questions, findings from case studies of comprehensive community planning in Florida and Washington State are analyzed. Drawing on this evidence, reasons are suggested why hazard mitigation policies within comprehensive plans have not attracted substantial citizen interest and actions are recommended to address the public interest during the formulation of these policies.

### **Participatory Planning Theory and Experience**

Public participation in urban planning in the US is arguably the most extensive and intensive in the world. Since the 1960s, citizens have been hotly engaged in plans for urban renewal, freeway construction, downtown revitalization, environmental protection and many other types of development or preservation proposals (Day, 1997). Encouraged and abetted by federal, state and local laws, citizen involvement is a staple of local plan making.

Three models of participation evolved during the 20th century. In the early 1900s, the good government reform movement devised a model of participation based on public hearings and blue ribbon advisory committees. During the 1960s, this advisory model was eclipsed by a model of collaboration and power-sharing. Then the 1980s saw the rise of a model of conflict management and dispute resolution. Elements of all three models persist today.

The advisory model relies on citizen input through public hearings and committees. The public hearing is designed to afford citizens the formal opportunity to give comments on proposed plans, ordinances and projects to local elected officials. This early device remains in widespread use, even though hearings are often criticized for occurring late in the planning process and for encouraging organized opposition rather than collaborative problem solving. The advisory committee, such as the planning board, is designed to provide ongoing advice to local elected officials. It also remains in widespread use, even though it has been criticized for failing to include a full spectrum of community interests.

A more recent strand of participatory theory focuses on collaborative planning, in which citizens and stakeholders are given significant roles and degrees of power (Arnstein, 1969; Innes, 1996; Forester, 1999; Wondolleck & Jaffee, 2000). In the collaborative planning approach, stakeholders are not just responders to staff plans but also are engaged in creating and selecting plan alternatives. Communities build planning and implementation capacity through decentralization and sharing of decision making.

A third strand of participatory theory is built around conflict management and

resolving the disputes that arise when participation brings stakeholder groups into opposition (Godschalk *et al.*, 1994; Susskind *et al.*, 1999). Using techniques of consensus building and dispute resolution, this approach often relies on third party neutrals to facilitate negotiation processes and mediate disputes.

In current practice, the advisory, collaborative, and conflict management theories tend to intertwine. For example, it is common for planners to employ advisory committees and public hearings, as well as collaboration techniques in the design of consensus-building processes (Godschalk *et al.*, 1994; Straus, 1999). Rather than a choice of one model or another, the techniques of all three are parts of a continuum of involvement methods and concepts drawn upon by participatory planning approaches. In this way, mutual learning and active collaboration are built into the process from the start.

These participatory theories do not distinguish among the types of planning subjects. Plans for technical subjects involving high complexity and risk, such as hazardous waste management (Merkhofer *et al.*, 1997), radioactive waste transport (Binney *et al.*, 1996), and nuclear weapons management (Williams *et al.*, 2001), have proven to be particularly difficult to explain to the public so as to generate informed public involvement. Planning problems whose solutions require engineering, science and technology applications present special challenges for participation programme designers.

The theories also do not distinguish among the types of plans being prepared. In the natural hazard mitigation field, the two main types of plans are: (1) specialized, stand-alone emergency management or hazard mitigation plans and (2) comprehensive community plans that contain hazard mitigation elements. Traditional emergency management practice has relied upon stand-alone plans. However, a number of state requirements for local comprehensive plans mandate preparation of hazard mitigation components (Brody *et al.*, 2003; Burby, 2003).

Both types of plan have their advantages, but there is compelling argument for incorporating mitigation into the comprehensive plan because of the opportunities for implementing mitigation through the policies contained in land use, transportation, infrastructure, environment, and other comprehensive plan components (Burby, 2003; Burby *et al.*, 1999). In addition, many hazard scholars have argued that mitigation should be incorporated into the comprehensive plan because that plan has standing with the government and elected officials as a community policy guide and is a focus for public participation (Godschalk *et al.*, 1998).

## **Overview of Hazard Mitigation Planning Practice in Florida and Washington**

In order to investigate citizen participation in the formation of hazard mitigation policies in comprehensive plans, case studies were conducted of comprehensive plan making in two states that require the inclusion of hazard mitigation in adopted local comprehensive plans: Florida and Washington. These two states were selected for analysis since both have comprehensive planning mandates with participation requirements, both are vulnerable to threats from natural hazards, and both include a number of local governments that have prepared updated plans since 1995.

*State Planning and Participation Mandates*

Preparation of city and county comprehensive plans in Florida is mandated under the Local Government Comprehensive Planning and Land Development Act. The growth management legislation is implemented by Rule 9J-5 of the Florida Administrative Code, which sets standards for judging the adequacy of local plans submitted to the state for approval. This rule requires the inclusion of specific elements in local plans and prescribes methods to be used in preparing plans. Under Florida law, comprehensive local plans must be updated on a regular basis. Preparation of an Evaluation and Appraisal Report (EAR) is used for the required updating of local comprehensive plans.

In Florida, local planning agencies must adopt procedures to encourage public participation in updates or amendments to comprehensive plans. In addition to providing property owners with notice of all official actions, local governments must provide for broad dissemination of proposals and alternatives, opportunity for written comments, public hearings, provisions for open discussion, communications programmes, information services and consideration of and response to public comments.

Washington's comprehensive planning requirements give local communities more flexibility in crafting a plan that meets specific local needs. The 1990 Growth Management Act (GMA) requires selected cities and counties in Washington to adopt a comprehensive plan. It specifies general goals, as well as plan elements dealing with land use, rural areas, transportation, housing, capital facilities and utilities.

Washington law states that citizens will play a key role in the development of the comprehensive plan, and that there will be varied opportunities for them to participate throughout the planning process. The GMA includes, as one of its 14 statewide planning goals, the goal of encouraging the involvement of citizens in the planning process and ensuring co-ordination between communities and jurisdictions to reconcile conflicts. In addition, the Act requires local governments to develop a public participation programme. The programme must include procedures that allow for public comment and review of proposals and alternatives during development and amendment of comprehensive plans and development regulations. The intent is to provide a framework that will guide citizen involvement efforts throughout the comprehensive planning process.

A significant element of the state frameworks is their requirement for the preparation of specialized or functional plans for hazard mitigation, in addition to the requirements for comprehensive plans. In Washington, the Growth Management Act requires local jurisdictions to adopt both comprehensive plans and critical areas ordinances. Geologically hazardous areas, frequently flooded areas, and wetlands are included in the types of critical areas to be regulated. These ordinances were to be adopted prior to the completion of the initial comprehensive plans under the GMA. They were to be reviewed and revised during the comprehensive plan process and then adopted into the relevant plan elements.

In Florida, a 1998 state initiative encouraged each county to develop a separate local mitigation strategy in collaboration with the cities within the county. The case study jurisdictions adopted separate Local Mitigation Strategies in 1998, as did other Florida jurisdictions. These planning processes were required to incorporate public participation measures.

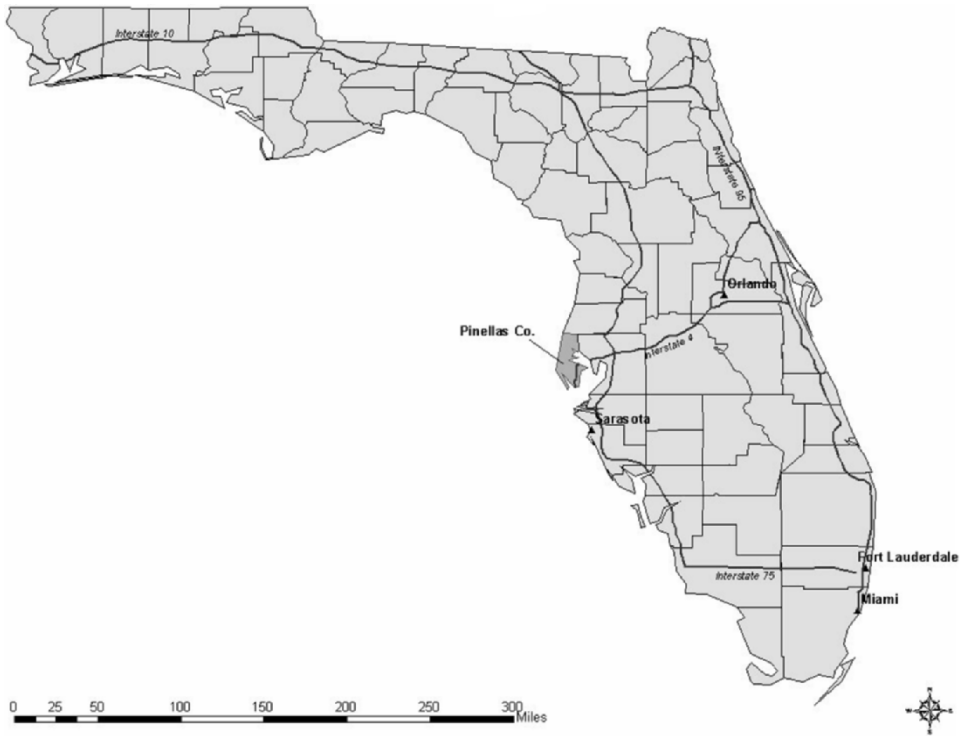


Figure 1. Florida study sites.

### *Case Study Locales*

The case studies were designed to build on the quantitative analyses of findings from the survey of 60 local planning directors and participation staff members in Florida and Washington states, reported in Burby (2003) and Brody *et al.* (2003). The purpose of the five local case studies was to provide a richer and more detailed understanding of the dynamics of public participation than had been obtained in the previous survey interviews. During 2000, case study staff members spent about a week in each locality conducting personal interviews with 13 to 14 elected and appointed officials, planners and citizens concerning their roles in the planning process, studying documents and records and compiling time lines of participation events and actions.

The three city and two county case study areas were selected on the basis of their higher than average efforts to involve citizens in the preparation and updating of their comprehensive plans, leading to the belief that they would represent models of best participation practice. The Florida localities studied were the cities of Fort Lauderdale and Sarasota, and Pinellas County (Figure 1). The Washington localities were Pierce County and the city of Issaquah (Figure 2).

Table 1 provides data on the characteristics of each place studied. The study localities vary in size from the two large counties to the smaller cities and towns. Growth rates in the Florida locales were modest, reflecting rapid growth in the decades after the Second World War, which slowed after 1980. Both Washington locales were growing at a substantial rate. Median housing values fell between

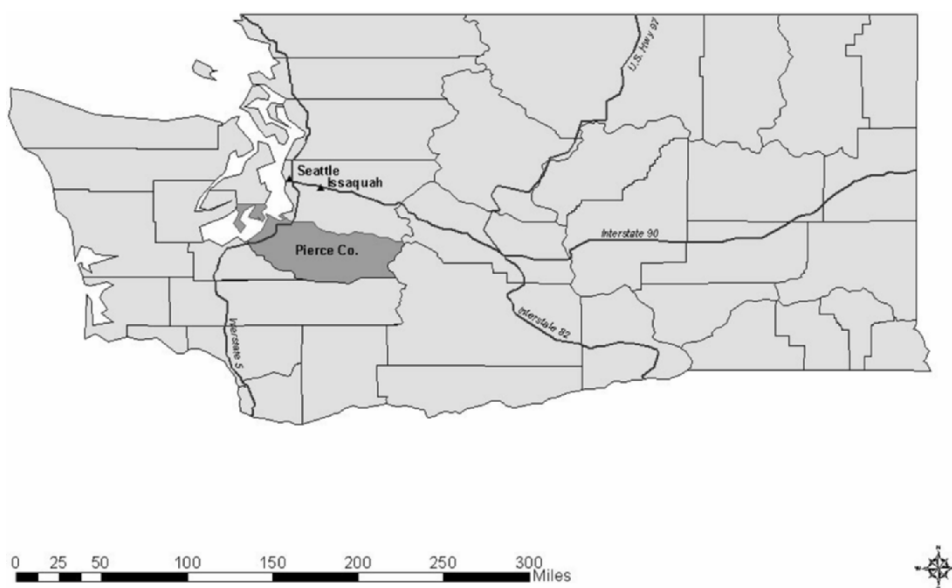


Figure 2. Washington study sites.

\$70 000 and \$100 000 in four of the localities, but they were substantially higher in Issaquah, which was in the path of higher status suburban growth pushing eastward from Seattle and Microsoft's headquarters several miles to the west. Demand for land in hazardous areas was moderate to very high in the Florida localities, low in Issaquah, and moderate in Pierce County. The survey found that each locality was subject to risks from natural hazards, as shown in Table 1. In the 1990s, each Florida locale experienced property damage from high winds and ground failure. Pinellas County and Sarasota also suffered from flooding. In Washington, Issaquah and Pierce County both experienced flood damage during the 1990s, and Pierce County also had damage from ground failure.

The case studies provided an opportunity to look at the impact of the state and local contexts on citizen participation in the comprehensive planning process and to study in more detail the degree to which participation influenced hazard mitigation policies in the plans. Interviews with both government officials and stakeholders, combined with documentary evidence (i.e. minutes from meetings, planning materials, reports), allowed comparisons of participation approaches and outcomes to be made. As Yin (2002) points out, systematically conducted case study research can generate valid findings. While the interviewees were limited to active participants, we obtained reviews of our draft case analyses from local respondents to ensure factual accuracy.

#### *Participation Processes in the Case Study Jurisdictions*

For the case studies, participation was defined in terms of specific actions stakeholders took during the preparation of the comprehensive plans. Such actions included playing an active role in the discussion of plan policies or alternatives during public hearings, workshops, committee meetings or informal

**Table 1.** Characteristics of the local governments studied

Characteristic	Florida			Washington	
	City of Ft. Lauderdale	Pinellas County	City of Sarasota	City of Issaquah	Pierce County
Population, 2000	152 397	921 482	52 715	11 212	700 820
Population growth, 1990–98	3%	3%	< 1%	30%	15%
Median housing value, 1990	\$99 200	\$73 800	\$71 600	\$168 200	\$82 500
Natural hazards:					
Damage, 1991–98					
Flooding	No	Yes	Yes	Yes	Yes
Ground failure	Yes	Yes	Yes	No	Yes
Hurricane, wind	Yes	Yes	Yes	No	No
Demand for land in hazard areas	High	Moderate	Very high	Low	Moderate
Official interest in hazard mitigation:					
Elected officials <sup>a</sup>	Strong	Strong	Moderate	Strong	Moderate
Planning staff <sup>b</sup>	Weak	Strong	Weak	Strong	Weak
Other local government staff <sup>b</sup>	Weak	Weak	Weak	Strong	Weak
Citizen interest in hazard mitigation <sup>b</sup>	Weak	Weak	Weak	Strong	Weak

Notes: <sup>a</sup>Rating based on estimated degree of commitment of elected officials to hazard mitigation.

<sup>b</sup>Strong = elected officials, planning staff, other government staff, citizens *were* a source of initiative for attention given to hazards in the planning process.

Weak = elected officials, planning staff, other government staff, citizens *were not* a source of initiative for attention given to hazards in the planning process.

Sources: US Census; survey of 60 local jurisdictions in Florida and Washington conducted in 1999 (see Burby, 2003).

sessions. Thus, targeted participation in planning was the focus, rather than civic participation in general or intent to participate. Respondents were asked how participation was carried out in the plan-making process, how it influenced the mitigation content of the plan, and how it influenced adoption and implementation of mitigation policies.

All five case study jurisdictions employed variants of the advisory and collaborative models of participation. Participation programme objectives ranged from educating citizens and finding out their preferences to fostering their influence in decision making. Participation techniques ranged from hearings, committees and workshops to visioning sessions. However, despite employing a menu of active participation techniques, no jurisdiction was able to achieve a high level of interest in hazard mitigation issues. Table 2 contains summary characteristics of the participation programmes for the five jurisdictions.

As reported by planning staff, the local government and citizen response to these hazards varied considerably. In Fort Lauderdale, elected officials had a strong interest in doing something about hazards, but hazards attracted little interest from planners, other local government officials, or citizens. In Pinellas County, both elected officials and planners were interested in doing something

to mitigate hazards through the planning process, but interest among other local officials and citizens was weak. In Sarasota, hazards attracted little attention from government officials and citizens. In contrast, in Issaquah, where flooding had recently caused damages, elected officials, planners and other local government officials and citizens all had a strong interest in mitigation. Finally, in Pierce County there was moderate interest in hazards among elected officials but very little among planners or citizens. Thus, in these places citizen participation did not provide a vehicle to get hazard mitigation onto the planning agenda or provide a basis for crafting hazard mitigation policies that were responsive to citizen concerns and interests.

While each jurisdiction's citizen participation effort had unique features, some additional cross-cutting general statements can be made. First, case study respondents indicated that Florida's top-down model of planning restricted citizen involvement more than Washington's bottom-up model. Florida's planning mandate made it difficult for some jurisdictions to implement broad-based and intensive participation programmes since the process of, and time-line for, plan adoption is rigorously specified at the state level. For example, Sarasota had to delay its planning process to allow time for adequate citizen participation. Fort Lauderdale's Evaluation and Appraisal Report was found 'insufficient' by the state in part because it was overly geared to zoning reform, where public interest was strongest.

In comparison, jurisdictions in Washington State relied more upon grassroots or community-driven approaches to public participation. Citizen groups and community organizations influenced the design of the planning process in addition to taking part in it. Furthermore, because jurisdictions have more flexibility to design their own planning processes, the Washington cases tended to be more diverse than their Florida counterparts.

Second, the primary objectives for participation programme were related to the type of mechanism employed to engage the public. For example, the Sarasota, Fort Lauderdale and Issaquah programmes focused on educating citizens and tapping citizen knowledge. To do this, these jurisdictions used public workshops or hearings to obtain citizen input. Since the goal was to inform the general public or understand their interests, forums and consensus building sessions were the most effective participation tools. In contrast, Pinellas and Pierce counties aimed their participation programmes at fostering citizen influence in decision making. Citizen advisory committees were the primary choice of participation techniques in these jurisdictions, since they permit a small number of participants to have a major impact on the content of the final plan.

Finally, the most active stakeholders were closely linked to the major issues emphasized in the planning process. Neighbourhood and civic groups played the largest roles when planners sought their input on site-specific issues, as was the case in Sarasota, where neighbourhood preservation was a main concern, and in Fort Lauderdale, where planners used the planning process to focus on zoning reform issues. Development and environmental groups played a more active role in addressing community-wide issues, such as resource protection or growth management. Possibly because planners themselves chose not to emphasize hazard mitigation issues in crafting comprehensive plans, in each jurisdiction citizens showed little interest in natural hazards, such as floods and hurricanes, when their input was sought during the planning processes that we studied. Some mild interest in hazard mitigation emerged in only a few



**Table 2.** Characteristics of the case study participation programmes

	Sarasota	Ft. Lauderdale	Pinellas County	Pierce County	Issaquah
Programme approaches	Formal and informal participation	Neighbourhood participation	Issue specific participation	Capacity, commitment building	Citizen initiative
Programme objectives*	Citizen education, preferences	Citizen knowledge, preferences	Citizen knowledge, influence	Citizen education, influence	Citizen knowledge, preferences
Involvement mechanisms	Workshops, public hearings	Community workshops	Advisory committees	Advisory committees, workshops	Visioning, public hearings
Active stakeholders	Neighbourhoods, developers, businesses	Civic associations, downtown authority	Environmental groups, non-governmental organizations, businesses	Developers, environmental groups, neighbourhoods	Developers, environmental groups, historic preservation
Planning issues	Neighbourhood preservation, downtown redevelopment	Zoning reform	Environmental management	Directing growth, protecting environment, conserving farms and forests	Land use, protecting environment, historic preservation
Interest in hazard mitigation	Neither elected officials, planners, nor citizens interested in hazard mitigation aspects of the plan	Elected officials interested in hazard mitigation, but little interest shown by planners or citizens	Elected officials and planners interested in hazard mitigation, but little interest shown by citizens	Elected officials moderately interested in hazard mitigation, but little interest shown by planners or citizens	Elected officials, planners, and citizens interested in hazard mitigation as it affected other salient planning issues

*Note:* \* Objectives of participation programs were taken from a survey of 60 local jurisdictions in Florida and Washington conducted in 1999 (see Burby, 2003).

instances, when citizens or planners linked hazards with more dominant issues, such as traffic patterns, zoning or beachfront development.

The paper now turns to the individual case studies for the details of participation and hazard mitigation in each comprehensive planning process. First, there is a look at the Florida jurisdictions.

### *Sarasota: Combining Formal and Informal Participation*

Sarasota is a city located on the west coast of Florida, and in 2000 its population was 52 715. Its comprehensive plan's vision is to create a city of urban amenities with a small town feeling. With few acres of vacant land remaining, hazard mitigation involved issues related to the redevelopment and protection of existing structures from coastal erosion and damage from high winds and storm surges during hurricanes. Sarasota began updating its 1989 plan in 1996. The plan-making process lasted approximately two and a half years and was driven primarily by state planning requirements (Brody, 2001a).

Participation in plan making consisted of public hearings and workshops held by the planning board and city commission, where most citizen input took place. Because land use issues were a major concern, separate workshops were held on issues of zoning and development around the central business district. The city delayed completion of the state-mandated plan evaluation and appraisal report (EAR) for three months beyond the state deadline to allow for public participation during the fall months instead of the summer. This delay was meant to broaden public input by catering to the seasonal residents who are normally away during the summer. After receiving no challenges during a required 21-day comment period, the comprehensive plan was adopted in November 1998.

Sarasota overlaid an intense citizen participation programme on top of a routine plan-making process. The result was a planning process designed to provide everyone with an opportunity to participate and make recommendations as the plan evolved. One citizen activist commented that if citizens and groups did not get involved, it was from "lack of interest not opportunity". The planners viewed the participation process as more important than the plan itself because it allowed the public to pause, reflect, and see where their community is headed in the future.

Sarasota's commitment to citizen input was codified in a 1998 ordinance that established procedures for public participation in the comprehensive planning process. The ordinance sets guidelines that direct updates to the comprehensive plan, such as notice procedures, written comments, public hearings and the dissemination of information to the public. While the ordinance provided a legal instrument to guide citizen input throughout the planning process, the nature and quality of the participation that took place was far more informal. One-on-one meetings, open houses, and community workshops better depict the character of public input than the formal procedures of the ordinance. Much of the citizen participation occurred behind the scenes, rather than being driven by a legal document.

The most active and influential groups in the planning process were those with the time and financial resources to attend the multitude of meetings. Well-educated retirees were extremely vocal, as well as business interests who could afford to pay a consultant or lawyer to represent them at meetings and

public hearings. Active participants thus consisted primarily of well-organized neighbourhood organizations, development representatives and business organizations, such as the Downtown Association. In general, neighbourhoods lacking leadership and resources did not participate to the same degree and therefore did not have the same level of influence on the final plan.

Neighbourhood groups swung the pendulum of power away from strictly development organizations to a more balanced set of issues. Participants characterized themselves as 'reactors' to and 'reviewers' of materials presented by staff, but at times they became the initiators of ideas that drove deliberations. Animated debates centred around business encroachment on neighbourhoods fringing the downtown area. These site-specific zoning issues generated more public interest and concern than what were perceived as technical issues, such as preventing damage from hurricanes or floods. The presence of active neighbourhood associations and debate over land use issues led to a neighbourhood element in the comprehensive plan.

An organized and interested citizenry combined with an open participation process resulted in a final comprehensive plan that was strongly influenced by public input. However, the respondents reported that citizens were generally not interested in issues related to the mitigation of natural hazards and therefore their input had little effect on hazard policies in the plan. Instead, participants focused on land use issues that involved preserving the quality of their neighbourhoods while encouraging the redevelopment of downtown areas.

Despite the lack of public interest in hazard mitigation, Sarasota's comprehensive plan contains strong policies related to mitigating damage from floods and hurricanes. The main reason is not public concern, but state planning requirements and the professional competence of the planning staff in complying with them. Because Sarasota is almost entirely built-out, most of the policies in the plan involve minimizing storm damage through land development regulations, such as the city's building code. Specific policies regulate construction in high wind areas, designate an engineering design manual, which addresses drainage issues, and encourage the use of dune walk-over systems to preserve dune vegetation.

In summary, the Sarasota community context, where individuals and groups felt comfortable enough to informally express concerns over planning issues, helped to increase participation and to strengthen the quality of the final plan. However, these issues had more to do with land use, neighbourhood protection, and downtown redevelopment, than with natural hazard mitigation, which neighbourhood groups and the planning staff viewed as involving a set of technical issues that did not require citizen input.

#### *Fort Lauderdale: Neighbourhood-based Participation*

Fort Lauderdale is a city located on the east coast of Florida with a population of 152 397 in 2000. Beginning in 1995, it engaged in a unique comprehensive plan-making process that focused on reform of the zoning ordinance. This initiative, spearheaded by the Planning and Zoning Division, involved changing the city's zoning code and zoning map to reflect a more coherent vision for the future. Changes were based on high levels of citizen participation involving meetings with property owners and civic associations in each neighbourhood district (Brody, 2001b).

Fort Lauderdale's unorthodox plan-making process sparked high levels of public interest and input in part because it focused on site-specific land use issues at the neighbourhood level. Well-organized and vocal civic associations gave citizens access to the planning process. These home owner groups provided an interface between planners and residents during the development of a new zoning code and updated comprehensive plan.

Because there was so much public interest in zoning reform, city staff devised a participatory process to engage the thousands of residents concerned about the future development patterns of their neighbourhoods. They instituted a constituency model where two planners were assigned to a neighbourhood, acting as a liaison between the city and community organizations. The district planners were selected based on their knowledge of and experience with a particular neighbourhood. If a contentious issue arose, the district planner was notified and teams of city staff were sent out into the neighbourhood to hold meetings and resolve the issue before it evolved into open conflict. This participatory design enabled planning staff to obtain site-specific input from a large population given limited time and resources available to develop a plan. Each neighbourhood worked through similar issues and developed a draft consensus plan.

A planning process designed for citizen participation and guided by a staff eager to listen to community concerns resulted in a final plan that was highly influenced by public input. By going to each neighbourhood group with a land use map showing zoning inconsistencies in the area, planning staff gave citizens the opportunity to respond to potential changes, as well as initiate new recommendations which were eventually folded into the plan.

Due to the size of the city population and the number of potential stakeholders involved in the planning process, organized groups with resources and strong leadership had the greatest influence on the process and plan. These included vocal civic associations, developers, and the downtown development authority. Each of these stakeholders took part in the process through different participatory venues. For example, through input at workshops, civic associations were instrumental in maintaining neighbourhood densities as single-family to protect the integrity of their communities over the long term. Community concern also led directly to a plan element on historic preservation that otherwise would not have been included in the final plan.

Hazard mitigation generated some interest from beach and barrier island communities. After lobbying by home owners' associations, the boundary of the coastal high hazard area was pushed westward to increase the size of this restricted area. Public input also led to a regulation that requires developers to study the impacts of hurricanes before their projects can be approved. However, these actions were driven more by concerns over density and traffic, rather than a desire to reduce potential hurricane damage.

Goals and policies related to mitigation of natural hazards in the comprehensive plan are largely the result of state requirements and staff expertise. Most hazard mitigation policies are aimed at reducing human exposure within the coastal high hazard area. Policies limit public expenditures, as well as direct future residential population concentrations away from this area. Because the city has a large population, hazard mitigation policies are also concerned with reducing hurricane evacuation times.

In summary, public interest in citywide zoning reform enabled Fort Lauderdale to obtain participation from a variety of groups. Although resolving land

use conflicts required some 50 public workshops over a three-year period, it touched upon issues that directly affected citizens' lives, creating a desire to participate. City planners met that desire by designing a neighbourhood-based participatory planning model, allowing staff to deal with specific neighbourhood concerns and engage a large proportion of the public. Neighbourhood concerns touched on hazard mitigation in oceanfront areas, but threats posed by hurricanes and other hazards generated little interest among citizens in other parts of the community.

#### *Pinellas County: Issue Specific Participation*

Pinellas County, located on the west coast of Florida, had a population of 921 482 in 2000. It began to update its comprehensive plan in 1995 and adopted a new plan three years later in 1998. After holding a series of town forums and working group meetings to obtain public input, the plan-making process followed the state-mandated administrative procedures. With a strong history of land use planning, Pinellas County could rely on previously adopted policies in its comprehensive plan as a foundation for its latest effort (Brody, 2001c).

A history of working with citizens, other departments, and adjacent jurisdictions contributed to the strong participation programme. Informal working relationships among county staff and the public increased feelings of trust, setting a precedent for involvement in land use planning. Pinellas County's plan relies on personal relationships and collaboration across organizations to achieve its goals. Much informal participation is not apparent on the surface of the planning process, but these informal meetings greatly influenced the comprehensive plan.

The strength of the county's programme lies in focused, issue-specific participation techniques. The planning staff brought together teams of professionals and interested citizens to work on specific topics. When parties focus on specific issues, they tend to be more engaged and able to provide useful input. Working groups also facilitated a two-way education process, where citizens learned about the county's priorities while planning staff learned about public concerns. These focused techniques were appropriate given the geographic make-up of the county. However, the planning staff did not include hazard mitigation as a special topic on which to focus citizen participation. In addition, because planning efforts were aimed at scattered pockets of unincorporated areas, it was more difficult to build a sense of community and maintain general public interest than is generally the case in tight-knit cities. The broad nature of planning issues at the county level also made it difficult for the public to become interested and engaged in the development of the comprehensive plan, as compared with neighbourhood-specific issues.

Thus, despite outreach efforts that included mailing lists, advertisements and information dissemination through libraries, the public meetings on the comprehensive plan were not well attended. Forums could not generate public input to the same degree as issue specific techniques. Working groups on particular issues, such as environmental management or transportation, provided the county planning staff with a solution to this problem by providing a focal point for parties to express their interests.

Public interest in the comprehensive plan was driven primarily by concern over environmental management issues, such as the protection of critical areas.

The environmental working group provided the greatest opportunity for public engagement. Comprised mostly of environmental organizations and concerned citizens, the working groups rigorously discussed each policy. Active participants, such as the Audubon Society, shared their data and knowledge of the region.

Communication, information sharing and a staff receptive to the comments of working group members led to a stronger, more innovative environmental component of the comprehensive plan. By initiating a two-way exchange of ideas, all parties were able to meet their goals and produce a balanced plan reflecting diverse interests.

The planning staff and broad policies of the comprehensive plan created a foundation for hazard mitigation efforts in Pinellas County. Policies in the comprehensive plan drove the stand-alone plans for dealing with specific types of hazards. For example, a specific policy in the comprehensive plan led to the county's post-disaster plan. Because comprehensive plans provide the legal basis for many local and countywide planning efforts, they are important tools to accomplish many of the goals of hazard mitigation. The most recently adopted version of the comprehensive plan seeks to implement the Pinellas County Post-Disaster Redevelopment Plan. Policies specify a recovery task force, relocation procedures, and acquisition of storm-damaged properties.

Other policies focus on inter-agency co-operation to reduce hurricane clearance times, through enforcement of regulations and road improvement projects. An objective of the coastal management element is to direct population concentrations out of the coastal high-hazard area. Such policies include density restrictions, siting prohibitions and the restriction of public expenditures in high hazard areas. Specific policies call for public education programmes to reduce the number of residents unnecessarily seeking shelter during a hurricane, as well as an emergency shelter workshop or summit for affected government agencies.

While Pinellas County has an extremely strong hazard mitigation programme that is fully integrated across government departments, it did not result from active engagement of citizens in hazard mitigation planning. Despite intense public outreach that includes an evacuation guide, television announcements, public speaking engagements and a yearly hurricane exposition, case study respondents reported that citizens are generally not interested in hazard mitigation. Environmental management issues receive more public attention. Hazard mitigation policies were written by planning staff, which sent drafts to other departments for comment and review.

In summary, a strong tradition of land use planning along with a history of working together on planning initiatives enabled Pinellas County to adopt a high quality comprehensive plan. Informal personal relationships among staff and community members enhanced the level of collaboration needed to achieve the county's planning goals. Focused participation techniques guided by a committed professional staff engaged citizens, enabling them to inject their ideas into the planning process. But because the planning staff did not identify hazard mitigation as a focus of public involvement, it received little attention from citizens, who did not bring it up on their own.

#### *Pierce County: A Bottom-up, Advisory Committee Approach*

Pierce County, located in western Washington State, had a population of 700 820

in 2000. Although staff originally developed the planning process, the Pierce County plan itself was generated through widespread community participation. The process built citizen support for the plan by involving individuals early in decision making. The goal of the public participation programme was to create a strong constituency who would stand up for the plan before the county council at the end of the process (Robison, 2001a).

A key feature of the public participation programme was the use of a Citizens Advisory Group (CAG). The CAG included people from all segments of the county. Thirty-one members were appointed by the county council to write the new comprehensive plan, with the help of county planners. The membership represented the community-at-large and assured that the plan reflected community priorities. County staff developed issue papers on each of the nine elements to be included in the plan. These issue papers identified the state planning requirements, while the CAG helped formulate specific policies and solutions to planning problems.

In addition, an Advisory Committee on the Elements (ACEs) was created for each of the nine elements. Membership was open to anyone interested. Some committees had five members and others (such as land use) had as many as 30 members. Planning staff saw the committees as a good way to supplement the larger CAG by including ordinary citizens, not appointed by the council, in the development of the plan. Each committee had one or two staff members who provided assistance and oversight. Staff prepared issue papers, agendas and kept minutes of meetings. The objective was to build trust and social learning, using two-way communication techniques so that everyone understood the issues.

The ACEs assisted in the development of issues and alternatives, which were presented to the CAG for consideration and inclusion in the plan. However, the CAG was charged with the drafting of the comprehensive plan and presenting it to the county executive and county council. Afterwards the plan was referred to the planning commission, which began the formal public review stage leading to adoption of a new comprehensive plan.

The CAG had a great deal of influence on the content of the plan. One of the major benefits of such a large group was that it brought together numerous players and thus best represented the general populace. However, there was concern about the role of the development community. Many of the chairs of the ACEs had strong development interests and influence on the policy direction of particular elements. The development community was able to influence the plan by being at the negotiating table throughout the process and knowing how to work behind the scenes with staff, county executive, planning commission and members of the county council. A representative of a large development company stated that it was selective in participating, concentrating its efforts on elected officials, staff and the agencies involved in setting the boundaries of urban growth areas.

To counter the strong development lobby, environmental and community groups were urged to protect their interests through active participation. Several environmental and neighbourhood groups built credibility by participation in the CAG. Over time, their influence grew as they became more familiar with the players and the process. Gradually, with the help of the media, neighbourhood and environmental groups began to level the playing field somewhat through building coalitions.

Flooding is the most prevalent natural hazard in Pierce County. However, there is very little co-ordination between comprehensive planning and floodplain planning in the county and flooding and other hazards drew little interest from citizens involved in the planning process. One planner interviewed did not know that Pierce County was participating in the National Flood Insurance Programme's Community Rating System (CRS) programme, which offers communities lower flood insurance rates in exchange for intensified local efforts to reduce losses from floods. Nor did the planner know who was in charge of floodplain planning. This is surprising given the fact that the preparation of a floodplain management plan and the critical areas policy process were occurring during the same period that the comprehensive plan was being prepared.

In summary, the Pierce County planning experience was based on a broad, bottom-up participation approach. The comprehensive plan was drafted by a 31 member Citizens Advisory Group. The CAG was assisted by advisory committees for each of the plan's nine elements. However, there was persistent concern about the powerful role of the development community in the planning process, which stimulated more activity by environmental and community groups, none of whom expressed concern about floods or other natural hazards.

#### *Issaquah: A Visioning Approach*

Issaquah is a city located east of Seattle in Washington State with a population of 11 212 in 2000. The city's original approach to public participation was to rely on the citizen members of the existing Planning Policy Commission to represent citizen interests and to charge the commission with responsibility for preparing the plan, with input from the city council and planning staff. Little time passed, however, before the public participation process was also influenced by citizen groups that came forward to provide input to the commission as it developed the plan. The planning staff did not originally anticipate conducting a visioning process or visual survey or using a citizen advisory committee to influence the plan's policies. However, as new opportunities emerged during the three-year process of preparing the plan, the staff supported folding these citizen-initiated public involvement efforts into the larger planning process. By the time the city council adopted the plan in early 1995, it reflected substantial community involvement (Robison, 2001b).

In addition to various *ad hoc* efforts, over 70 Planning Policy Commission meetings and open houses were held and at least 12 city council committee-of-the-whole meetings were used to review, to seek public comment and to revise the plan. Highlights of the public participation processes included community visioning sessions, a visual preference survey, hot topic meetings and Chamber of Commerce task forces and meetings. Several city newsletters were produced, which focused on important planning issues and several additional household mailings were conducted to inform residents of upcoming meetings.

The distinguishing feature of Issaquah's public participation process was its emphasis on community visioning. The purpose of this facilitated process was to draw people out, and to get them to dream about the future by asking a series of leading questions. Between 25 and 30 groups participated in the process, with each group arriving at 10 nominations for what were termed Issaquah 'treasures.' Each group also developed priorities for Issaquah and created a map



of how the area would look in the year 2020. Twenty-two meetings were held involving over 200 people. The planners disseminated the results through an exhibit with an interactive questionnaire at the end of the process. The final report included the maps prepared by the groups. Common themes emerged along with a prioritized list of Issaquah treasures.

Due to the design of the planning process, the Planning Policy Commission and staff played a leadership role in the preparation of the draft plan. The city council perceived the composition of the commission as balanced and representative of the community as a whole. Other key stakeholder groups participating in the planning process helped influence certain goals and policies of the plan. For example, one of the primary goals was to protect and enhance the natural environment. The involvement of the Issaquah Trails Club strengthened priorities for protecting habitat and open spaces, rather than on simply promoting trails. Stakeholders interviewed mentioned that the club has been partially responsible for promoting a strong environmental ethic in the community over the years. An additional key stakeholder group was the development community, which throughout the planning process worked with city and county staff to demonstrate that annexation outside the city limits would help Issaquah meet its population targets required under the state growth management act.

Issaquah worked in conjunction with King County to address flooding issues, the city's most prominent natural hazard. This technical planning process relied on the King County floodplain modelling efforts to update floodplain maps and identify channel improvement projects. The city's public works staff was in charge of the floodplain management and drainage planning efforts. Flooding issues were not directly addressed by the planning policy committee and staff planners during the comprehensive plan efforts, except in the case of specific creek areas that were proposed for multifamily densities and needed protection from flooding. However, a plan for the Issaquah Creek Basin that had been prepared earlier by King County was incorporated by reference into the comprehensive plan, and a few of overall goals of the basin plan were summarized and included in the land use and housing elements in the comprehensive plan.

In summary, Issaquah came to rely upon a visioning process to engage its citizens in thinking about desirable futures for the community. Citizens produced a prioritized list of town treasures, as well as maps of future development scenarios. Despite vulnerability to flooding, the comprehensive plan did not directly deal with this or other natural hazards, and citizens did not raise issues related to hazards as important community problems that needed attention in the plan.

#### *Why Hazards Received Little Attention from Citizens*

Despite the differences in planning and participation approaches and types of natural hazards present in the five jurisdictions studied, a common set of factors appears to explain why the public was not interested in issues related to natural hazards or the way hazards were addressed in the comprehensive plans. The primary explanations revolve around dual allocation of hazard planning responsibility, public perceptions of technical complexity related to hazard mitigation, and failure to relate hazard mitigation to site specific concerns.

First, many planners believed that hazard mitigation and emergency response were handled adequately by the plans and programmes of other government

agencies. In Florida, counties have primary responsibility for emergency management. Planners felt that duplication of these efforts at the city level would not be efficient. Florida planners perceived county stand-alone hazard plans as more relevant for dealing with the details of hazard mitigation than local comprehensive plans, which they viewed as broad policy instruments. In Washington, local communities are required to draft a separate critical area plan that addresses flooding and other natural hazards. Because of these stand-alone plans, planners did not see the need to address natural hazard issues during the comprehensive planning process, except in a few instances where hazards affected more central planning concerns, such as the siting of high density housing.

Second, hazard mitigation planning typically is perceived by both government officials and the community to involve technical issues most effectively addressed by trained staff. Citizens generally felt that they lacked the ability to provide input on issues related to engineering and building codes. This was especially true in communities that were almost entirely built-out, where hazard mitigation primarily involved structural modifications and technical building requirements that could not easily fit into the visionary policies of a comprehensive plan, unless relocation of structures from hazard areas was seen as a major local concern.

Finally, citizens were most interested in neighbourhood issues and no organized interest groups chose to emphasize natural hazards in the interactions with city and county planning staffs. Public participation was motivated by concrete concerns and here-and-now issues, such as neighbourhood protection from unwanted land uses or relief from traffic congestion. Additionally, in the Florida communities because many citizens were relative newcomers and had not experienced a disaster, they did not view mitigation to be a matter of high concern. Lack of experience with natural hazards reduces interest in planning for their impact. This is known as the 'window of opportunity' phenomenon, in which public interest peaks following a 'focusing event', such as a disaster and then declines (Birkland, 1996, 1997; Prater & Lindell, 2000). Since most people and interest groups did not believe that natural hazards directly influenced their daily lives or immediate interests, they were not interested in commenting on hazard mitigation policies or in insisting on greater attention to hazard mitigation in the planning process.

### **Conclusions and Recommendations for Building Citizen Interest in Hazard Mitigation**

This paper has examined the problem of weak citizen input into the hazard mitigation elements of local government comprehensive plans, in communities faced with substantial risks from natural hazards. In five case studies of planning processes with exemplary citizen participation efforts, citizens expressed virtually no interest in natural hazards as a community problem and no interest in helping planners better understand how to deal effectively with hazards in comprehensive plans. This is a serious issue, since without active citizen involvement in their preparation, plans for hazard mitigation can falter when efforts are made to implement recommended policies. This can occur if proposed policies fail to garner active citizen support and are ignored by elected officials as they attend to issues that citizens are lobbying them to address. Or, proposed policies can die if they generate vigorous opposition from groups who

only realize after a plan has been adopted that its policies violate their values or immediate interests.

It is possible to overcome these disconnects between public participation and natural hazard mitigation during the comprehensive planning process, but it will take special attention and effort. While the case studies did not specifically analyze ways to increase citizen interest, the problems that were found led to thinking about ways to improve participation in hazard mitigation. In order to build more citizen interest in hazard mitigation issues within the comprehensive planning process, we recommend: conducting targeted hazard mitigation education programmes, co-ordinating hazard mitigation plans with comprehensive plan elements, connecting mitigation policies and quality of life concerns and preparing small area plans for locations with high hazard vulnerability. It is necessary to devise creative participation programmes in communities facing high hazard risks.

#### *Conduct Targeted Hazard Mitigation Education Programmes*

Education campaigns raise public interest by pointing out the risks of potential hazard threats. Such campaigns demonstrate what can be done to create hazard resiliency and security, both in neighbourhoods and community-wide (Godschalk, 2003). They can educate planners, as well as citizens and elected officials. Particularly in localities where there has not been a recent disaster or where new residents have no disaster experience, regular education campaigns can raise public awareness about the need for mitigation. Campaigns should be hazard-specific and targeted to specific population groups. For example, co-ordinate coastal area campaigns with the onset of hurricane season. Create separate programmes for school children, households, businesses and construction firms. Publish histories of past disasters, maps of vulnerable areas, and mitigation instructions. Publicize hazard issues through press releases, public events and web sites.

#### *Co-ordinate Hazard Mitigation Plans with Comprehensive Plan Elements*

The federal Disaster Mitigation Act of 2000 requires localities to prepare hazard mitigation plans. Even where such plans are prepared by separate emergency management agencies, the comprehensive planning process should be seen as an opportunity to co-ordinate them with the broader concerns of the community. Stand-alone hazard mitigation and emergency management plans must deal with hazard-specific risks. Comprehensive planners should be trained to relate these risk management programmes to broader community growth and development policies. Land use and infrastructure components of the comprehensive plan are particularly relevant to hazard mitigation. For growing communities, the future land use plan should focus on avoiding designated hazard locations during development. For communities that are stable or approaching build-out, the plan should focus on retrofitting vulnerable structures and public facilities, as well as relocating existing buildings from floodplains and other hazard areas to safe locations. Hazard mitigation training for planners will enable them to recognize these opportunities. Both mitigation plans and comprehensive plans should be reviewed and updated regularly. The updating process offers an

excellent opportunity to integrate current hazard mitigation policies with the long-term vision and elements of the comprehensive plan.

### *Connect Mitigation Policies and Quality of Life Concerns*

If mitigation proposals are connected to more immediate quality of life concerns, they can gain a place on the public agenda. Hazard mitigation can be piggy-backed on more prominent issues, such as transportation, zoning, and development, to increase interest and participation. For example, flood hazard mitigation can be designed to provide quality of life improvements, as when a floodplain is redeveloped as a river front park and greenway. Mitigation programmes typically affect greater numbers of poor households, so residential hazard-proofing can be built into disadvantaged neighbourhood upgrading programmes. Deciding where and when to retrofit are both hazard mitigation issues and land use policy issues with related concerns for environmental protection, fairness, and quality of life (see chapter 12 in Godschalk *et al.*, 1998, on the ethics of hazard mitigation). Highlighting these connections early in the planning process demonstrates to citizens and public officials the need to build mitigation into plan policies.

### *Prepare Small Area Plans for Areas with Significant Hazard Vulnerability*

Most citizens are concerned primarily with impacts on their own neighbourhoods. It can be difficult to create citizen interest in shaping broad community-wide hazard policies. But it is easy to create citizen interest in hazard plans for specific neighbourhoods. Stepping down from the general community scale to the local neighbourhood scale creates opportunities to involve citizens directly in land use policy and decision making. This also allows planners to employ targeted participation techniques, such as neighbourhood-based advisory committees and small area hazards workshops, to work with citizens in an informal atmosphere. Once citizens have worked on a neighbourhood mitigation plan, the rationale for area wide mitigation planning will become less abstract to them. Then they can see the need for involvement in broader, community and regional mitigation planning.

### *Creative Participation Programmes Can Pay off in more Effective Hazard Mitigation*

In the case studies, hazard mitigation was perceived as a technical topic to be dealt with by a separate emergency management agency, a topic of limited relevance to citizens and to comprehensive community planning. However, research indicates that planners can build support for mitigation through citizen input to elected officials during the comprehensive planning process (Burby, 2003).

If planners are to take full advantage of the comprehensive planning process to engage the public in hazard mitigation planning, they must first believe that this task is important. Then they must be creative in seeking opportunities to stimulate and sustain public interest. While initially this may require more effort, the enhanced public understanding should pay off in more widely supported hazard mitigation and should lead to more resilient and safer communities.

## Acknowledgements

This paper is based on research supported by US National Science Foundation Grant No.CMS-9801155 to the University of New Orleans, and subsequently to the University of North Carolina at Chapel Hill. Investigators include Philip Berke, Raymond Burby, David Godschalk, Jack Kartez, and Gary Pivo. The findings and opinions are those of the authors and are not necessarily endorsed by the National Science Foundation.

## References

- Arnstein, S. (1969) A ladder of citizen participation, *Journal of the American Institute of Planners*, 35(4), pp. 216–224.
- Berry, J.M., Portney, K.E. & Thomson, K. (1993) *The Rebirth of Urban Democracy* (Washington DC, The Brookings Institution).
- Binney, S.E., Mason, R., Martsolf, S. & Detweiler, J.H. (1996) Credibility, public trust, and the transport of radioactive waste through local communities, *Environment and Behavior*, 28, pp. 283–302.
- Birkland, T.A. (1996) Natural disasters as focussing events: policy communities and political response, *International Journal of Mass Emergencies and Disasters*, 14(2), pp. 221–243.
- Birkland, T.A. (1997) *After Disaster: Agenda Setting, Public Policy, and Focusing Events* (Washington DC, Georgetown University Press).
- Brody, S. (2001a) *The City of Sarasota, FL 1998 Comprehensive Plan: The Role of Communicative Culture and Informal Public Participation in Plan Making* (Chapel Hill, NC, Center for Urban and Regional Studies).
- Brody, S. (2001b) *Public Participation in the City of Fort Lauderdale Comprehensive Plan: A Constituency Model of Plan Making* (Chapel Hill, NC, Center for Urban and Regional Studies).
- Brody, S. (2001c) *Pinellas County: The Role of Focused Participation in the Comprehensive Planning Process* (Chapel Hill, NC, Center for Urban and Regional Studies).
- Brody, S., Godschalk, D.R. & Burby, R.J. (2003) Mandating citizen participation in plan-making: six strategic choices, *Journal of the American Planning Association*, 69(3), pp. 245–264.
- Burby, R. J. (2003) Making plans that matter: citizen involvement and government action, *Journal of the American Planning Association*, 46(1), pp. 33–49.
- Burby, R.J., Beatley, T., Berke, P.R., Deyle, R.E., French, S.P., Godschalk, D.R., Kaiser, E.J., Kartez, J.D., May, P.J., Olshansky, R., Paterson, R.G. & Platt, R.H. (1999) Unleashing the power of planning to create disaster-resistant communities, *Journal of the American Planning Association*, 65(3), pp. 247–258.
- Day, D. (1997) Citizen participation in the planning process: an essentially contested concept? *Journal of Planning Literature*, 11(3), pp. 421–434.
- Fagence, M. (1977) *Citizen Participation in Planning* (Oxford, Pergamon Press).
- FEMA (2002) Hazard mitigation planning and hazard mitigation grant program: interim final rule, *Federal Register*, 67(38), 26 February, pp. 8843–8854.
- Forester, J. (1999) *The Deliberative Practitioner: Encouraging Participatory Planning Processes* (Cambridge, MA, MIT Press).
- Godschalk, D.R. (2003) Urban hazard mitigation: creating resilient cities, *Natural Hazards Review*, 4(3), pp. 136–143.
- Godschalk, D.R., Parham, D., Porter, D., Potapchuk, W. & Schukraft, S. (1994) *Pulling Together: A Planning and Development Consensus-Building Manual* (Washington DC, Urban Land Institute).
- Godschalk, D.R., Kaiser, E.J. & Berke, P.R. (1998) Integrating hazard mitigation and local land use planning, in: R. Burby (Ed.) *Cooperating with Nature: Confronting Natural Hazards with Land-Use Planning for Sustainable Communities* (Washington DC, Joseph Henry Press).
- Innes, J. (1996) Planning through consensus building: a new view of the comprehensive planning ideal, *Journal of the American Planning Association*, 62(4), pp. 460–472.
- Lowry, K., Adler, P. & Milner, N. (1997) Participating the public: group process, politics, and planning, *Journal of Planning Education and Research*, 16(3), pp. 177–187.
- Merkhofer, M.W., Conway, R. & Anderson, R.G. (1997) Multiattribute utility analysis as a framework for public participation in siting a hazardous waste facility, *Environmental Management*, 21(6), pp. 831–839.

- Mileti, D. (1999) *Disasters by Design: A Reassessment of Natural Hazards in the United States* (Washington DC, Joseph Henry Press).
- Pateman, C. (1970) *Participation and Democratic Theory* (London, Cambridge University Press).
- Prater, C. & Lindell, M.K. (2000) Politics of hazard mitigation, *Natural Hazards Review*, May, pp. 73–82.
- Robison, D. (2001a) *Bottom-up Comprehensive Planning: A Case Study of Pierce County, Washington* (Chapel Hill, NC, Center for Urban and Regional Studies).
- Robison, D. (2001b) *Citizen Driven Visioning in Comprehensive Planning: A Case Study of Issaquah, Washington* (Chapel Hill, NC, Center for Urban and Regional Studies).
- Straus, D.A. (1999) Designing a consensus building process using a graphic road map, in: L. Susskind, S. McKernan & J.T. Larner *The Consensus Building Handbook* (Thousand Oaks, CA, Sage Publications).
- Susskind, L., McKernan, S. & Larner, J.T. (1999) *The Consensus Building Handbook* (Thousand Oaks, CA, Sage Publications).
- Williams, B.L., Suen, H.K., Brown, S., Bruhn, R., Blaquiere, R.D. & Rzasa, S.E. (2001) Hierarchical linear models of factors associated with public participation among residents living near the US Army's chemical weapons stockpile sites, *Journal of Environmental Planning and Management*, 44(1), pp. 41–65.
- Wondolleck, J. & Jaffee, S. (2000). *Making Collaboration Work: Lessons from Innovation in Natural Resource Management* (Washington DC, Island Press).
- Yin, R.K. (2002) *Case Study Research: Design and Methods* (Thousand Oaks, CA, Sage Publications).