Mitigation Strategy Workshop

Mitigation Strategy Workshop

- Overview of Risk and Capability Assessment Findings
- Mitigation Policy and Project Identification
  - Card Storming Exercise
- Next Steps

The Mitigation Planning Process

Hazard Identification and Risk Assessment

- Identify Hazards
  - Hazard Description
- Profiling Hazards
  - Hazard History
  - Hazard Frequency
  - Hazard Map
- Assessing Vulnerability
  - Identify Assets (types and number of structures)
  - Estimate Current and Future Expected Losses
  - State-owned Facilities

Hazard Identification

Natural Hazards

Geologic Hazards
- Earthquakes

Extreme Winds
- Windstorms
- Hurricanes
- Tornadoes

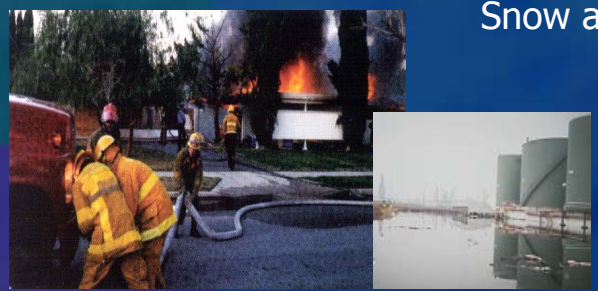
Wildfire

Flooding
- Riverine
- Coastal

Coastal Erosion

Atmospheric
- Hailstorm
- Drought

Winter Storms
- Snow and Ice



Human-Caused Hazards

Dam Failures

Hazardous Materials
- Fixed and Mobile

Terrorism
- Security
- Blast / Explosion
- Chemical / Biological

Nuclear Accidents
- Radioactive Materials

Utility Failures / Sabotage

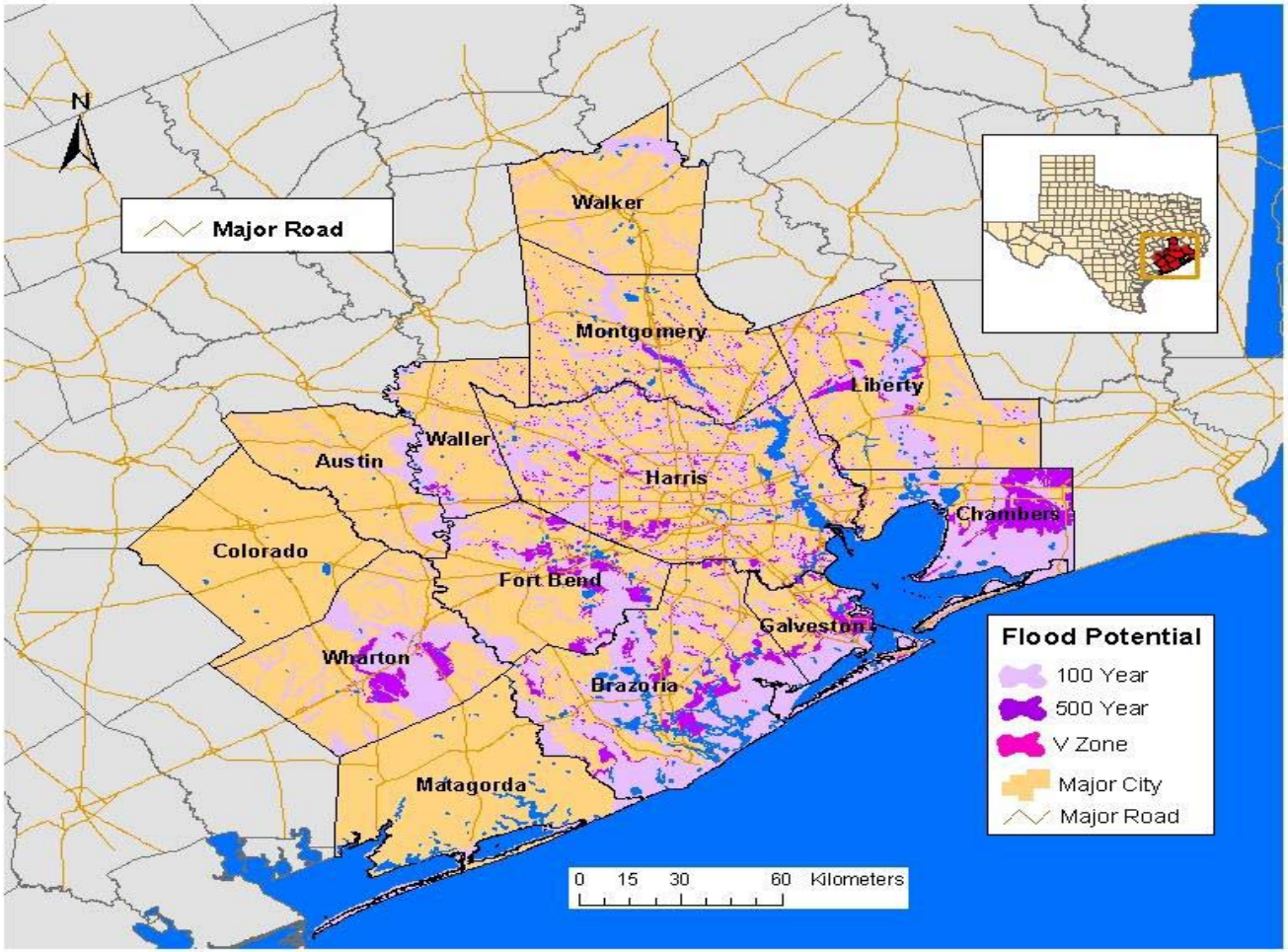
Transportation Disruption

Pipelines

Hazard Profile – Severe Winds

	Wind Speed (Mile per Hour)						
COUNTY	10-year	20-year	50-year	100-year	200-year	500-year	1000-year
Austin	52	68	86	97	107	118	125
Brazoria	68	88	109	123	134	147	155
Chambers	67	86	107	121	133	147	157
Fort Bend	61	79	98	110	121	133	140
Galveston	69	90	112	126	139	153	162
Harris	62	80	99	112	123	135	143
Liberty	59	76	95	107	118	131	139
Montgomery	53	69	87	99	110	122	130
Walker	45	61	78	89	100	113	121
Waller	52	68	85	97	107	119	128

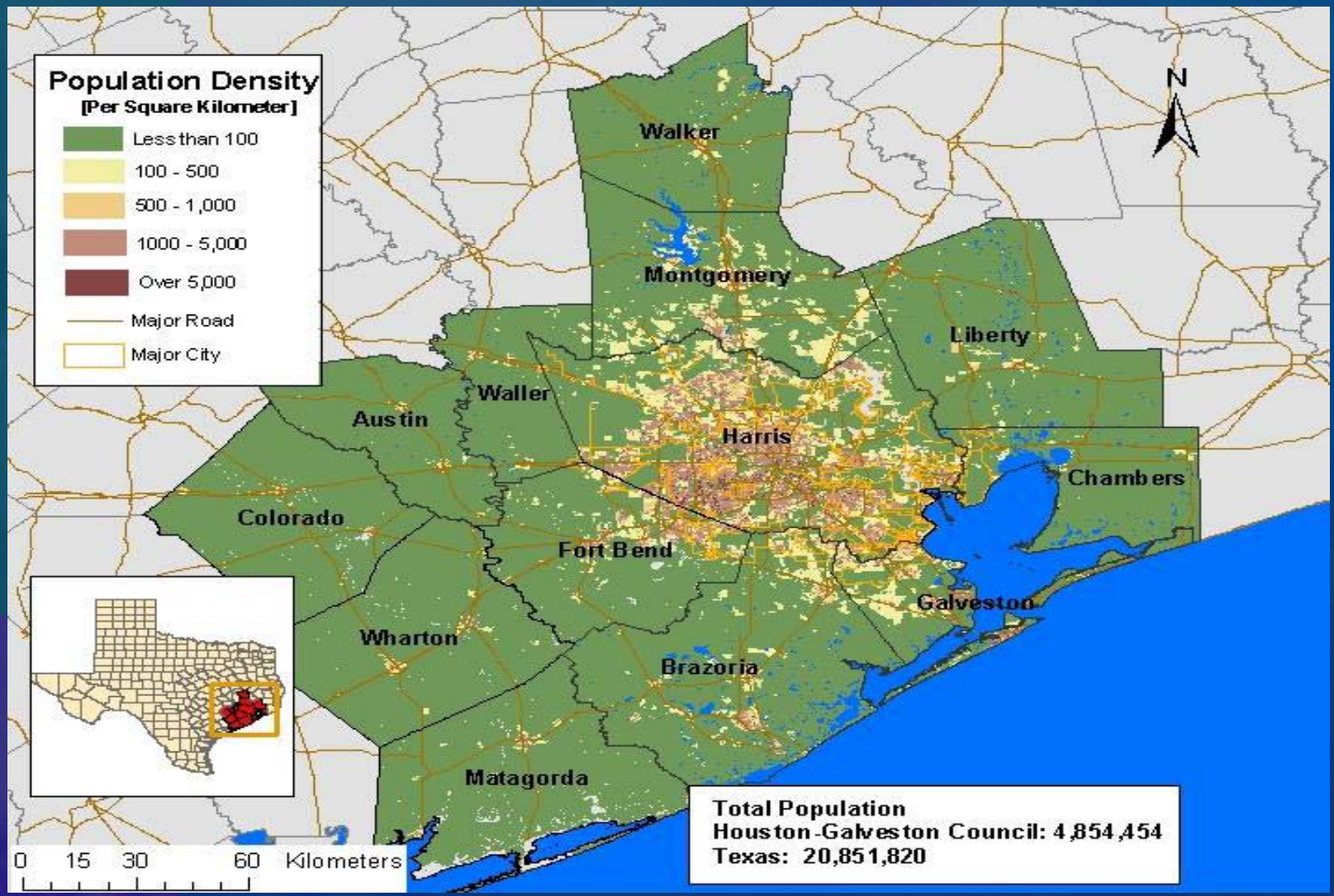
Mapping Hazards



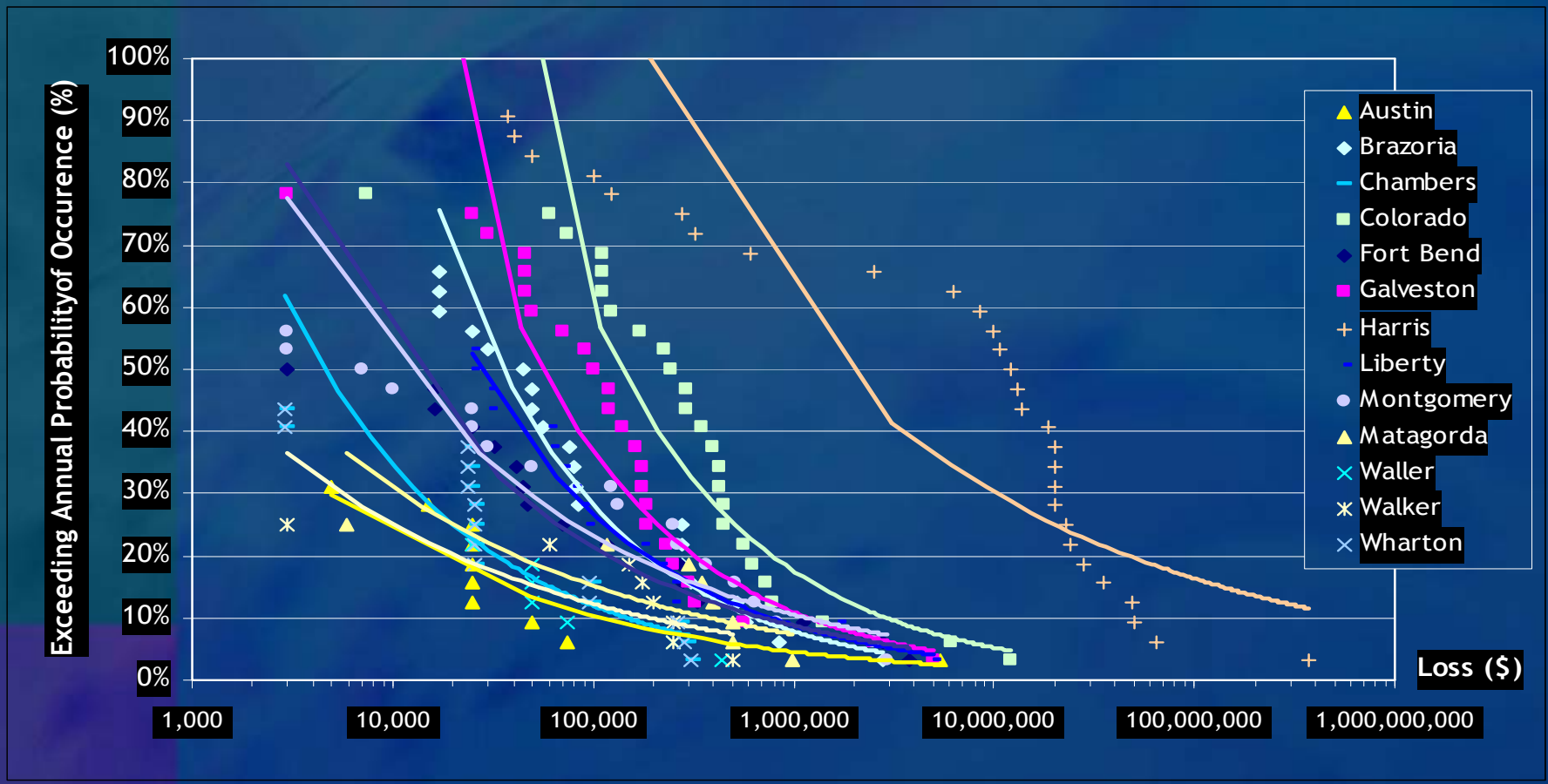
Building Exposure

	Building Exposure [$M] (Data based on HAZUS-MH)						
County Name	Residential	Commercial	Industrial	Agricultural	Religious	Critical Facilities	Essential Facilities
Austin	2,304	288	96	21	49	5	28
Brazoria	32,188	2,551	849	65	262	72	607
Chambers	3,013	306	130	10	71	7	32
Colorado	1,914	266	110	27	52	14	71
FortBend	73,345	4,344	1,556	102	448	55	711
Galveston	39,636	3,441	588	37	317	57	662
Harris	528,429	62,026	21,933	547	4,873	556	11,940
Liberty	4,882	525	171	14	117	24	183
Matagorda	3,662	337	141	20	59	12	85
Montgomery	47,315	3,842	1,422	178	432	35	640
Walker	4,864	493	140	10	73	61	128
Waller	2,698	270	134	24	43	8	120
Wharton	3,481	469	137	51	67	8	80
Total	**747,730**	**79,158**	**27,405**	**1,108**	**6,863**	**915**	**15,286**

Population


Population Density
[Per Square Kilometer]
Less than 100
100 - 500
500 - 1,000
1000 - 5,000
Over 5,000
Major Road
Major City
N
Walker
Montgomery
Liberty
Waller
Austin
Harris
Chambers
Colorado
Fort Bend
Galveston
Wharton
Brazoria
Matagorda
0 15 30 60 Kilometers
Total Population
Houston-Galveston Council: 4,854,454
Texas: 20,851,820

Damage Profile - Tornadoes



H-GAC Annualized Expected Losses

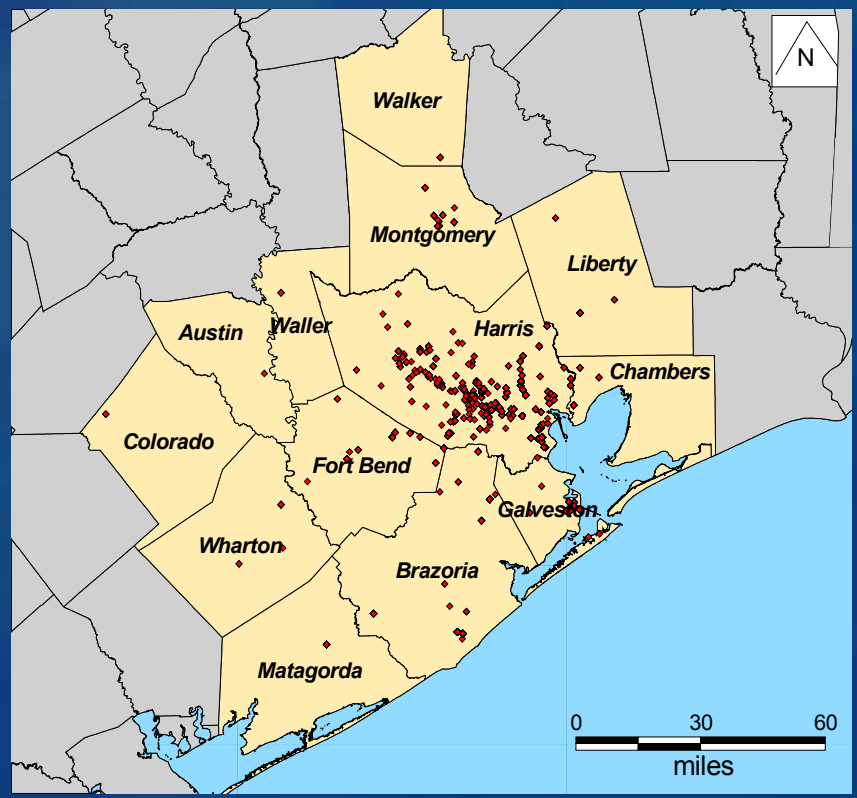
	Earthquake	Severe Wind	Flood	Hail	Tornado	Thunderstorm	Drought
Austin		1,740,066	407,368	146,546	259,359	70,040	5,385,432
Brazoria		52,940,643	11,874,938	27,970	248,118	200,004	6,243,119
Chambers		9,180,969	780,119	16,529	44,956	64,097	891,589
Colorado		2,168,772	98,050	67,394	1,029,095	128,625	6,261,017
Fort Bend		123,387,494	780,220	168,403	337,773	271,633	15,763,859
Galveston		145,221,012	23,947,273	41,844	420,233	495,400	1,377,968
Harris		472,194,063	8,870,060	1,459,851	31,502,124	7,795,272	7,874,500
Liberty		4,722,935	1,438,247	13,353	420,832	52,292	4,670,530
Matagorda		20,668,386	726,000	27,117	113,816	35,063	9,820,583
Montgomery		29,544,030	2,036,613	693,294	315,898	88,938	3,627,965
Walker		1,882,678	152,886	12,096	57,438	43,009	2,565,723
Waller		2,587,239	169,484	12,901	36,133	16,755	5,844,021
Wharton		11,274,217	721,025	53,902	43,030	131,300	21,925,074
Total	0	877,512,504	52,002,283	2,741,199	34,828,804	9,392,425	92,251,381

Hazard Risk Ranking By Annualized Losses

1)	Hurricane Wind	$877,512,504
2)	Drought	$92,251,381
3)	Flood	$52,002,283
4)	Tornado	$34,828,804
5)	Thunderstorm	$9,392,425
6)	Hail	$2,741,199
7)	Earthquake	Negligible

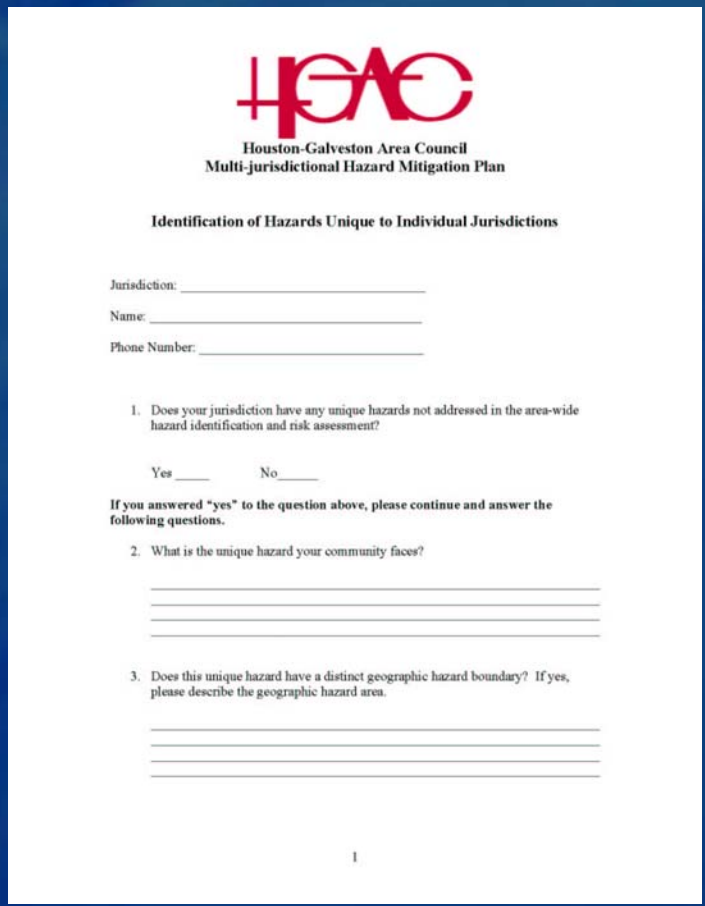
HazMat Facilities (.5 mile radius)

County Name	Population at Risk	# Buildings Exposed
Austin	11	4
Brazoria	10,075	3,952
Chambers	721	271
Colorado	215	93
Fort Bend	11,948	4,230
Galveston	14,850	5,768
Harris	276,598	96,151
Liberty	311	111
Matagorda	2	0
Montgomery	9,270	2,992
Waller	1,404	522
Wharton	366	120
Total	325,771	114,214



Hazards Worksheet

- Identifying localized hazards not captured in the regional risk assessment



Houston-Galveston Area Council
Multi-jurisdictional Hazard Mitigation Plan

Identification of Hazards Unique to Individual Jurisdictions

Jurisdiction: _____

Name: _____

Phone Number: _____

1. Does your jurisdiction have any unique hazards not addressed in the area-wide hazard identification and risk assessment?

   Yes ____ No____

If you answered "yes" to the question above, please continue and answer the following questions.

2. What is the unique hazard your community faces?

   _____
   _____
   _____
   _____

3. Does this unique hazard have a distinct geographic hazard boundary? If yes, please describe the geographic hazard area.

   _____
   _____
   _____
   _____

1

Capability Assessment

- Measures each jurisdiction's capability to implement hazard mitigation activities
- Identifies existing gaps, weaknesses or conflicts (i.e., "mitigation opportunities") with local programs, plans, policies, etc.
- Identifies mitigation practices already in place

** Coupled with the Risk Assessment, the Capability Assessment helps to form the foundation for identifying Mitigation Actions*

Capability Indicators

- National Flood Insurance Program (NFIP) Participation – required in Texas
- Community Rating System (CRS) Participation
- Building Code Effectiveness Grading Schedule (BCEGS)
- Local Capability Assessment Survey
  - Inventory and evaluation of existing plans, policies, programs and ordinances

Capability Indicators

- Technical Capability
- Administrative Capability
- Fiscal Capability
- Political Capability

Capability Assessment Findings

- 90% of jurisdictions participate in NFIP (all but 8)
  - 23% of NFIP participants indicated they did not have a Flood Damage Prevention Ordinance
- Three (3) jurisdictions participate in CRS:
  - City of Conroe (Class 7)
  - City of Kemah (Class 5)
  - Village of Tiki Island (Class 9)
- BCEGS Ratings
  - 25% of jurisdictions have been rated by ISO
  - Highest grade received = 5, shared by six (6) jurisdictions

Capability Assessment Findings

- 57 of 79 participating jurisdictions provided responses to Local Capability Assessment Survey
  - Response Rate = 72%
- Survey results will help determine general classifications for each community based upon overall capability and hazard risk:

Example:		HAZARD RISK		
		Low	Moderate	High
OVERALL CAPABILITY	High			
	Moderate			
	Limited			

Capability Assessment Findings

Plan, Policy, Program or Ordinance	Percentage
Hazard Mitigation Plan (or Flood Mitigation Plan)	37%
Disaster Recovery Plan	40%
Comprehensive Plan	21%
Floodplain Management Plan	67%
Stormwater Management Plan	26%
Emergency Operations Plan	79%
Continuity of Operations Plan	44%
Radiological Emergency Plan	49%
SARA Title III – HazMat Emergency Response Plan	53%

Capability Assessment Findings

Plan, Policy, Program or Ordinance	Percentage
Transportation Plan	30%
Regional Planning	60%
Historic Preservation Plan	2%
Zoning Ordinance	35%
Subdivision Ordinance	79%
Flood Damage Prevention Ordinance	90%*
NFIP	90%*
CRS	4% *
Building Code	67%

* Source: FEMA

Capability Assessment Findings

Plan, Policy, Program or Ordinance	Percentage
Fire Code	49%
Riparian / Wetlands Preservation Program	7%
Riparian Buffers	4%
Land Acquisition Program (for Public Use)	19%
Partnerships with NGOs for Land Acquisition	16%
Open Space/Forestry Management Plan	5%
Public-Private Partnerships for disaster-related issues	32%

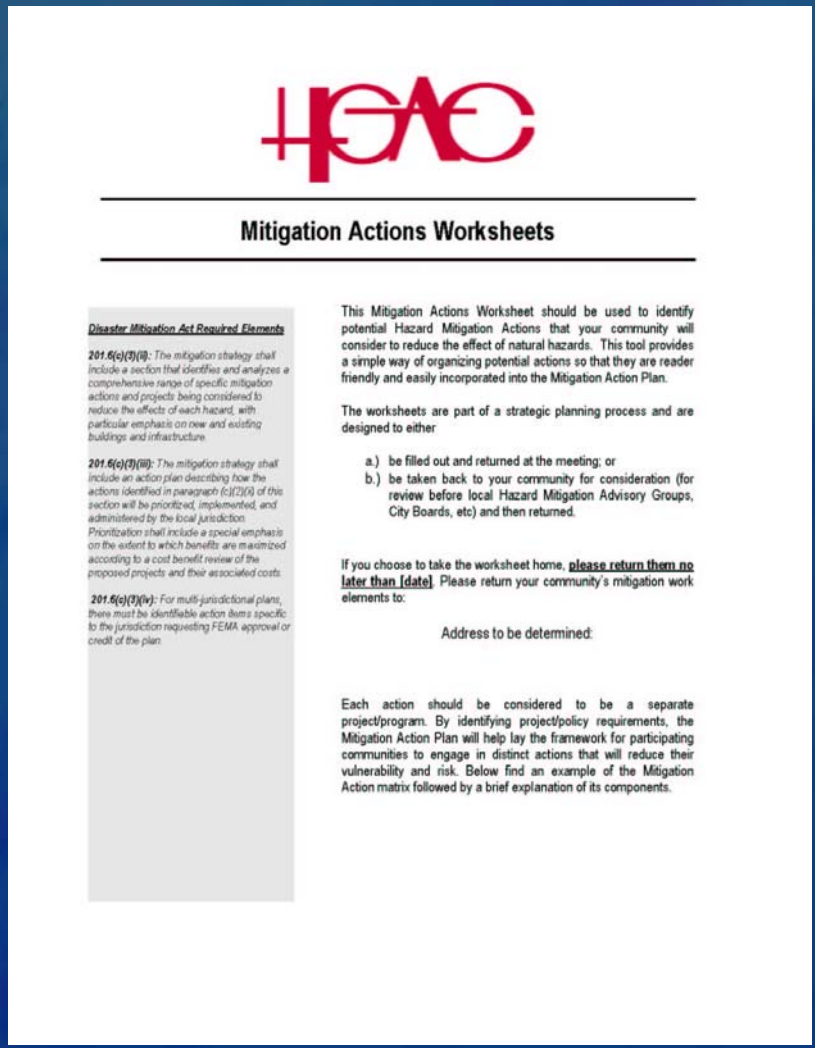
Cardstorming Exercise

- Purpose
  - Identification of Goals, Policies and Projects
  - Mitigation Action Plan
  - Regional Policy and Project Identification
- Ground Rules
- Explaining the Process
  - Technique
  - Homework

Types of Mitigation Measures

- Prevention
- Property Protection
- Natural Resource Protection
- Structural Projects
- Emergency Services
- Public Education and Awareness

Mitigation Actions Worksheets



Mitigation Actions Worksheets

Disaster Mitigation Act Required Elements

201.6(c)(3)(i): *The mitigation strategy shall include a section that identifies and analyzes a comprehensive range of specific mitigation actions and projects being considered to reduce the effects of each hazard, with particular emphasis on new and existing buildings and infrastructure.*

201.6(c)(3)(iii): *The mitigation strategy shall include an action plan describing how the actions identified in paragraph (c)(2)(ii) of this section will be prioritized, implemented, and administered by the local jurisdiction. Prioritization shall include a special emphasis on the extent to which benefits are maximized according to a cost benefit review of the proposed projects and their associated costs.*

201.6(c)(3)(iv): *For multi-jurisdictional plans, there must be identifiable action items specific to the jurisdiction requesting FEMA approval or credit of the plan.*

This Mitigation Actions Worksheet should be used to identify potential Hazard Mitigation Actions that your community will consider to reduce the effect of natural hazards. This tool provides a simple way of organizing potential actions so that they are reader friendly and easily incorporated into the Mitigation Action Plan.

The worksheets are part of a strategic planning process and are designed to either

a.) be filled out and returned at the meeting; or
b.) be taken back to your community for consideration (for review before local Hazard Mitigation Advisory Groups, City Boards, etc) and then returned.

If you choose to take the worksheet home, **please return them no later than [date]**. Please return your community's mitigation work elements to:

Address to be determined:

Each action should be considered to be a separate project/program. By identifying project/policy requirements, the Mitigation Action Plan will help lay the framework for participating communities to engage in distinct actions that will reduce their vulnerability and risk. Below find an example of the Mitigation Action matrix followed by a brief explanation of its components.

Mitigation Actions Worksheets

Community Name:	
Action Item (describe):	
Category:	
Hazard(s):	
Lead Agency/Department Responsible:	
Estimated Cost:	
Funding Method:	
Implementation Schedule:	
Priority:	

Next Steps

- Mitigation Action Worksheets
- On-going Coordination
  - Regional Actions
  - State and FEMA Review
- Future Meetings
  - Draft Plan Presentations

Questions?