



**Recovering From Disaster: A Summary of the
October 17, 2007 Workshop of the Disasters
Roundtable**

By William A. Anderson, National Research Council of
the National Academies

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FOREWORD

The Disasters Roundtable (DR) seeks to facilitate and enhance communication and the exchange of ideas among scientists, practitioners, and policymakers concerned with urgent and important issues related to natural, technological, and other disasters. Roundtable workshops are held three times a year in Washington, D.C. Each workshop is an open forum focused on a specific topic or issue selected by the DR steering committee. For upcoming meetings, please visit <http://www.nationalacademies.org/disasters>.

The DR steering committee is composed of seven appointed members and sponsoring ex-officio members. The appointed members at the time of the workshop were William H. Hooke, chair, American Meteorological Society; Ronald T. Eguchi, ImageCat, Inc; John R. Harrald, The George Washington University; Juan M. Ortiz, Tarrant County Office of Emergency Management; Monica Schoch-Spana, University of Pittsburgh Medical Center; Deborah S. K. Thomas, University of Colorado at Denver; and Darlene Sparks Washington, American Red Cross. The ex-officio members were Stephen Ambrose, National Aeronautics and Space Administration; Frank Best, PB Alltech, Inc.; Lloyd Cluff, Pacific Gas & Electric; Timothy A. Cohn, U.S. Geological Survey; and Margaret Davidson and John Gaynor, National Oceanic and Atmospheric Administration. The DR staff included William A. Anderson, director, Rachael Shiflett, senior program assistant, and Brianna R. Cash, program assistant.

This document presents the rapporteur's summary of the forum discussions and does not necessarily reflect the views of the Roundtable members or other participants. For more information on the Roundtable visit our website: <http://dels.nas.edu/dr> or contact us at the address below.

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This summary has been reviewed in draft form by individuals chosen for their diverse perspectives and technical expertise, in accordance with procedures approved by the National Research Council's Report Review Committee. The purpose of this independent review is to provide candid and critical comments that will assist the institution in making its published summary as sound as possible and to ensure that the summary meets institutional standards for objectivity, evidence, and responsiveness to the study charge. The review comments and draft manuscript remain confidential to protect the integrity of the deliberative process. We wish to thank the following individuals for their review of this summary: Brenda Phillips, Oklahoma State University and Richard Sylves, University of Delaware.

Responsibility for the final content of this summary rests entirely with the author and the institution.

Workshop Objective

Disaster recovery is a complex and challenging process that involves all sectors of a community as well as outside interests. In many cases, it is not even clear if and when recovery has been achieved because of varying stakeholder goals for the community, for example with some wanting it returned to what is considered its pre-disaster status and others wanting it to undergo change to realize a vision in which advances are made in risk reduction and other areas. This workshop considered what has been learned about disaster recovery, which has been understudied in comparison to the emergency and other phases of disasters, from both scientific research and the experience of policy makers and practitioners. Historical and recent recovery actions following such events as the September 11th terrorist attacks and Hurricane Katrina were discussed, along with examples of both pre- and post-disaster recovery planning.

Tribute to Gilbert Fowler White

William Hooke, chair of the DR's steering committee and director of the Atmospheric Policy Program at the American Meteorological Society, opened the workshop by indicating that it was just a little over two years ago since Hurricane Katrina struck the Gulf Coast of the United States and that this was a good time to take stock of how that disaster and other recent experiences are shaping our thinking about the nature and meaning of disaster recovery. He further noted that October 5th marked the first anniversary of the death of geographer [Gilbert Fowler White](#), whose memory the workshop was honoring. In a tribute to him, Hooke indicated that White had done more than any other individual to shape the present science and practice of disaster mitigation, influencing the thinking and aspirations of every one at the workshop, either directly or indirectly. Hooke suggested that White's influence was not simply founded on the range of his intellect, but also on his strong and consistent personal integrity, his keen interest in us as colleagues, the well being of humanity, and his deeply rooted Quaker faith and values. Hooke asked for a moment of silence in honor of Gilbert White, and a renewal of personal commitment to reducing disasters' toll and improving the human prospect. Hooke then noted that the film *Reflections on the Life of Gilbert White*, produced by independent film maker Marshall Frech, would be shown at the end of the workshop.

Session I: Perspectives from Research

Overview of Research-Based Knowledge on Disaster Recovery

Robert Olshansky, professor of urban and regional planning at the University of Illinois at Urbana-Champaign, began the first session by indicating that a definition of recovery useful to him is the return of a community to a stable state after a disaster. There is no magic day when this happens and it is a very complicated and long-term process. He noted that the first goals of recovery are to at least return to a previous level of economic function and to replace lost housing units. When these two goals have been reached, some claim to recovery can be made.

Olshansky sees research on post-disaster recovery as a developing field, with experts analyzing the process from different perspectives, including urban planning, physical design, and economic development. Drawing on findings from his many years of research and those of other investigators, Olshansky made a series of observations, including:

- As in the case of New Orleans following Hurricane Katrina, recovery compresses urban development into a short time period.

- Local leadership and organizations are crucial for successful recovery, and new community-based organizations emerge to carry out needed tasks, but outside resources are also vital.
- The most effective role for government is to support the recovery efforts of local organizations, including providing funds and information.
- Citizen participation is essential for setting goals and ensuring community support for recovery strategies and actions.
- After disasters, the strength of continuing social and economic networks, including families, community groups, and businesses, are a key to successful community recovery.
- Pre-existing plans can help improve both the speed and quality of post-disaster recovery decisions.

Olshansky also noted that, except for the worst disasters, cities usually rebuild in the same place, and negative pre-disaster trends usually worsen during recovery. Speed is vital in rebuilding after disasters in order to keep businesses alive, rebuild infrastructure, and provide temporary and permanent housing for disaster victims. At the same time, careful deliberation is also important in order to ensure that permanent communities are economically viable, safe, and sustainable places.

Conceptualizing and Documenting Community Disaster Recovery

Like Robert Olshansky, Daniel Alesch, professor emeritus of public administration at the University of Wisconsin, Green Bay, has spent many years studying community disaster recovery. With funding from such organizations as the [National Science Foundation](#) (NSF) and the [Public Entity Risk Institute](#), Alesch has been involved in collaborative research to document disaster recovery in about 30 communities of all sizes across the U.S. over a twelve-year period. The conceptual framework used in this research to understand community recovery from disaster involves seeing communities as complex, dynamic, and open systems which are continually changing. An extreme event like a disaster seriously disrupts elements in a community system and their relationship with outside entities, such as external groups, organizations, and markets.

After a disaster such as Hurricane Katrina, communities do not just bounce back to exactly the way they were before; they reform, according to Alesch. His research shows that they may not always reform to the pre-event system. Alesch noted that key findings from his research include :

- If community recovery means reestablishing what existed before the event, it almost never happens.
- Recovery is neither assured nor automatic.
- There is no recovery timetable.
- Recovery can be defined as becoming satisfactorily viable in the post-event period.
- The real benefits of community hazard mitigation are that it enhances the probability of community recovery, especially given an event of small or moderate size.
- Replacing and rebuilding structures is necessary, but not sufficient for recovery.
- It takes time to repair, rebuild, or replace relationships in a community, which is an important aspect of recovery.
- Government usually has to make up-front investments to further community disaster recovery.
- Recovery almost necessarily involves inefficiencies.

Alesch indicated that the next steps in his collaborative work on community disaster recovery involves completing a book aimed at helping local government managers deal with the challenges of disaster recovery, and building the research data base on the topic and devising and testing rigorous hypotheses to advance knowledge in the field.

In the discussion that followed the two presentations, it was suggested by workshop participants that even communities that fail to meet many of the challenges of recovery seldom disappear. It was also noted that recovery is very difficult to direct and manage, even when urban planners and other relevant professionals are heavily involved in the process. Finally, it was suggested that Kobe, Japan, which was struck by a devastating earthquake in 1995, was a recovery success story, even though the city underwent rather significant change following the event.

Session II: Some Key Disaster Recovery Issues

Role of the Federal Government in Disaster Recovery

James A. Walke, chief of the Public Assistance Branch in the Federal Emergency Management Agency's (FEMA) Disaster Assistance Directorate, led off the session by noting that, besides FEMA, many federal agencies have authority to provide grants and loans following disaster, including the Small Business Administration ([SBA](#)) and the Department of Housing and Urban Development ([HUD](#)).

Focusing his remarks on FEMA's public assistance program, Walke indicated that it provides funds on a cost-share basis to state and local governments and some non-profit organizations to repair infrastructure. Following a [presidential disaster declaration](#), FEMA processes requests for financial assistance from states for their impacted communities. FEMA's assistance is provided for such things as emergency response activities, debris removal, rebuilding and repairing structures to their pre-disaster condition, and disaster mitigation efforts. Walke noted that only about 100 staff members in the 10 FEMA regions work on public assistance, and that such a small staff creates a major challenge for the agency following disasters as large as Hurricanes Katrina and Rita, which require sustained activity over a year or more.

According to Walke, about 50 presidential disaster declarations are made each year that result in FEMA providing disaster assistance, and on average about \$2.6 billion a year is made available to disaster struck communities for coping with the impacts of disasters, most frequently floods. Walke noted, however, that FEMA expenditures in the Gulf Coast states for Hurricane Katrina far exceeded this figure.

Walke indicated that FEMA carries out activities to try to improve the services it offers. FEMA provides information to the public on its disaster assistance program to try to demystify how the agency runs the program, according to Walke. For example, guidelines, fact sheets, and statistical data are provided on the [FEMA Web site](#). Walke also indicated that a new initiative involves developing operational procedures for mega-disasters such as Hurricane Katrina, as opposed to small or medium-size disasters.

Role of Health Systems in Disaster Recovery

Joseph A. Barbera, clinical associate professor of emergency medicine and co-director of the Institute for Crisis, Disaster and Risk Management at George Washington University, began his presentation by indicating that the healthcare system and individual hospitals in the U.S. face many challenges even before disasters strike communities. He noted, for example, that in the last several years healthcare delivery has been compelled to become more "business-like," with "just enough staff, just enough quality, and just-in-time inventory." A symptom of the failing capacity is the number of emergency departments and hospitals that are closing around the country, making effective emergency response and disaster recovery that much more difficult when catastrophic events like Hurricane Katrina strike vulnerable communities. Barbera noted that there can be no overall community disaster recovery without the restoration of local medical and mental-health delivery systems.

According to Barbera, who as a medical doctor has had the opportunity to serve on disaster response teams in both the U.S. and in foreign countries, it is important to understand that the healthcare organizations found in communities throughout the U.S. are not built for the extra surge in patients they are expected to serve after a disaster. They simply do not have the capacity and resources, including staff and funds, to do so. Furthermore, healthcare organizations that are directly or indirectly impacted by a variety of events, including terrorist attacks and natural disasters, can be expected to experience major recovery problems.

Barbera noted that this adverse situation is crucial because he, along with others in the medical profession, see healthcare recovery as a critical cornerstone to broader community disaster recovery. He suggested, for example, that the failure to restore the healthcare system in New Orleans since Katrina is a major factor hindering the economic and social revival of the community. Many former residents are hesitant to return to New Orleans because of concern about where they would get healthcare. Also, non-residents who would like to use their skills to help in restoration efforts may find the lack of adequate healthcare resources too daunting a problem to migrate to the city. On top of that the recovery capacity of the healthcare system, and therefore that of the city at large, is further eroded when medical personnel themselves choose to re-locate elsewhere due to slow healthcare system recovery along with degraded quality of life factors like compromised educational systems for their children. Barbera concluded by stressing the importance of government and community focusing upon restoration of the healthcare delivery system post-disaster, and that economic assistance to both public and private healthcare providers will likely provide major benefits in promoting rapid and complete community recovery.

Pre-Disaster Planning for Post-Disaster Recovery

Laurie Johnson, an independent urban planning consultant, began her joint presentation with fellow planner Robert Olshansky by discussing the evolution of pre-disaster planning for post-disaster recovery in the U.S. She concluded that an initial effort began in 1976 as a result of then mayor of Los Angeles, Thomas Bradley, appointing a task force to explore how the city might respond to a credible earthquake prediction. Recovery was one of the issues that the task force ultimately considered. Another important development that generated interest in preplanning for recovery was a project funded by NSF in the 1980s called Pre-Earthquake Planning for Post Earthquake Rebuilding (PEPPER). Johnson noted that a number of relevant actions in California followed this project, including a recovery and reconstruction plan for Los Angeles, drafted in 1988 and revised in 1993, and the development of recovery and reconstruction plans for California by its [Office of Emergency Services](#). According to Johnson, FEMA entered the picture by funding the development of a post-disaster rebuilding exercise for local governments. This was followed by the agency's collaboration with the [American Planning Association](#) to produce a planning guidebook in 1998 entitled *Planning for Post-Disaster Recovery and Reconstruction*, which was geared towards practicing planners.

Robert Olshansky discussed the state of Florida's three-year post-disaster redevelopment planning initiative launched by the [Florida Department of Community Affairs](#). He noted that funding for the initiative is provided by the National Oceanic and Atmospheric Administration ([NOAA](#)) through the Florida Coastal Management Program. All of Florida's 203 coastal counties and municipalities are required to adopt recovery plans and inland communities are also encouraged to prepare them, according to Olshansky. He noted that many Florida communities already have plans for mitigation and response and that the new initiative is to ensure that long-term recovery strategies also further hazard mitigation and response goals. The Florida recovery planning initiative is being carried out in three phases. The first phase includes a review of existing recovery plans in the state and the development of new guidelines, followed by a test of the guidelines in a pilot community, and then an analysis of the pilot test and revision of the guidelines. The intended outcome of this process is to produce a model post-disaster redevelopment plan that would represent a consensus of relevant stakeholders, including local

government officials and planners, which would result in integrated regional decision making on such key issues as post-disaster infrastructure and future land use patterns. Olshansky emphasized the importance, as Florida is attempting to do, of completing such planning before a disaster rather than doing it under the pressure of an actual event.

Johnson concluded the joint presentation by noting that mitigation and recovery planning need to be priorities both before and after disasters. She also applauded renewed emphasis on catastrophic planning in highly vulnerable areas, particularly efforts focused on potential regional challenges.

During the discussion following the session presentations, the point was made that, compared to a few years ago, the federal government is now doing a great deal to promote hospital and healthcare preparedness. The issue was raised about how much more such preparedness could be done, especially for disasters that might strike an entire region.

Session III: Historical and Current Recovery Experience and Status

Mississippi Following Hurricane Camille

Mark Smith, Carolina Distinguished Professor of History at the University of South Carolina, provided a historian's perspective on [Hurricane Camille](#), which struck the coast of southern Mississippi in 1969, claiming over 200 lives and injuring nearly 9,000 residents. Smith observed that one way to view Camille is to see it in the context of the historical patterns of segregation in Mississippi and federal attempts to bring about school desegregation there. Through his presentation, which he said he could have just as well entitled Braiding Disaster Rights and Civil Rights, Smith documented both the physical and socioeconomic impacts of Camille on Mississippi, including its role in initiating the process to bring Mississippi into compliance with the Civil Rights Act of [1964](#). Smith noted that at the time of the hurricane, a group of Justice Department lawyers were in Mississippi preparing a school desegregation case against the state because of its non-compliance to the new federal law. From the very beginning to the end, Camille was thoroughly politicized, according to Smith. Mississippi was desperately in need of disaster assistance following the hurricane. As a result, persistent federal officials from the Justice Department and the Department of Health, Education and Welfare, with encouragement from the National Association for the Advancement of Colored People, were able to further civil rights in Mississippi, even though they faced resistance by state and local officials and even from some federal quarters, according to Smith. He indicated that this was done by coupling federal disaster assistance to school desegregation. Ultimately, after failing to get the government to decouple disaster aid and civil rights, Mississippi authorities were forced to begin taking actions to comply with the new integration statutes in order to receive millions of badly needed dollars from the federal government for hurricane relief and recovery, according to Smith. On this occasion, then, Smith noted that hurricane recovery overrode the commitment by some local and state decision makers in Mississippi to school segregation, and federal officials were able to use the disaster as an agent of social change.

Status of Recovery in New York Since the World Trade Center Attacks

Rae Zimmerman, professor of planning and public administration at New York University and Director of the Institute for Civil Infrastructure Systems (www.nyu.edu/icis), began by noting that, after a slow start, New York City has rebounded quite considerably from the September 11, 2001 terrorist attacks. This has been particularly true of the public infrastructure service sector due to its flexibility and significant redundancy, according to Zimmerman. She noted that an example of this was the electric company Con Edison's ability to establish alternative links in its distribution system for those destroyed at the World

Trade Center site in order to continue to provide electrical service to the damaged area and other parts of the city. Zimmerman gauged New York's recovery by citing a number of positive indicators used by the New York City Office of the Comptroller and others, including population growth, job increases, low office vacancy rates, increases in the market value of property, and the development of new transportation designs. In contrast to today, these features of the city were quite grim following the attacks. In spite of the progress, there are areas of concern that need to be addressed, according to Zimmerman. She indicated, for example, that according to recent Census information Manhattan continues to have one of the highest income disparities in the country, creating the concern that rebuilding is going to be skewed towards upper-income communities. Another remaining concern, noted Zimmerman, is how to effectively gauge the health of responders and workers who were at the disaster site and how to devise the best strategies to maximize their chances for long-term recovery. And although advances have been made in emergency communications, much remains to be done to give confidence that the city's communication system will function as effectively as needed during any future catastrophe. A concluding observation made by Zimmerman was that the New York experience will continue to provide valuable lessons for coping with natural, technological, and human-induced disasters for years to come, including lessons on how to make public services more disaster resilient.

An Emerging Framework on the Recovery Experience

Gavin Smith, principal at PBS&J, offered a framework he is developing for understanding the challenges faced by stakeholders with roles in disaster recovery. His perspective comes from experience working on recovery in Mississippi following Hurricane Katrina and in other locales and his review of the scholarly literature on the subject. Smith noted that three kinds of resources are needed to further recovery in disaster-struck communities: financial and technical assistance and effective policy. Unfortunately, too often these resources do not become available in a coordinated fashion, according to Smith, thereby reducing the impacts that they might otherwise have collectively. Smith suggested that it is essential that planners play a key role in coordinating both pre- and post-disaster planning for recovery in order to meet the needs of communities in a more holistic fashion and to maximize the provision and utilization of recovery resources. He further noted that in mobilizing and planning for recovery, while financial assistance is crucial, much more attention needs to be focused on increasing the capacity of stakeholders to effectively participate in the recovery process.

As reflected in his experience in Mississippi, Smith characterized disaster recovery systems as multilayered, consisting of federal, state, and local stakeholders and nonprofit and newly formed groups which are not always well connected. He noted that federal agencies often can provide the greatest financial resources, but that they can be handicapped by a lack of knowledge of the needs of the local communities they intend to assist. A challenge for state, local, and nonprofit and newly formed groups is that they may have a better understanding of regional and local needs but without the resources of federal players. Also, without coordinated planning, the multiplicity of organizations that participate in recovery can work at cross purposes. Other barriers to more effective disaster recovery noted by Smith include the lack of a national recovery strategy, insufficient capacity at the state and local levels to engender more self reliance, and inadequate problem-solving and resource-allocation strategies, which planners can help design when included in the decision making process.

Status of Recovery in New Orleans since Hurricane Katrina

Shirley Laska, professor of sociology and director of the Center for Hazards Assessment, Response and Technology at the University of New Orleans, began her presentation by stating that recovery is very complex and multifaceted and therefore no single assessment can tell the complete story. In her view, mixed signals of recovery progress are often observed. She gave the example of articles in a local newspaper that presented opposite sides of the post-disaster recovery situation in New Orleans. One story

discussed such positive indicators as improvements in the tourist industry and health care, while others discussed the lack of progress in curbing the increased crime rate in the city and the plight of a local university that still had to hold classes in trailers because damaged campus buildings had not been fully restored.

Laska mentioned a short list of questions and topics related to recovery in New Orleans that could be relevant to researchers and policy makers, including:

- What is the role of tourism in the recovery of New Orleans and how is this connected to other needs and priorities in the city?
- How can the patterns of nationwide dispersal and resettlement of persons displaced by Hurricane Katrina be explained and what have been the consequences for the displaced, their new communities, and for New Orleans?
- What has been the role of post-Katrina migrants, both laborers and professionals, and their impacts on New Orleans?
- To what extent did disparities exist in recovery decision making, such as designating locations in the community for landfills, which might have negative impacts on less powerful groups in the city?

Laska noted that the New Orleans recovery effort is marked by a number of challenges, or what she calls conundrums, that the community and other stakeholders have to face. She indicated, for example, that there is the human right of residents to be able to return to their homes, regardless of whether their residence is a house they own, a rented apartment, or public housing. In some cases, though, this right has been challenged, in some instances by authorities, when returning might create public safety concerns because hazardous conditions could persist, even for future generations. Residents who want to exercise their human right to return to their homes and at the same time reduce their vulnerability to future events need assistance from government programs, which too often are not available, according to Laska.

Another recovery conundrum mentioned by Laska was the conflict between those thinking about long-term development versus those who want their immediate needs met. She indicated, for example, that some in the community advocate developing long-term plans for such institutions as the healthcare system and public housing. However, others, including many of the poor who badly need mental health services and housing now, are pushing for the utilization of resources to meet these needs as soon as possible, rather than waiting until more advanced development can take place, which could take many years.

Laska gave citizen involvement in the recovery effort in New Orleans very high marks. Effective recovery actions have been undertaken by many residents, neighborhood associations, faith-based organizations and other nongovernment organizations. She thinks such actions are important enough to be thoroughly documented by the research community.

The open discussion following the presentations touched upon the challenge of incorporating mitigation measures into recovery strategies, as well as the need to integrate mitigation with environmentally friendly design concepts such as energy-efficient structures. The importance of resilient power and other infrastructure systems was also discussed, along with the need for recovery-relevant groups and organizations to learn from and build upon previous experiences.

Session IV: Current Recovery Planning

Status of Recovery Planning in Louisiana

Jeff Hebert, Senior Planner for Concordia LLC (www.concordia.com) and former director of Community Planning for the [Louisiana Recovery Authority](#) (LRA) discussed the evolution of the Louisiana recovery planning efforts under Governor Kathleen Blanco, whom he characterized as a strong leader and coalition builder. Hebert noted that one of Blanco's first major actions was to hire James Lee Witt, former director of FEMA, as a consultant. This was followed by several other notable actions by the governor to generate an effective planning structure for the state's recovery, including the creation of :

- Louisiana Recovery Authority to serve as the planning and coordinating body for all levels of government and to allocate incoming federal funds throughout the state.
- [Coastal Protection and Restoration Authority](#) to take the lead in developing plans for environmental actions to mitigate future coastal storms.
- [Louisiana Family Recovery Corps](#) , a nonprofit entity to help families get back on their feet by linking them to both nonprofit and government resources.
- [Louisiana Disaster Recovery Foundation](#) to pull in resources outside Louisiana and to distribute them through grants to local nonprofit groups and organizations throughout the state for disaster response and recovery projects.
- [Recovery School District](#) to rebuild the troubled New Orleans public school system.
- Statewide building code to facilitate mitigation.

According to Hebert, these outcomes were achieved by the governor through tough negotiations with stakeholders and coalition building. He indicated that the resulting new organizations and institutions represented a significant departure from traditional problem-solving approaches used in Louisiana and these were made necessary because of the extreme demands placed on the state by Katrina.

Hebert noted that the LRA is the centerpiece of the governor's institutional building efforts to meet the recovery crisis. It was designed to be bipartisan and is led by [Dr. Norman Francis](#), president of Xavier University and one of the most admired persons in the state. It has a 33- member board comprised of people related to Louisiana from a local and national perspective, as well as persons from specific constituencies, such as the business and scientific communities.

According to Hebert, the well-publicized difficulties that the governor and the mayor of New Orleans, Ray Nagin, initially had working together changed over time. He noted that the hiring of Edward Blakely as the director of the [New Orleans Office of Recovery Management](#) considerably improved relations between such state agencies as LRA and the state's largest city. Hebert indicated that the state is making progress through the LRA and other new entities but that some of the big challenges faced by the LRA as a new agency involve overcoming the resistance of established agencies, coping with recovery politics at all levels, and understanding and meeting the requirements of federal recovery programs.

Status of Recovery Planning in New Orleans

Laurie Johnson, independent consultant, moved the discussion from a focus on statewide recovery in Louisiana to recovery planning activities in New Orleans. She participated in these efforts as a planning consultant with the [Unified New Orleans Plan](#), a nonprofit activity funded by the Rockefeller Foundation. Johnson characterized the Unified New Orleans Plan as a citywide planning effort to obtain input from both official New Orleans and neighborhood groups and private citizens, including many residents who had been forced to move away from the city after Hurricane Katrina struck. The planning group had four months to complete its work, which included holding four rounds of district meetings with stakeholders and three outreach efforts called community congresses, the most expensive part of the process. Johnson indicated that even displaced persons were involved in the discussions and that 2,500 participants from five cities were linked together by satellite during the second community congress. The plan that evolved was based on the public's priorities and these were determined through the planning group's engagement with stakeholders and included: safety from future flooding; empowerment to rebuild safe, stable neighborhoods; opportunity for all to return; and equitable access to public services. According to Johnson, the planning group envisioned a plan that would cost \$14 billion to support several core programs, including those to help residents rebuild appropriately and to elevate homes, restore and upgrade the physical and social infrastructure of the city, and rebuild health care institutions.

Johnson noted that the Unified New Orleans Plan was submitted to the City Planning Commission on January 30, 2007. This became a part of the final recovery plan for the city that was approved by the City Council on June 21, 2007, which led the way for the Louisiana Recovery Authority to give the city access to \$117 million in federal [Community Development Block Grant Funds](#). According to Johnson, coming nearly two years after the storm, this was crucial initial funding to further recovery efforts in the city.

Johnson indicated that after the Office of Recovery Management was established by the mayor in December 2006 to serve as the focal point for recovery efforts in New Orleans, to its credit began borrowing from the Unified New Orleans Plan. In providing an update on the office, Johnson noted that it was in the implementation and financing stage, which involves prioritizing public projects, integrating projects into the city's capital budget, tying the city's recovery efforts with other city functions, and obtaining recovery funds for such activities as blight cleanup.

In looking ahead to future challenges facing New Orleans, Johnson posed a number of questions which have planning and research implications these include:

- Can future flood risk be reduced sufficiently and in time?
- What long-term public investment is needed in catastrophic recovery?
- What will be the impact of the emerging demographic shifts in the city?

Johnson noted that all of these questions need to be thoroughly answered, and that while there is some relevant data on them, there is far from enough to draw definitive conclusions. This makes future recovery planning and decision making problematic.

Discussion following the presentations included questions about the costs and benefits of mitigation measures in New Orleans, the need for local capacity building to meet the challenges of recovery planning and program implementation, and the difficulties of passing on lessons learned from previous recovery experiences.

A Film Tribute to Gilbert White

In honor of the late Gilbert White, the film *Reflections on the Life of Gilbert White*, produced by independent filmmaker Marshall Frech through funds provided by the Public Entity Risk Institute, was shown as the final segment of the workshop. The film highlights the leadership that Dr. White provided over the years, especially for the hazards community, and the outstanding contributions he made to research and policy during his long and productive life.

Following the showing of the film, William Hooke, chair of the DR's steering committee, announced that the next workshop, the 22nd, will focus on disaster risk management in the context of climate change and is scheduled for April 3, 2008. He then announced the adjournment of the 21st workshop.

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