

BERKE, TAMU
DHS Coastal Resilience Center
Research Project
Annual Project Performance Report

Covers reporting period January 1, 2016 – June 30, 2016

1. Project Title: Local Planning Networks and Neighborhood Vulnerability Indicators

2. Principal Investigator / Institution: Philip Berke/Texas A&M University-College Station

3. Other Research Participants/Partners:

-Galen Newman, Assistant Professor, Texas A&M; Supervise digital mapping, visualization.

-Walter Peacock, Professor, Texas A&M; Develop indicators, analysis of indicator data, report research.

-Texas Target Communities (John Cooper and Jaimie Masterson), Texas A&M University; lead and supervise all end user engagement activities.

4. Short Project Description:

We developed a plan integration scorecard and user guidelines to assist local planners and emergency managers to improve integration of vulnerability reduction practices into different plans (land use, hazard mitigation, housing, transportation, economic development) that guide land use and urban development in hazardous areas.

Communities often fail to coordinate networks of plans, which can significantly increase the vulnerability to coastal hazards and climate change. Development and validation of the tool requires testing the tool in six demonstration communities at risk to coastal hazards to determine how well networks of local plans integrate vulnerability reduction practices.

5. Abstract:

Problem. Fragmentation and poor integration among the diverse range of sectors of planning has led to siloes in which mitigation planning is isolated from other planning. Hazard mitigation specialists have long been concerned about the lack of integration of mitigation across local planning sectors, which can significantly compound future vulnerability. Failure to coordinate multiple planning activities that govern land use in hazard areas has become a national policy concern. This was acknowledged by the FEMA director Craig Fugate's call for more integration of hazard mitigation efforts into all types of local planning and more cooperation between emergency managers and planners (Fugate 2010).

Methods. We will initially review the literature in hazard mitigation planning to identify how mitigation can be supported by different local planning activities (economic development, land use, capital improvement programs, environment) that influence land use and development patterns. We then develop a conceptual framework to guide the creation of a scorecard that includes indicators that measure the variation of vulnerability within different geographic areas of a community, and that measure how well a local network of plans integrate vulnerability reduction for each geographic area. Next, we apply the scorecard indicators to six demonstration coastal communities to test the applicability of the scorecard in determining how well the network of local plans support mitigation, and how well they are correlated with neighborhood vulnerability to coastal floods and projected sea level rise.

Fugate, W. C. 2010. "Integrating Hazards into Local Planning," Foreword to *Hazard Mitigation: Integrating Best Practices into Planning*, James Schwab, editor, PAS 560, American Planning Association, Chicago: iii-iv.

6. End users:

We are engaging end-users through creation of a National Advisory Committee, direct contact with FEMA officials, and involvement of local government staff in the demonstration communities.

We have recruited and convened a National Advisory Committee to strengthen partnerships and collaborations with the practice community and to ensure the applicability of the scorecard for mitigation practitioners. Members include key leaders in the practice community:

- Chad Berginnis, Director, Association of State Floodplain Managers
- Matt Campbell, Nat'l Coordinator for Community Recovery Planning & Branch Chief
for Community Planning and Capacity Building of the Interagency Coord. Div., FEMA
- Jennifer Ellison, Community Development Coordinator, City of Urbandale, Iowa
- Allison Hardin, Urban Planner, City of Myrtle Beach, SC
- Barry Hokanson, Director, Hazard Mitigation and Disaster Recovery Division of the
American Planning Association & Mitigation Planner, PLN Associates
- Darrin Punchard, Mitigation Planner, Hawksley Consulting
- Gavin Smith, Exec. Director, Coastal Resilience Center, University North Carolina

The Committee meets about every 4-months via teleconference with project investigators. To date the Committee has met twice. Committee members offer guidance in the development of the plan integration scorecard tool, assist with dissemination of project results, and provide oversight and strategic advice to the research and translational activities. The Committee also serves to enhance communication between the project researchers and the practice community.

FEMA is the primary end user for this project. Our point of contacts are in the FEMA Risk Analysis Division, Assessment and Planning Branch, Mitigation Planning Program: Kathleen Smith, 202 646-4372, Kathlccn.W.Smith@fema.dhs.gov; and [Jenny Burmester](mailto:Jenny.Burmester@fema.dhs.gov), Jenny.Burmester@fema.dhs.gov. We informed Kathleen Smith of our progress last April during the Hazard Mitigation and Disaster Recovery Division meeting at the American Planning Association Conference in April 2016. In addition, Matt Campbell of FEMA serves on our National Advisory Committee. We also plan to keep in regular communication with our OUP Program Manager (Eleanore Hajian at 202 567-1525 or eleanore.hajian@hq.dhs.gov) about progress of this study through emails, conference calls, and preparation of a brief research summary report.

Finally, we have initiated preliminary engagement efforts with two demonstration communities in League City, Texas (Key contact: Marc Linenschmidt, Planning and Development Department) and Hampton, Virginia (Terry O’Neill, Community Development Department). It is the local community where all aspects of planning come together. We engage local agency staff and in some cases non-governmental actors charged with responsibilities for planning. Local entities include, for example, emergency management, land use planning, housing, utilities, transportation, economic development, and environmental conservation. These end users are typically charged with preparing, updating and reviewing the diversity of local plans that influence land use and development in hazardous areas.

7. Explanation of Changes:

No significant changes.

8. Unanticipated Problems:

No unanticipated major problems.

9. Project Outcomes:

We will create an interactive web-based plan integration scorecard for community disaster resiliency derived from research in six demonstration communities. We will convert the research-driven scorecard to a user-friendly tool that will enable local decision makers to improve integration of mitigation into multiple planning activities, regulations, and public infrastructure investment decisions that influence land use and development patterns in hazard areas. A Practitioner’s Guide and Scorecard will provide end users the opportunity to identify when and where their community plans are in conflict, as well as how well they target different geographic areas of the community that are most vulnerable. Armed with this new knowledge, planners can engage the whole community regarding 'missed opportunities' to strengthen local hazard mitigation planning, and leveraging the new knowledge to improve the integration, consistency, and responsiveness of their networks of plans.

The plan integration scorecard will be a web-based tool that adds new elements to a previous UNC CRC project by Berke, which yielded the “[Beyond the Basics](#)” website. The site is designed to help local governments prepare a new, or update an existing, hazard mitigation plan based on best practice standards and consistent with FEMA’s Local Mitigation Planning Handbook. The core contribution of the plan integration scorecard is to help communities apply mitigation practices – development regulations, incentives and public spending – that are woven into all sectors of urban development management, rather than stand-alone and isolated efforts. Beyond the Basics” has recorded more than 13,000 hits over the last 12 months (7/15 to 7/16), with a steady growth in usage. Within the United States, California, Texas and New York, all high-population coastal states, are the source of most visitors.

10. Research Activity and Milestone Progress:

Research Activities and Milestones: Progress to Date

Reporting Period 1/1/2016 – 6/30/2016			
<u>Research Activity</u>	<u>Proposed Completion Date</u>	<u>% Complete</u>	<u>Explanation of why activity / milestone was not reached, and when completion is expected</u>
Draft plan integration assessment tool and user guidelines	2/28/16	100	The draft version of the tool was completed in response to reviews by our national advisory committee. (See below for discussion on importance of committee in assisting our efforts to translate our research to practice.)
Assess the physical and social vulnerability and apply the draft plan integration assessment tool to 2 demonstration communities.	6/30/16	100	We have engaged 2 demonstration cities: League City, TX and Norfolk, VA. We developed a vulnerability assessment for each city. We developed a 3-step process that led to selection of the 2 cities: 1) sent out request to 400 communities on HMDR’s membership list; 2) candidate cities were asked to ensure participation by key local government agencies that influence development in hazard areas (planning, emergency management, housing, parks and

			rec., etc.); and 3) elected officials of selected cities express support for the project. We completed a social and physical vulnerability assessment and are training local officials in applying the plan integration tool in the 2 cities.
Research Milestone			
Complete data collection for social and physical vulnerability for the two demonstration communities.	6/30/16	100	

11. Transition Activity and Milestone Progress:

Transition Activities and Milestones: Progress to Date

Reporting Period 1/1/2016 – 6/30/2016			
<u>Transition Activity</u>	<u>Proposed Completion Date</u>	<u>% Complete</u>	<u>Explanation of why activity / milestone was not reached, and when completion is expected</u>
Engage 2 partner communities willing to work with research team in the development of a draft plan integration assessment tool.	2/28/16	100	<p>As noted, the draft version of the tool was completed with assistance from our national advisory committee. The committee plays a critical role in helping us ensure that the tool is relevant to hazard mitigation planning practice. The committee members include 8 highly qualified practitioners with experience in various aspects of planning that potentially influence land use and development in hazard areas. They are drawn from the leadership team of the Hazard Mitigation and Disaster Recovery Division (HMDR) of the American Planning Association. The tool has gone through 3 reviews by the advisory committee and been improved via multiple revisions.</p> <p>As indicated below, we are training local agency staff to self-evaluate the network of local plans by applying the plan integration assessment tool in League City and Norfolk. The results will identify degree of coordination (and conflict) among plans and the degree to which plans prioritize vulnerability reduction in different geographic areas. The cities are committed to use this information to update existing plans and guide creation of new plans deal with guiding public and private investments, regulations and revenue generation in hazard areas.</p> <p>Our ultimate goal is to translate the research (2015 Best Article Award, Journal of the American Planning Association) to a practice-based guidebook for application of the tool. We are working with HMDR at APA and the Rockefeller 100</p>

			Resilient Cities Program to help support widespread application of the tool. Of course, we aim to work with FEMA to achieve this goal. One of the members, Matt Campbell, on our National Advisory Committee is from FEMA.
Transition Milestone			
Conduct three workshops with key agency staff for each demonstration community. The purpose is to receive input on current mitigation practices and opportunities to improved coordinated integration among agencies.		80	We have engaged the communities and are currently working with them in assessing their networks of plans. We have not conducted three workshops in each community to date. The actual number of workshops needed per community may vary given the technical capacity and availability of local staff. We see 100% achievement of this milestone that will enable 100% achievement of the next milestone (draft user guidelines and assessment tool) on 9/30/16.

12. Interactions with education projects:

We supported the successful application of Dr. Sonia Gilkey from Texas A&M Kingsville that is a HSI (Hispanic serving institution) with Jen Horney (School of Public Health at Texas A&M University) to the DHS Summer Research Team Program for Minority Serving Institutions. Although Dr. Gilkey and her student were selected to participate in the program, they subsequently declined to participate due to a scheduling conflict.

13. Publications:

14. CRC Performance Metrics:

CRC Performance Metrics			
Metric	Research	Education	Center
Courses/certificates developed, taught, and/or modified		See Table	
Enrollments in Center-supported courses/certificates			
HS-related internships (number)	0		

Undergraduates provided tuition/fee support (number)	0		
Undergraduate students provided stipends (number)	0		
Graduate students provided tuition/fee support (number)	2		
Graduate students provided stipends (number)	3		
Undergraduates who received HS-related degrees (number)	0		
Graduate students who received HS-related degrees (number)	0		
Certificates awarded (number)			
Graduates who obtained HS-related employment (number)	0		
SUMREX program students hosted (number)	0		
Lectures/presentations/seminars at Center partners (number)	0		
DHS MSI Summer Research Teams hosted (number)	0		
Journal articles submitted (number)	0		
Journal articles published (number)	0		
Conference presentations made (number)	3 (Delft University, Holland; University of Kansas, University of Colorado)		
Other presentations, interviews, etc. (number)	1 (Hazard Mitigation Division, American Planning Assoc.)		
Patent applications filed (number)	0		
Patents awarded (number)	0		
Trademarks/copyrights filed (number)	0		
Requests for assistance/advice from DHS agencies (number)	0		
Requests for assistance/advice from other Federal agencies or	0		
Total milestones for reporting period (number)			
Accomplished fully (number)			
Accomplished partially (number)			
Not accomplished (number)			
Product/s delivered to end-user/s (description and recipients)	See Table		
External funding received	See Table		
Leveraged support	See Table		
Articles on Center-related work published on website (number)			1
Coverage in media, blogs (number)			0
Social media followers (number)			0
Posts to social media accounts (number)			1
Events hosted (number)			0
Website hits (number)			0 (13,000)

Table for Documenting CRC Research Project Product Delivery

<u>Product Name</u>	<u>Product Type</u>	<u>Approx. Delivery Date</u>	<u>Recipient or Anticipated End Users</u>
Plan Integration Scorecard for Community Disaster Resilience	Software and Hard Copy Products	November 2016	FEMA, Coastal Communities

Table for Documenting External Funding and Leveraged Support

<u>External Funding</u>			
<u>Title</u>	<u>PI</u>	<u>Total Amount</u>	<u>Source</u>
Coastal Flood Risk Reduction Program: Integrated, Multi-scale Approaches for Understanding How to Reduce Vulnerability to Damaging Events	Berke	\$200,000	NSF
<u>Leveraged Support</u>			
<u>Description</u>			<u>Estimated Annual Value</u>
Portion of university indirect returned to project			\$2,000