

Polk County Multi-Jurisdictional Hazard Mitigation Plan

Meeting 2: Risk Assessment Results Developing Mitigation Goals October 17, 2013

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AMEC Environment & Infrastructure, Inc.



Meeting Purpose

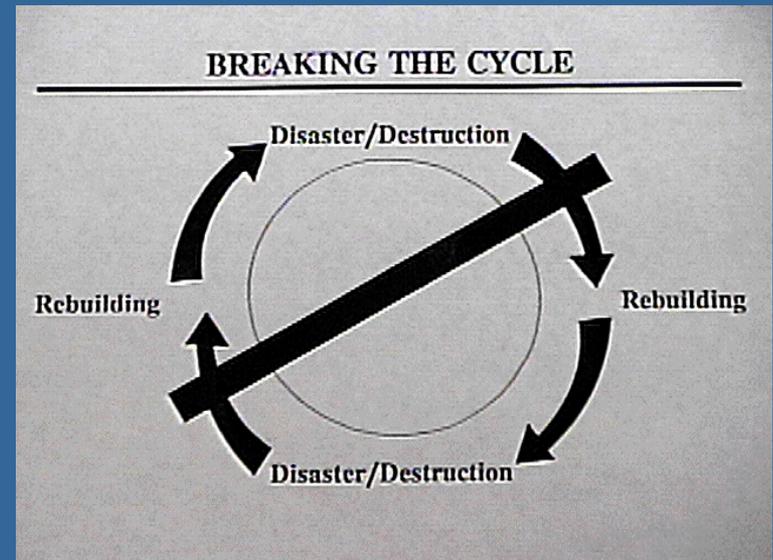
- Brief Review
- Public Survey
- Discuss Participation Requirements/Status
- Plan Update Format
- Sample Results of Countywide Risk Assessment
- Review/Validate Critical Facilities
- Update Mitigation Goals
- Discuss Mitigation Actions
- Next Steps

Soft Match

- Planning Grant from FEMA administered by Iowa HSEMD
 - 75% federal, 10% state, and 15% local
- Local funds can be Soft Match
- Your time in meetings, gathering data, reviewing drafts, notifying public, etc. counts!
- Please continue to complete and turn in forms.

Disaster Mitigation Act of 2000

- Requires local governments to adopt a natural hazard mitigation plan to maintain eligibility for FEMA Hazard Mitigation Assistance funds
- This Plan Update is for a Multi-jurisdictional Hazard Mitigation Plan covering the Unincorporated County, participating Incorporated Cities, and Public School Districts



Mitigation Planning Steps

- Phase I
 - 1. Organize Resources
 - 2. Plan for Public Involvement
 - 3. Coordinate with Other Departments and Agencies
 - 4. Identify the Hazards
- Phase 2
 - 5. Profile the Hazards
 - 6. Identify Assets
 - 7. Estimate Losses
- Phase 3

 - 8. Identify/Update Plan Goals
 - 9. Develop Potential Mitigation Actions
 - 10. Draft the Mitigation Plan
- Phase 4
 - 11. Adopt the Plan
 - 12. Implement and Maintain the Plan

Public Survey Update

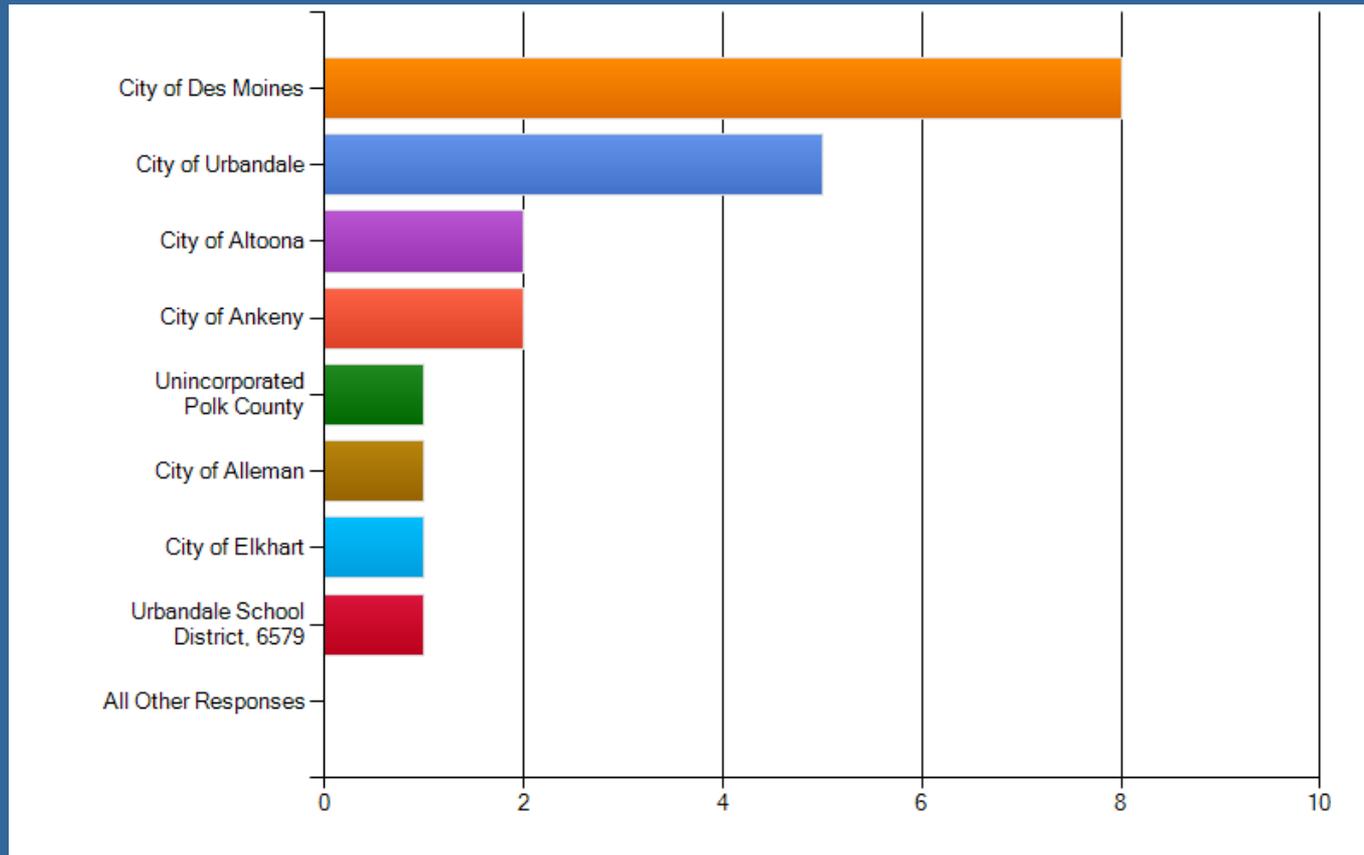
- Survey Monkey—notify public, provide link in newsletters, on websites, in utility mailers, via social media, etc.
- Survey closes 12/16/2013
 - <https://www.surveymonkey.com/s/PolkCountyHMP>
- Hard Copy Surveys
- Press Release will be issued with link and locations of hard copies.
 - City Halls???
 - Public School Building Offices???
 - Public Libraries???
 - United States Post Offices???

Efforts to Promote Survey

- Polk County Board of Supervisors Newsletter in DMWW Water Bill—coming soon!
- Any other other efforts already?
- Any other efforts planned?

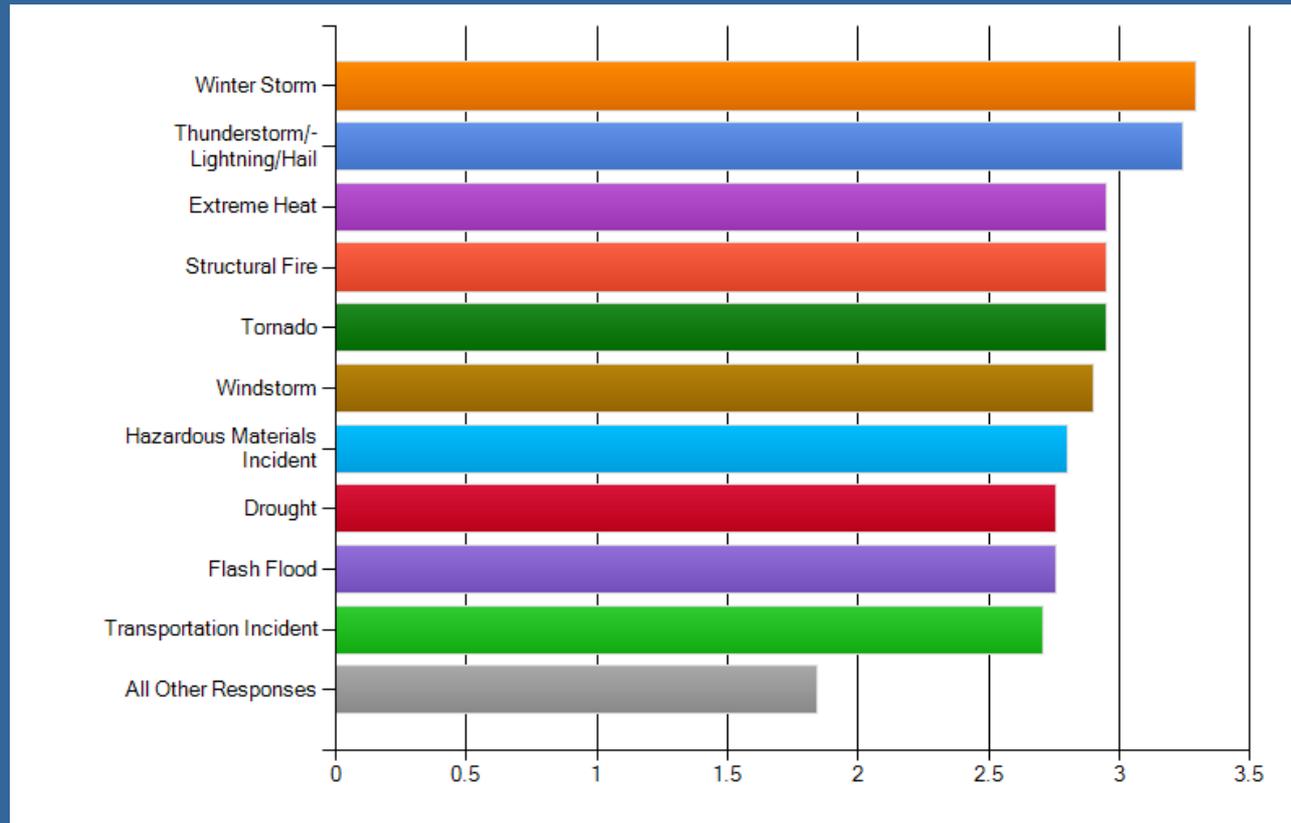
Initial Survey Results

- 21 Responses:



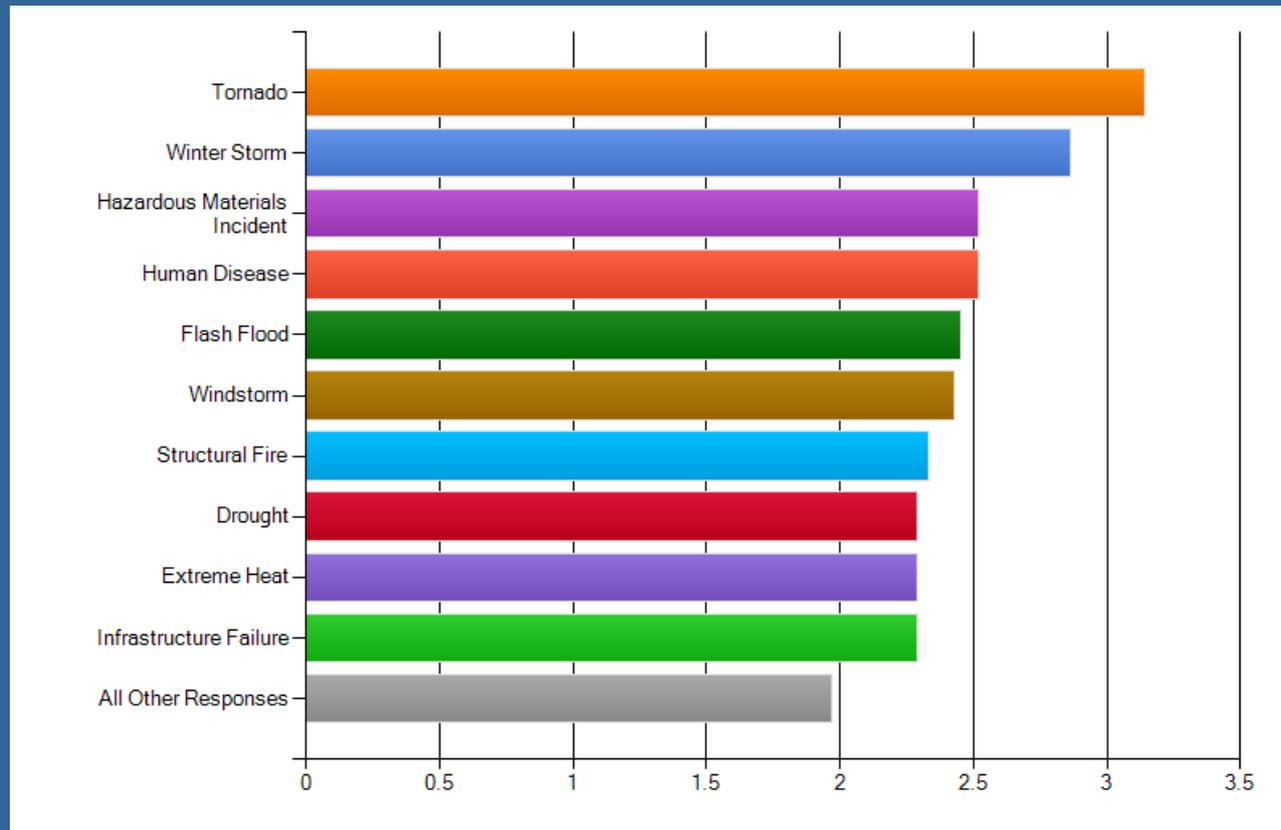
Initial Survey Results

- Probability Rankings:



Initial Survey Results

- Magnitude Rankings:



Participating Jurisdictions—Review Requirements

- **Meeting Participation** —Designate a representative to serve on the Polk County Hazard Mitigation Planning Committee, which will meet three times during the planning process,
- **Data Collection Guides** —Provide data and comment on plan drafts as requested,
- **Mitigation Actions**— Assist in the development of a risk assessment and mitigation actions (at least one) specific to the jurisdiction,
- **Disseminate Information** —Inform the public, local officials, and other interested parties about the planning process and provide opportunity for them to comment on the plan, and
- **Formally adopt the mitigation plan**

Jurisdiction	MEETING #1	DATA COLLECTION GUIDE	SOFT MATCH FORM(S)
City of Alleman			
City of Altoona	X	X	X
City of Ankeny	X	X	X
City of Bondurant	X	X	
City of Carlisle	NR	NR	NR
City of Clive	X	X	X
City of Des Moines	X	X	X
City of Elkhart		X	X
City of Granger	NR	NR	NR
City of Grimes	X	X	X
City of Johnston	X	X	X
City of Mitchellville	X	X	X
City of Norwalk	X- NR	NR	NR
City of Pleasant Hill	X	X	X
City of Polk City	X	X	X
City of Runnells		X	
City of Sheldahl	NR	NR	NR
City of Urbandale	X	X	X
City of West Des Moines	X	X	
City of Windsor Heights	X	X	X
Unincorporated Polk County	X	X	X
Ankeny, 261		X	
Bondurant-Farrar, 720			
Dallas Center-Grimes, 1576		X	X
Des Moines Independent, 1737		X	
Johnston, 3231	X		
North Polk, 4779		X	
Saydel, 5805			
Southeast Polk, 6101			
Urbandale, 6579		X	
West Des Moines	X	X	X

Critical Facilities

- Critical Facility—essential in providing utility or direction either during the response to an emergency or during the recovery operation.
 - Essential Facility—if damaged would have devastating impacts on disaster response and/or recovery.
 - High Potential Loss Facility—if damaged would have a high loss or impact on the community.
 - Transportation/Lifeline Facility—assets critical for transport and provision of necessary utilities

Critical Facility Examples

Essential Facilities	High Potential Loss Facilities	Transportation and Lifeline
<ul style="list-style-type: none"> •Hospitals and other medical facilities •Police stations •Fire station •Emergency Operations Centers 	<ul style="list-style-type: none"> •Power plants •Dams/levees •Military installations •Hazardous material sites •Schools •Shelters •Day care centers •Nursing homes •Main government buildings 	<ul style="list-style-type: none"> •Highways, bridges, and tunnels •Railroads and facilities •Bus facilities •Airports •Water treatment facilities •Natural gas facilities and pipelines •Oil facilities and pipelines •Communications facilities

Analysis of Critical Facilities

- Impacts of some hazards will be considered for critical facilities
 - River Flood—critical facilities in floodplain
 - Hazardous Materials Incidents—critical facilities in ½ mile Initial Isolation Zone of Tier II Facilities
- GIS Layers for Critical Facilities
 - 2011 HAZUS Project: data from Des Moines Area Regional GIS Partnership hosted by City of Des Moines
 - Childcare Facilities: Des Moines Area Regional GIS Partnership hosted by City of Des Moines
 - Nursing Home Facilities-Des Moines Area Regional GIS Partnership hosted by City of Des Moines

Types of Facilities in Inventory

- Airport
- Bus
- Child Care
- Communications
- County Government
- Electric Power
- Emergency Management
- Federal Government
- Fire Station
- Group Housing
- Health Care
- Highway Bridge
- Local Government
- Military
- Nursing Home
- Police Station
- Potable Water
- Rail
- Railway Bridge
- Red Cross
- School
- State Government
- Wastewater

Types of Facilities Excluded from Inventory (part of 2011 HAZUS Project Inventory)

- Botanical Gardens
- Cemetery
- Chamber of Commerce
- Community Center
- Fair Grounds
- Golf Course
- Library
- Marina
- Park
- Parking
- Pool
- Recreation
- Zoo

Polk County Multi-Jurisdictional Hazard Mitigation Plan

Jurisdiction	# of Critical Facilities in Inventory
Alleman	55
Altoona	57
Ankeny	162
Bondurant	27
Carlisle	9
Carlisle (Warren)	2
Clive	58
Clive (Dallas)	5
Des Moines	978
Des Moines (Warren)	22
Elkhart	8
Grimes	44
Johnston	73
Mitchellville	11
Norwalk	1
Pleasant Hill	61
Polk City	15
Polk County	425
Runnells	5
Urbandale	106
Urbandale (Dallas)	8
West Des Moines	175
West Des Moines (Dallas)	35
West Des Moines (Warren)	1
Windsor Heights	22
Total	2,365

Validate Critical Facilities

- 2,365 Facilities (138 are public schools)
- Spreadsheet and/or GIS layer can also be provided to you for validation
- Validate and return/reply to Laurie Bestgen by 11/22
- Inventory/Maps and Hazard Analysis Results will be FOUO Appendix

Plan Update Format

- Executive Summary
- Chapter 1—Planning Process
- Chapter 2—Jurisdiction Profiles
- **Chapter 3—Risk Assessment**
- Chapter 4—Mitigation Strategy
- Chapter 5—Plan Maintenance
- Appendices

Polk County DRAFT Risk Assessment—Chapter 3

- Available on project FTP site (instructions on back of agenda)
- Review and Comment—Comments Due 11/22
 - Hyperlinked Table of Contents and references throughout
 - Utilize PDF search function for key words/name of jurisdiction
 - Yellow Highlight Indicates Information Needed/Revision Needed
- Presentation is Overview of High and Moderate Ranked Hazards (15)

Polk County

Multi-Jurisdictional Hazard Mitigation Plan

Hazard	Probability	Magnitude	Warning Time	Duration	Weighted Score	Level
River Flooding	4	3	1	4	3.25	High
Winter Storm	4	2	3	3	3.15	High
Flash Flood	4	3 (from 2)	2 (from 1)	1	3.10	High
HAZMAT Incident	4	2 (from 1)	4	1	3.10	High
Structural Fire	4	2	4	1	3.10	High
Transportation Incident	4	2	4	1	3.10	High
Tornado	4	2 (from 3)	3	1	2.95	Moderate
Levee Failure	2	3	4	4	2.80	Moderate
Windstorm	4	1 (from 2)	3 (from 2)	2	2.75	Moderate
Thunderstorm/Lightning/Hail	4	1 (from 2)	3 (from 2)	1 (from 2)	2.65	Moderate
Drought	3	2	1	4	2.50	Moderate
Infrastructure Failure	2	2	4	4	2.50	Moderate
Human Disease	2	3	2	4	2.50	Moderate
Grass/Wildland Fire	4	1	1	1	2.35	Moderate
Dam Failure	1	3	4	4	2.35	Moderate
Extreme Heat	2	2	1	3	1.95	Low
Animal/Plant/Crop Disease	1	2	1	4	1.60	Low
Earthquake	1	1	4	1	1.45	Low
Sinkholes/Landslide	1	1	4 (from 2)	1	1.45	Low
Expansive Soils	2	1	1	1	1.45	Low

Chapter 3 Includes the Following for EACH Hazard

- Hazard Profile
 - Hazard Description
 - Geographic Location/Extent
 - Previous Occurrences
 - Probability of Future Occurrence
- Vulnerability Assessment
 - Vulnerability Overview
 - Potential Losses to Existing Development
 - Future Development
 - Hazard Summary by Jurisdiction

Multi-Jurisdictional Hazard Mitigation Plan

Example Hazard Ranking Tables

Planning area Overview - Beginning of Each Hazard Section

Ranking for Each Jurisdiction- End of Each Hazard Section

Hazard Score Calculation

Probability	Magnitude/Severity	Warning Time	Duration	Weighted Score	Level
1	3	4	4	2.35	Moderate

Jurisdiction	Probability	Magnitude	Warning Time	Duration	Score	Level
Polk County	1	3	4	4	2.35	Moderate
Cities						
City of Alleman	N/A	N/A	N/A	N/A	N/A	N/A
City of Altoona	1	2	4	4	2.05	Moderate
City of Ankeny	1	3	4	4	2.35	Moderate
City of Bondurant	N/A	N/A	N/A	N/A	N/A	N/A
City of Clive	1	3	4	4	2.35	Moderate
City of Des Moines	1	3	4	4	2.35	Moderate
City of Elkhart	N/A	N/A	N/A	N/A	N/A	N/A
City of Grimes	N/A	N/A	N/A	N/A	N/A	N/A
City of Johnston	1	3	4	4	2.35	Moderate
City of Mitchellville	N/A	N/A	N/A	N/A	N/A	N/A
City of Pleasant Hill	1	3	4	4	2.35	Moderate
City of Polk City	1	3	4	4	2.35	Moderate
City of Runnells	1	3	4	4	2.35	Moderate
City of Urbandale	1	3	4	4	2.35	Moderate
City of West Des Moines	1	3	4	4	2.35	Moderate
City of Windsor Heights	N/A	N/A	N/A	N/A	N/A	N/A
School Districts						
Ankeny, 261	1	3	4	4	2.35	Moderate
Bondurant-Farrar, 720	N/A	N/A	N/A	N/A	N/A	N/A
Dallas Center-Grimes, 1576	N/A	N/A	N/A	N/A	N/A	N/A
Des Moines Independent, 1737	1	3	4	4	2.35	Moderate
Johnston, 3231	1	3	4	4	2.35	Moderate
North Polk, 4779	N/A	N/A	N/A	N/A	N/A	N/A
Saydel, 5805	1	3	4	4	2.35	Moderate
Southeast Polk, 6101	1	3	4	4	2.35	Moderate
Urbandale, 6579	1	3	4	4	2.35	Moderate
West Des Moines	1	3	4	4	2.35	Moderate



Sample
Risk Assessment Results
High and Moderate
Hazards

River Flooding

- 10 Presidential Disaster Declarations including Polk County since 1969 included flooding
- Portions of 4 Watersheds in Polk Co.
 - South Skunk
 - Middle Des Moines
 - North Raccoon
 - Lake Red Rock
- Preliminary Digital Flood Insurance Rate Maps
 - Under revision through RiskMap due to new discharge estimates from USACE in 2011
 - New preliminary DFIRM will be issued some time in 2014 as part of RiskMap
 - Analysis for Risk Assessment utilized Preliminary DFIRM with revisions to approximate study areas provided by the Iowa Flood Center
 - Exposure and Loss Estimates based on Parcel and Building Data from Des Moines Regional GIS Partnership hosted by City of Des Moines

Polk County Multi-Jurisdictional Hazard Mitigation Plan

1-Percent Annual Chance Flood (100-year Flood) Analysis Results

Jurisdiction	Total Building Value at Risk	Estimated Building Losses	Number of Residential Buildings	Average household Size	Estimated Impacted Population
Alleman	\$2,039,500	\$407,900	4	2.86	11
Altoona	\$11,798,800	\$2,359,760	32	2.64	84
Ankeny	\$97,953,000	\$19,590,600	395	2.58	1,019
Bondurant	\$11,051,200	\$2,210,240	52	2.83	147
Carlisle*	\$131,300	\$26,260	0	2.57	0
Clive (Dallas)	\$17,994,590	\$3,598,918	29	2.68	78
Clive (Polk)	\$179,772,730	\$35,954,546	451	2.68	1,209
Des Moines (Polk)	\$323,991,070	\$64,798,214	1,809	2.43	4,396
Des Moines (Warren)	\$0	\$0	0	2.43	0
Elkhart	\$0	\$0	0	2.67	0
Granger*	\$0	\$0	0	2.59	0
Grimes (Dallas)	\$0	\$0	0	2.65	0
Grimes (Polk)	\$48,666,600	\$9,733,320	284	2.65	753
Johnston	\$121,652,250	\$24,330,450	72	2.67	192
Mitchellville	\$0	\$0	0	2.53	0
Mitchellville (Jasper)	\$0	\$0	0	2.53	0
Norwalk*	\$0	\$0	0	2.53	0
Pleasant Hill	\$15,214,100	\$3,042,820	17	2.57	44
Polk City	\$5,850,200	\$1,170,040	22	2.73	60
Polk County Unincorporated	\$141,742,750	\$28,348,550	1,680	2.48	4,166
Runnels	\$0	\$0	0	2.83	0
Sheldahl*	\$0	\$0	0	2.57	0
Urbandale (Dallas)	\$33,412,050	\$6,682,410	97	2.52	244
Urbandale (Polk)	\$153,685,000	\$30,737,000	469	2.52	1,182
West Des Moines (Dallas)	\$50,108,060	\$10,021,612	8	2.32	19
West Des Moines (Madison)	\$0	\$0	0	2.32	0
West Des Moines (Polk)	\$138,660,800	\$27,732,160	423	2.32	981
West Des Moines (Warren)	\$0	\$0	0	2.32	0
Windsor Heights	\$32,539,900	\$6,507,980	128	2.24	287
Total	\$1,386,263,900	\$277,252,780	5,972	N/A	14,872

Polk County Multi-Jurisdictional Hazard Mitigation Plan

Estimated Losses: Loss Ratio

(100-yr flood losses compared to total exposure value in jurisdiction)

Jurisdiction	Building Exposure (\$)	Estimated Building Losses	Loss Ratio %
Alleman	\$24,364,900	\$407,900	1.7%
Altoona	\$957,693,680	\$2,359,760	0.2%
Ankeny	\$2,936,209,050	\$19,590,600	0.7%
Bondurant	\$204,495,420	\$2,210,240	1.1%
Carlisle*	\$13,561,600	\$26,260	0.2%
Clive	\$1,427,445,690	\$39,553,464	2.8%
Des Moines	\$9,453,905,860	\$64,798,214	0.7%
Elkhart	\$23,919,600	\$0	0.0%
Granger*	\$15,440,500	\$0	0.0%
Grimes	\$544,058,200	\$9,733,320	1.8%
Johnston	\$1,473,397,350	\$24,330,450	1.7%
Mitchellville	\$59,238,800	\$0	0.0%
Norwalk*	\$0	\$0	0.0%
Pleasant Hill	\$524,475,690	\$3,042,820	0.6%
Polk City	\$216,399,800	\$1,170,040	0.5%
Polk County Unincorporated	\$1,820,273,890	\$28,348,550	1.6%
Runnells	\$18,350,900	\$0	0.0%
Sheldahl*	\$5,266,100	\$0	0.0%
Urbandale	\$3,039,647,700	\$37,419,410	1.2%
West Des Moines	\$4,707,775,460	\$37,753,772	0.8%
Windsor Heights	\$275,606,100	\$6,507,980	2.4%



Polk County

Multi-Jurisdictional Hazard Mitigation Plan

Flood Insurance Policies and Claims 1978-July 31, 2013

Community Name	Policies in Force	Insurance in Force	Closed Losses	Total Payments
Altoona, City of	5	\$825,000	1	\$11,937
Ankeny, City of	50	\$9,169,100	5	\$18,916
Bondurant, City of	10	\$2,091,000	0	\$0
Carlisle, City of	5	\$1,217,900	0	\$0
Clive, City of	141	\$42,576,900	28	\$653,271
Des Moines, City of	747	\$176,719,100	607	\$17,027,471
Granger, City of	2	\$560,000	0	\$0
Grimes, City of	21	\$4,873,500	2	\$19,261
Johnston, City of	53	\$19,721,400	13	\$882,051
Mitchellville	0	\$0	0	\$0
Norwalk, City of	9	\$1,937,100	0	\$0
Pleasant Hill, City of	23	\$2,295,100	6	\$79,393
Polk County *	128	\$26,393,000	68	\$1,558,338
Runnells, City of	0	\$0	0	\$0
Urbandale, City of	47	\$9,589,500	7	\$49,543
West Des Moines, City of	137	\$36,028,800	294	\$3,542,116
Windsor Heights, City of	25	\$6,950,300	6	\$57,282
Total	1,403	\$340,947,700	1,037	\$23,899,579

Polk County Multi-Jurisdictional Hazard Mitigation Plan

Repetitive Loss Properties

136 Total Repetitive Loss properties in Polk County—2 or more payments of \$5,000 or more in 10 yrs.

107 have been mitigated-leaving 29 unmitigated properties

Jurisdiction	# of Properties	# Mitigated	Building Payments	Contents Payments	Total Payments	Average Payment	# of Losses
Clive, City of	1	0	\$8,863	\$989	\$9,853	\$4,926	2
Des Moines, City of	94	74	\$4,545,020	\$924,957	\$5,469,977	\$2,080,559	243
Pleasant Hill, City of	1	0	\$59,411	\$0	\$59,411	\$29,706	2
Polk County (unincorporated)	5	0	\$103,349	\$0	\$103,349	\$41,937	12
Urbandale, City of	1	0	\$3,210	\$2,416	\$5,626	\$2,813	2
West Des Moines, City of	33	32	\$1,006,805	\$405,443	\$1,412,248	\$581,904	74
Windsor Heights, City of	1	1	\$11,860	\$0	\$11,860	\$5,930	2
Total	136	107	\$5,738,519	\$1,333,805	\$7,072,324	\$2,747,775	337

Polk County

Multi-Jurisdictional Hazard Mitigation Plan

Winter Storm

Disaster Number	Description	Declaration Date (Incident Period)
DR-1688	Severe Winter Storms	03/14/2007 (2/23 to 3/2/2007)
DR-1191	Severe Snow Storm	11/20/1997 (10/26 to 10/28/1997)

At least 3 Winter or Ice Storms every year in last 17.3 year timeframe. (NCDC)

NWS Des Moines Weather Forecast Office has issued 178 Advisory, Watch, and/or Warnings concerning winter weather (between 2005 and May 2013)

Phenomena	Significance	Number Issued
Blizzard	Warning	8
Blizzard	Watch	3
Blowing Snow	Advisory	5
Freeze	Warning	9
Freeze	Watch	4
Freezing Fog	Advisory	1
Freezing Rain	Advisory	5
Frost	Advisory	10
Heavy Snow	Warning	1
Ice Storm	Warning	3
Snow	Advisory	12
Snow & Blowing Snow	Advisory	7
Wind Chill	Warning	3
Winter Storm	Warning	19
Winter Storm	Watch	33
Winter Weather	Advisory	58
Total		178

Polk County Multi-Jurisdictional Hazard Mitigation Plan

Power
Loss=
Economic
Losses

FEMA Loss
of Use
Estimates

Jurisdiction	County	Population	Estimated Affected Population 10%	Electric Loss of Use Estimate (\$126 per person per day)
City of Alleman	Polk	432	43	\$5,443
City of Altoona	Polk	14,541	1,454	\$183,217
City of Ankeny	Polk	45,580	4,558	\$574,308
City of Bondurant	Polk	3,860	386	\$48,636
City of Carlisle	Polk	82	8	\$1,033
City of Clive	Dallas	4,713	471	\$59,384
City of Clive	Polk	10,728	1,073	\$135,173
City of Des Moines	Polk	204,122	20,412	\$2,571,937
City of Des Moines	Warren	625	63	\$7,875
City of Elkhart	Polk	683	68	\$8,606
City of Granger	Polk	212	21	\$2,671
City of Grimes	Dallas	14	1	\$176
City of Grimes	Polk	8,232	823	\$103,723
City of Johnston	Polk	17,278	1,728	\$217,703
City of Mitchellville	Jasper	26	3	\$328
City of Mitchellville	Polk	2,228	223	\$28,073
City of Norwalk	Polk	0	0	\$0
City of Pleasant Hill	Polk	9,009	901	\$113,513
City of Polk City	Polk	3,416	342	\$43,042
Polk County	Polk	26,624	2,662	\$335,462
City of Runnells	Polk	507	51	\$6,388
City of Sheldahl	Polk	134	13	\$1,688
City of Urbandale	Dallas	6,339	634	\$79,871
City of Urbandale	Polk	33,070	3,307	\$416,682
City of West Des Moines	Dallas	11,764	1,176	\$148,226
City of West Des Moines	Madison	3	0	\$38
City of West Des Moines	Polk	44,999	4,500	\$566,987
City of West Des Moines	Warren	41	4	\$517
City of Windsor Heights	Polk	4,903	490	\$61,778
Total		454,165	45,417	\$5,722,479

Polk County

Multi-Jurisdictional Hazard Mitigation Plan

Vulnerable Populations

Jurisdiction	Population Under 5 yrs	Population 65 yrs and over
Polk County	32,816	46,545
City of Alleman	19	32
City of Altoona	1,240	1,316
City of Ankeny	4,204	3,795
City of Bondurant	427	97
City of Carlisle	277	475
City of Clive	1,107	1,541
City of Des Moines	16,152	22,318
City of Elkhart	89	52
City of Granger	36	123
City of Grimes	817	471
City of Johnston	1,239	1,712
City of Mitchellville	121	230
City of Norwalk	612	512
City of Pleasant Hill	736	989
City of Polk City	328	264
City of Runnels	51	54
City of Sheldahl	25	44
City of Urbandale	2,778	4,664
City of West Des Moines	3,995	6,028
City of Windsor Heights	289	870

Polk County Multi-Jurisdictional Hazard Mitigation Plan

Flash Flood—NCDC Flash Flood Events 1996-April 2013

Location	# of Events
Unincorporated County	13
-Unincorporated County (unspecified)	
-Unincorporated County (Hastier area)-1	
-Unincorporated County (Lovington area)-5	
-Unincorporated County (North Portion)-2	
-Unincorporated County (Santiago area)-2	
-Unincorporated County (Swanwood area)-1	
Altoona	1
Ankeny	8
-Ankeny (unspecified) -6	
-Ankeny (Oralabor area)-1	
-Ankeny (Saylorville area)-1	
Des Moines	19
-Des Moines (unspecified)-18	
-Des Moines (Avon area)-1	
Elkhart	1
Grimes	3
Mitchelville	1
Pleasant Hill-Youngstown area	1
Polk City	2
Runnells	1
Urbandale	7
-Urbandale (unspecified)-6	
-Urbandale(Rider area)-1	
West Des Moines	4
-West Des Moines (unspecified)-3	
-West Des Moines (Clover Hills area)-1	
Windsor Hgts	1
Des Moines International Airport	4
Countywide	1
Total	66

- Risk Assessment includes specific areas/intersections
- NWS Flash Flood Watches/Warnings
 - Average 8 per year ea. for Polk Co.
- Annual Average Property Losses \$250K

Polk County Multi-Jurisdictional Hazard Mitigation Plan

Ice Jams (Sept. 1993 to August 2013)

City	River	Jam Date	Water Year	Gage Number
Des Moines	Raccoon River	2/17/2011	2011	
Des Moines	Raccoon River	3/10/2010	2010	5484900
Des Moines	Raccoon River	12/28/2008	2009	5484900
Des Moines	Raccoon River	12/27/2008	2009	5484900
Norwalk	North River	12/27/2008	2009	5486000
Norwalk	North River	12/27/2008	2009	5486000
Des Moines	Raccoon River	12/10/2007	2008	5484650
Saylorville	Des Moines River	1/23/2005	2005	5481650
Des Moines	Des Moines River	1/23/2005	2005	5485500
Runnells	Des Moines River	1/23/2005	2005	5487500
Des Moines	Des Moines River	1/23/2005	2005	5482000
Des Moines	Walnut Creek	12/24/2004	2005	5484800
Des Moines	Raccoon River	3/15/2001	2001	5484650
Des Moines	Raccoon River	2/21/1997	1997	5484650
Norwalk	North River	2/20/1997	1997	5486000
Des Moines	Raccoon River	2/1/1996	1996	Not Reported
Des Moines	Raccoon River	3/4/1993	1993	Not Reported
Des Moines	Raccoon River	3/4/1993	1993	Not Reported

Source: US Army Corps of Engineers, Cold Regions Research and Engineering Laboratory, website accessed 8/28/2013;
<http://www.crrel.usace.army.mil/>

HAZMAT Incident

- Fixed Facilities
- Transportation Incidents
- Pipeline Incidents

Polk County Multi-Jurisdictional Hazard Mitigation Plan

Fixed Facilities: Tier II Facilities and Facilities with Extremely Hazardous Substances (EHS)

Jurisdiction	Tier II Facilities	EHS Facilities
Alleman	1	1
Altoona	10	5
Ankeny	19	14
Bondurant	3	2
Carlisle*	2	2
Clive (Dallas)	0	0
Clive (Polk)	6	1
Des Moines (Polk)	122	56
Des Moines (Warren)	0	0
Elkhart	1	0
Granger*	0	0
Grimes (Dallas)	0	0
Grimes (Polk)	10	3
Johnston	13	8
Mitchellville	3	3
Mitchellville (Jasper)	0	0
Norwalk*	0	0
Pleasant Hill	15	7
Polk City	2	2
Polk County Unincorporated	61	30
Runnells	0	0
Sheldahl*	0	0
Urbandale (Dallas)	0	0
Urbandale (Polk)	24	15
West Des Moines (Dallas)	2	2
West Des Moines (Madison)	0	0
West Des Moines (Polk)	16	6
West Des Moines (Warren)	0	0
Windsor Heights	1	1
Total	311	158

Transportation HAZMAT Incidents

- 1-35 and 1-80 have traffic counts above 13,000/day
- Other Roadways with high volume
 - U.S. 6, Iowa 141, Iowa 160
- Four Freight Rail Road Companies
 - Burlington Northern Santa Fe Railroad
 - Norfolk Southern Railroad
 - Union Pacific Railroad
 - Iowa Interstate Railroad
- Air Freight: Des Moines International Airport, Ankeny Airport, 7 regional airports

**Inbound/Outbound
Freight reported by
Commodity for each
Mode of Transport—
2002 Goods
Movement Report**

Polk County Multi-Jurisdictional Hazard Mitigation Plan

Hazardous Materials Spills Reported to DNR 1995-July 2013

Location	Reported Spills
Unincorporated County	18
Alleman	5
Altoona	84
Ankeny	110
Bondurant	24
Carlisle	3
Clive	85
Des Moines	963
Elkhart	9
Granger	2
Grimes	21
Johnston	59
Mitchellville	18
Norwalk	1
Pleasant Hill	84
Polk City	11
Runnells	8
Sheldahl	1
Urbandale	95
West Des Moines	121
Windsor Heights	16
Total	1,738

124 Air Releases
198 Ground Water Impacts
1,550 Land
52 Surface Water Impacts

**Note: Some spills had
multiple impacts**

Polk County Multi-Jurisdictional Hazard Mitigation Plan

Pipelines

- 102 miles of gas pipelines (blue)
- 1,571 miles of liquid pipelines (red)
- Significant Pipeline Incidents 2002-July 2013)



Date	City	Operator	Cause	Sub-Cause	Fatalities	Injuries	Property Damage	Gross Barrels Spilled (Haz&Nbsp; Liq)	Net Barrels Lost (Haz&Nbsp; Liq)
01/02/2002	Des Moines	Williams Pipe Line Company	Mat'l/Weld/ Equip Failure	Malfunction of Control/Relief Equipment	0	0	\$6,214	0	0
01/25/2008	Des Moines	Magellan Pipeline Company Lp	Natural Force Damage	Temperature	0	0	\$117,686	2	1
05/12/2011	Des Moines	Midamerican Energy Company	All Other Causes	Unknown Cause	0	1	\$5,335	N/A	N/A
01/22/2012	Pleasant Hill	Oneok Ngl Pipeline Lic	M at'l/Weld/ Equip Failure	Threaded Connection/C oupling Failure	0	0	\$5,393	12	6
Totals					0	0	\$134,628	14	7

Hazardous Materials Incident Cost Estimate

- \$1,270 per gallon response cost for crude oil, gasoline, and other fuels (Pipelines and Hazardous Materials Safety Administration)
- Average size of this type of spill in Polk County was 115.6 gallons (1995-July 3013)
- \$146,812 per spill
- Average 2.1 spills of this type per year
- \$308,305 response costs per year for this type of spill.

Polk County

Multi-Jurisdictional Hazard Mitigation Plan

Structural Fire Data from National Fire Incident Reporting System (NFIRS)

Fire Departments	2012 Total Reports Received	2012 Total Structure Fires Reported	Total Incident Property Loss	Total Incident Content Loss	Incident Civilian Injury	Incident Civilian Death
Altoona Fire Department	1,699	35	\$27,000	\$38,450	0	0
Ankeny Fire Department	3,304	61	\$488,099	\$241,999	1	0
Bondurant Fire Department	323	10	\$0	\$0	0	0
Clive Fire Department	1,046	27	\$9,643	\$500	0	0
Delaware Twp Fire Department	432	31	\$107,656	\$20,100	0	0
Des Moines Fire Department	20,164	335	\$3,666,563	\$1,158,072	21	3
Elkhart Fire Department	87	9	\$7,000	\$45,000	0	0
Grimes Fire Department	740	15	\$210,750	\$81,200	1	0
Johnston Fire Department	1,099	31	\$256,000	\$151,000	0	0
Mitchellville Fire Department	0	0	\$0	\$0	0	0
Pleasant Hill Fire Department	829	28	\$54,400	\$36,000	1	0
Polk City Fire Department	363	12	\$0	\$1,000	0	0
Runnells Fire Department	0	0	\$0	\$0	0	0
Saylor Twp Fire Department	735	25	\$173,000	\$82,500	0	0
Urbandale Fire Department	2,605	53	\$452,921	\$111,945	0	0
West Des Moines Fire Department	2,467	70	\$1,441,400	\$193,660	1	0
Windsor Heights Fire Department	0	0	\$0	\$0	0	0
Total	35,927	742	\$6,894,432	\$2,161,426	25	3

Multi-Jurisdictional Hazard Mitigation Plan

Transportation Incident – Potential Cost of Traffic Crashes

	Fatal Crash	Major Crash	Minor Crash	Crash with Property Damage Only
Polk County (unincorporated)				
Average Annual Cost	\$31,565,395	\$1,498,464	\$2,396,640	\$2,075,017
City of Altoona				
Average Annual Cost	\$2,869,581	\$158,928	\$437,387	\$476,569
City of Ankeny				
Average Annual Cost	\$9,018,684	\$754,908	\$2,037,144	\$1,540,729
City of Clive				
Average Annual Cost	\$2,049,701	\$397,320	\$934,690	\$927,907
City of Des Moines				
Average Annual Cost	\$47,963,003	\$7,038,240	\$14,271,991	\$11,877,649
City of Grimes				
Average Annual Cost	\$1,639,761	\$73,788	\$179,748	\$226,142
City of Johnston				
Average Annual Cost	\$2,049,701	\$113,520	\$290,593	\$378,795
City of Pleasant Hill				
Average Annual Cost	\$2,869,581	\$158,928	\$293,588	\$251,058
City of Urbandale				
Average Annual Cost	\$5,739,163	\$658,416	\$1,336,127	\$1,865,276
City of West Des Moines				
Average Annual Cost	\$11,068,385	\$1,072,764	\$2,552,422	\$2,103,087
City of Windsor Heights				
Average Annual Cost	\$2,049,701	\$175,956	\$389,454	\$464,584

Cost of Traffic Crashes based on historical # of crashes and Federal Hwy Admin's estimated cost of traffic crashes.

Tornado

- NCDC estimate for past property damages from 1980-April 2013 is \$14 million. This translates to \$402,163 in annualized losses over the 34.3-year period.
- 27 Recorded Tornadoes: 1-F4, 4-F2, 10-F1, and 12-F0.



Polk County

Multi-Jurisdictional Hazard Mitigation Plan

Tornado Damage Scenarios

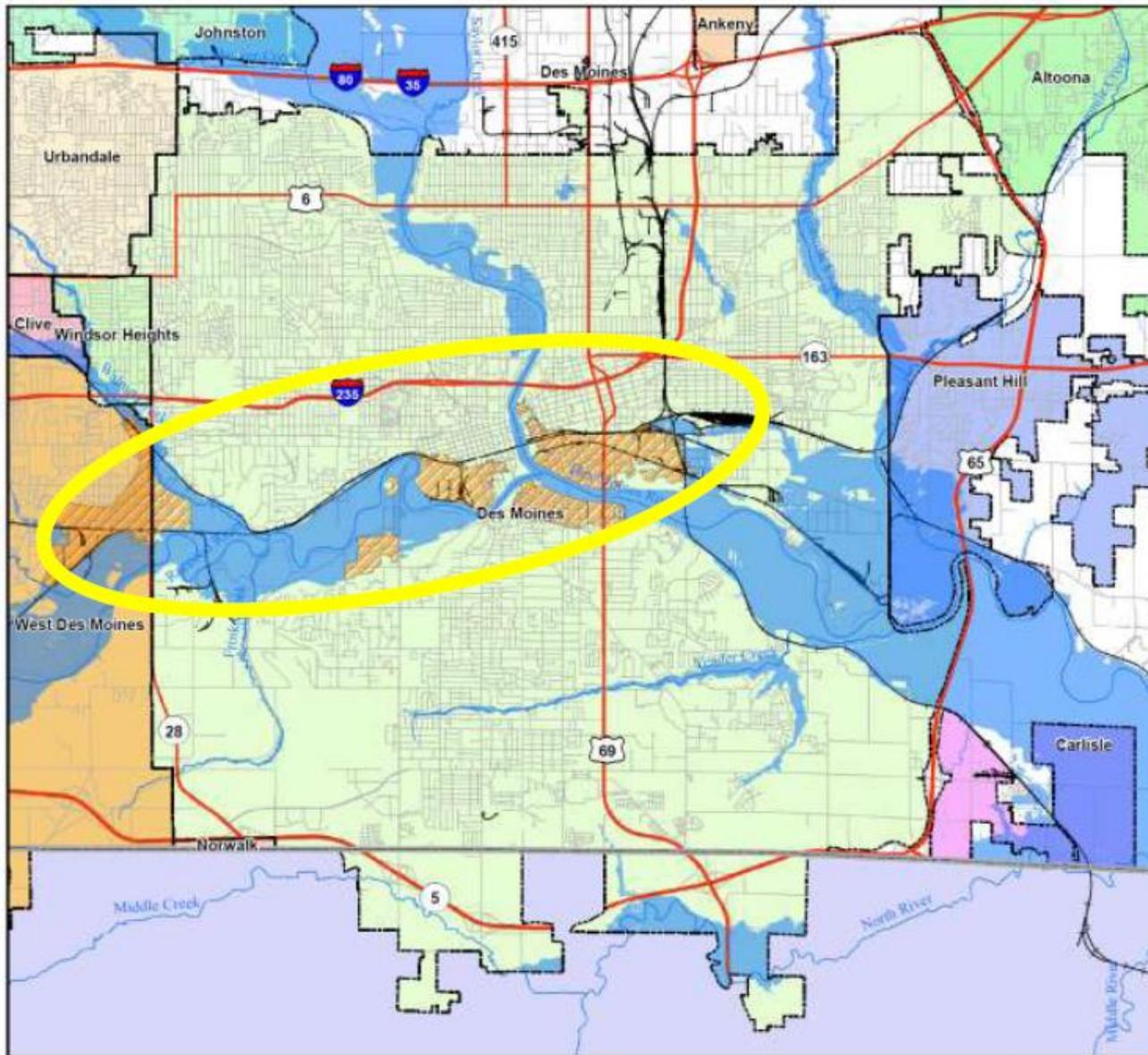
F1/EF1, 100 mph, 50yds X 3 mile path, 45 degree angle

Jurisdiction	# of Buildings in Path	Total Building Values in Path	10% Loss Estimate
Polk County	36	\$1,140,200	\$114,020
City of Alleman	2	\$199,700	\$19,970
City of Altoona	134	\$11,194,600	\$1,119,460
City of Ankeny	164	\$15,011,800	\$1,501,180
City of Bondurant	41	\$3,018,260	\$301,826
City of Carlisle	10	\$268,600	\$26,860
City of Clive	8	\$5,412,200	\$541,220
City of Des Moines	266	\$11,714,330	\$1,171,433
City of Elkhart	19	\$2,004,000	\$200,400
City of Granger	6	\$1,281,300	\$128,130
City of Grimes	34	\$3,370,900	\$337,090
City of Johnston	19	\$4,957,500	\$495,750
City of Mitchellville	37	\$1,089,400	\$108,940
City of Norwalk	0	\$0	\$0
City of Pleasant Hill	69	\$6,240,690	\$624,069
City of Polk City	46	\$2,603,800	\$260,380
City of Runnells	29	\$1,953,100	\$195,310
City of Sheldahl	12	\$627,700	\$62,770
City of Urbandale	55	\$10,619,100	\$1,061,910
City of West Des Moines	119	\$51,459,450	\$5,145,945
City of Windsor Heights	68	\$5,391,100	\$539,110

Levee Failure

- Des Moines-6 levee systems shown as providing protection from 1-percent annual chance flood
- West Des Moines-1 levee system shown as providing protection from 1-percent annual chance flood

Polk County Multi-Jurisdictional Hazard Mitigation Plan



Polk County Multi-Jurisdictional Hazard Mitigation Plan

Building Counts/Values and Estimated Population in Levee Protected Areas

Jurisdiction	Residential	Commercial	Government	School	Industrial	Agricultural	Total Test	Average Household Size	Est. Population at Risk
Des Moines (Polk)	1,872	457	155	5	157	1	2,647	2.43	4,549
West Des Moines (Polk)	1,302	321	132	2	37		1,794	2.32	3,021
Total	3,174	778	287	7	194	1	4,441	N/A	7,570

Jurisdiction	Residential	Commercial	Government	School	Industrial	Agricultural	Total
Des Moines (Polk)	\$85,867,900	\$147,089,390	\$2,553,540	\$1,615,000	\$31,005,600	\$0	\$268,131,430
West Des Moines (Polk)	\$60,079,200	\$37,525,600	\$638,300	\$0	\$13,264,300	\$0	\$111,507,400
Total	\$145,947,100	\$184,614,990	\$3,191,840	\$1,615,000	\$44,269,900	\$0	\$379,638,830

Polk County Multi-Jurisdictional Hazard Mitigation Plan

Windstorm

- 10-yr Annual Avg. of Crop Insurance Paid-- \$803,271
- NWS Des Moines Weather Forecast Office– High Wind Watches, Warnings, & Advisories

Year	High Wind Watch	High Wind Warning	High Wind Advisory
2013		1	3
2012		3	7
2011			6
2010	2	1	7
2009			3
2008	1	2	10
2007			8
2006		4	8
2005			2
Total	3	11	54

Polk County Multi-Jurisdictional Hazard Mitigation Plan

Vulnerable Light Frame Structures in Planning Area

Jurisdiction	Mobile Homes	Outbuildings	Sheds
Polk County	1,174	8,671	6,691
City of Alleman	2	74	65
City of Altoona	373	1,516	1,126
City of Ankeny	556	3,434	2,125
City of Bondurant	3	469	358
City of Carlisle	0	34	19
City of Clive	2	444	505
City of Des Moines	2,157	38,274	15,523
City of Elkhart	8	75	68
City of Granger	0	0	1
City of Grimes	496	718	565
City of Johnston	110	734	659
City of Mitchellville	40	414	312
City of Norwalk	0	0	0
City of Pleasant Hill	12	714	605
City of Polk City	7	439	259
City of Runnells	4	118	65
City of Sheldahl	0	60	23
City of Urbandale	76	2,673	2,220
City of West Des Moines	432	4,059	2,473
City of Windsor Heights	4	601	454
Total	5,456	63,521	34,116

Thunderstorm/Lightning/Hail

**NWS Des Moines
Weather Forecast Office
has issued 208 Severe
Thunderstorm Watch
and/or Warnings
(between 2005 and May
2013)**

Year	Severe Thunderstorm Watch	Severe Thunderstorm Warning
2013	9	8
2012	5	19
2011	9	30
2010	23	25
2009	13	22
2008	15	54
2007	15	18
2006	12	15
2005	0	17
Total	101	208

Thunderstorm/Lightning/Hail

Estimated Annualized Property is Minimal Compared to Building Exposure in Polk County.

Building Exposure	Hail/Lightning/Thunderstorm Wind Property Damages	Annualized Property Damages
\$27,741,526,290	Hail - \$13,000,000 Lightning - \$957,000 Wind - \$ 72,000,000 Total \$85,957,000	\$4,968,612

Estimated Insurable Annualized Crop Damages is Minimal Compared to Crop Exposure in Polk County

Crop Exposure (2007)	Insurance Paid (2003-2012)	Adjusted Crop Damages	Annualized Adjusted Crop Damages
\$105,403,000	Hail -\$267,431 Wind -\$803,271 Total -\$1,070,702	\$1,216,707	\$121,670

Drought

- 9 Reported Droughts in last 30 years thus 30 percent probability of drought conditions in any given year.
- USDA Risk Management Agency's insured crop damages in Polk County from 2003-2012 was \$4,817,019.
 - 58% of damages where in 2012 ONLY
 - Average Annual \$481,702.



Infrastructure Failure

- Communications
- Energy
- Water
- Sewer
- Transportation

Providers and Service Areas are discussed in Risk Assessment

FEMA Standard Values for Loss of Service

Loss of Electric Power	Cost of Complete Loss of Service
Total Economic Impact	\$126 per person per day
Loss of Potable Water Service	Cost of Complete Loss of Service
Total Economic Impact	\$93 per person per day
Loss of Wastewater Service	Cost of Complete Loss of Service
Total Economic Impact	\$41 per person per day
Loss of Road/Bridge Service	Cost of Complete Loss of Service
Vehicle Delay Detour Time	\$38.15 per vehicle per hour
Vehicle Delay Mileage	\$0.55 per mile (or current federal mileage rate)

Polk County Multi-Jurisdictional Hazard Mitigation Plan

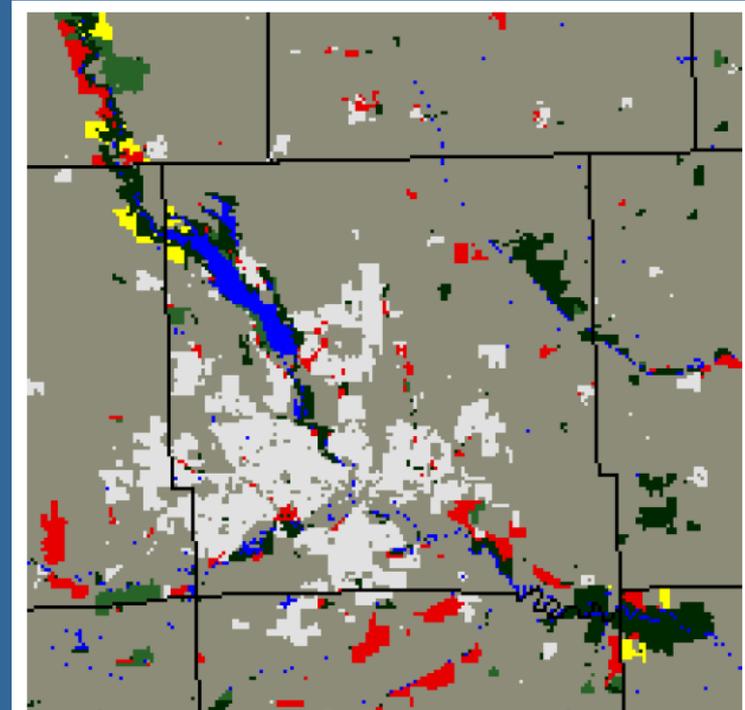
Human Disease – Pandemic Influenza Worst Case Scenario Projected # of People Affected

Jurisdiction	County	2010 Population	30% of Population Affected
City of Alleman	Polk	432	130
City of Altoona	Polk	14,541	4,362
City of Ankeny	Polk	45,580	13,674
City of Bondurant	Polk	3,860	1,158
City of Carlisle	Polk	82	25
City of Clive	Dallas	4,713	1,414
City of Clive	Polk	10,728	3,218
City of Des Moines	Polk	204,122	61,237
City of Des Moines	Warren	625	188
City of Elkhart	Polk	683	205
City of Granger	Polk	212	64
City of Grimes	Dallas	14	4
City of Grimes	Polk	8,232	2,470
City of Johnston	Polk	17,278	5,183
City of Mitchellville	Jasper	26	8
City of Mitchellville	Polk	2,228	668
City of Norwalk	Polk	0	0
City of Pleasant Hill	Polk	9,009	2,703
City of Polk City	Polk	3,416	1,025
Polk County	Polk	26,624	7,987
City of Runnells	Polk	507	152
City of Sheldahl	Polk	134	40
City of Urbandale	Dallas	6,339	1902
City of Urbandale	Polk	33,070	9921
City of West Des Moines	Dallas	11,764	3,529
City of West Des Moines	Madison	3	1
City of West Des Moines	Polk	44,999	13,500
City of West Des Moines	Warren	41	12
City of Windsor Heights	Polk	4,903	1,471
Total		454,165	136,121

Polk County Multi-Jurisdictional Hazard Mitigation Plan

Grass/Wildland Fire

Jurisdiction	Intermix (Acreage)	Interface (Acreage)
Alleman	0	0
Altoona	9	0
Ankeny	696	0
Bondurant	0	0
Carlisle*	0	0
Clive (Dallas)	57	0
Clive (Polk)	91	0
Des Moines (Polk)	1,412	0
Des Moines (Warren)	72	0
Elkhart	0	0
Granger*	0	0
Grimes (Dallas)	0	0
Grimes (Polk)	82	0
Johnston	270	0
Mitchellville	34	0
Mitchellville (Jasper)	25	0
Norwalk*	0	0
Pleasant Hill	1,086	0
Polk City	163	0
Polk County Unincorporated	3,881	1,207
Runnells	0	0
Sheldahl*	20	0
Urbandale (Dallas)	10	0
Urbandale (Polk)	25	0
West Des Moines (Dallas)	57	0
West Des Moines (Madison)	0	0
West Des Moines (Polk)	339	0
West Des Moines (Warren)	0	0
Windsor Heights	0	0
Total	8,329	1,207



Iowa

2010 Wildland Urban Interface

WUI

- Interface
- Intermix

Non-WUI Vegetated

- No Housing
- Very Low Density Housing

Non-Vegetated or Agriculture

- Medium and High Density Housing
- Low and Very Low Housing Density
- Water

Dam Failure-State-Regulated

- Jurisdictions Vulnerable to Failure of State-regulated High Hazard Dams
 - Clive, Des Moines, Pleasant Hill, Polk City, Urbandale, West Des Moines
- Jurisdictions Vulnerable to Failure of State-regulated Significant Hazard Dams
 - Altoona, Ankeny, Clive, Des Moines, Urbandale, West Des Moines
 - Risk Assessment Includes Aerial Maps of High Hazard Dams w/ Downstream Development for Context

Dam Failure-Outside Polk County

- Upstream Dams outside Polk County of Concern
 - Maffit Reservoir (Dallas Co)
 - Lake Panorama (Guthrie Co)

Polk County

Multi-Jurisdictional Hazard Mitigation Plan

Saylorville Lake Analysis-Buildings/Population Probable Maximum Flood Scenario

Jurisdiction	Residential	Commercial	Government	School	Industrial	Agricultural	Total	Avg. Household Size	Est. Population at Risk
Alleman	0	0	0	0	0	0	0	2.86	0
Altoona	0	0	0	0	0	0	0	2.64	0
Ankeny	2	0	0	0	0	0	2	2.58	5
Bondurant	0	0	0	0	0	0	0	2.83	0
Carlisle*	68	14	4	0	8	23	117	2.57	175
Clive (Dallas)	0	0	0	0	0	0	0	2.68	0
Clive (Polk)	0	0	0	0	0	0	0	2.68	0
Des Moines (Polk)	11,809	1,716	735	27	463	27	14,777	2.43	28,696
Des Moines (Warren)	0	3	0	0	0	1	4	2.43	0
Elkhart	0	0	0	0	0	0	0	2.67	0
Granger*	0	0	0	0	0	0	0	2.59	0
Grimes (Dallas)	0	0	0	0	0	0	0	2.65	0
Grimes (Polk)	0	0	0	0	0	0	0	2.65	0
Johnston	1,907	593	275	32	23	30	2,860	2.67	5,092
Mitchellville	0	0	0	0	0	0	0	2.53	0
Mitchellville (Jasper)	0	0	0	0	0	0	0	2.53	0
Norwalk*	0	0	0	0	0	0	0	2.70	0
Pleasant Hill	87	481	13	0	20	7	608	2.57	224
Polk City	0	0	0	0	0	0	0	2.73	0
Polk County Unincorporated	2,590	618	133	0	49	611	4,001	2.48	6,423
Runnells	21	2	16	0	0	4	43	2.83	59
Sheldahl*	0	0	0	0	0	0	0	2.57	0
Urbandale (Dallas)	0	0	0	0	0	0	0	2.52	0
Urbandale (Polk)	231	11	8	0	0	0	250	2.52	582
West Des Moines (Dallas)	0	0	0	0	0	0	0	2.32	0
West Des Moines (Madison)	0	0	0	0	0	0	0	2.32	0
West Des Moines (Polk)	7	12	20	0	0	4	43	2.32	16
West Des Moines (Warren)	0	0	0	0	0	0	0	2.32	0
Windsor Heights	0	0	0	0	0	0	0	2.24	0
Total	16,722	3,450	1,204	59	563	707	22,705		41,272

Polk County

Multi-Jurisdictional Hazard Mitigation Plan

Saylorville Lake Analysis-Values Probable Maximum Flood Scenario

Jurisdiction	Residential	Commercial	Government	School	Industrial	Agricultural	Total
Alleman	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Altoona	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Ankeny	\$765,500	\$0	\$0	\$0	\$0	\$0	\$765,500
Bondurant	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Carlisle*	\$2,888,800	\$4,742,000	\$0	\$0	\$4,822,000	\$343,300	\$12,796,100
Clive (Dallas)	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Clive (Polk)	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Des Moines (Polk)	\$467,372,100	\$535,544,310	\$27,520,350	\$2,646,000	\$99,859,400	\$3,100	\$1,132,945,260
Des Moines (Warren)	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Elkhart	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Granger*	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Grimes (Dallas)	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Grimes (Polk)	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Johnston	\$270,840,950	\$226,566,060	\$2,760,350	\$7,401,990	\$1,275,000	\$301,800	\$509,146,150
Mitchellville	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Mitchellville (Jasper)	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Norwalk*	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pleasant Hill	\$4,999,100	\$10,696,600	\$0	\$0	\$3,921,500	\$0	\$19,617,200
Polk City	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Polk County Unincorporated	\$109,120,300	\$43,371,000	\$684,420	\$0	\$19,490,500	\$8,073,700	\$180,739,920
Runnells	\$566,800	\$0	\$0	\$0	\$0	\$44,000	\$610,800
Sheldahl	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Urbandale (Dallas)	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Urbandale (Polk)	\$28,262,600	\$15,330,100	\$0	\$0	\$0	\$0	\$43,592,700
West Des Moines (Dallas)	\$0	\$0	\$0	\$0	\$0	\$0	\$0
West Des Moines (Madison)	\$0	\$0	\$0	\$0	\$0	\$0	\$0
West Des Moines (Polk)	\$816,600	\$173,100	\$0	\$0	\$0	\$0	\$989,700
West Des Moines (Warren)	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Windsor Heights	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Total	\$885,632,750	\$836,423,170	\$30,965,120	\$10,047,990	\$129,368,400	\$8,765,900	\$1,901,203,330

Review
Draft Risk Assessment
For Additional Details
and Remaining Hazards

Risk Assessment Comments due 11/22

- **Mail to:**

AMEC

Attn: Laurie Bestgen

1129 SW Wanamaker, Suite 101

Topeka, KS 66604

- **E-mail to:**

laurie.bestgen@amec.com

**Update Collective Goals for the Polk
County Multi-jurisdictional Hazard
Mitigation Plan**

Mitigation Strategy:

Goals and Actions

- **Goals:** Describe the overall direction of the plan
- **Actions:** Describe specific activities or projects designed to achieve goals

Common Categories of Mitigation Goals

- **Public Education**
- **Policies/Planning/Training/Communication**
- **Reduce Risk to Life and Property**
- **Protection of Critical/Essential Facilities**

State Goals

2013 Iowa State Hazard Mitigation Plan

- **Goal 1:**
- **Protect the health, safety and quality of life for Iowa citizens while reducing or eliminating property losses, economic costs, and damage to the natural environment caused by a disaster.**
- **Goal 2:**
- **Ensure government operations, response, and recovery are not significantly disrupted by disasters.**
- **Goal 3:**
- **Expand public awareness and encourage intergovernmental cooperation, coordination and communication to build a more resilient community against all hazards.**

2009 Plan Goals (Review/Revise)

- Protect the public health, safety, and welfare by increasing public awareness of hazards and by encouraging collective and individual responsibility for mitigating hazard risks.
- Improve capabilities, coordination, and opportunities at municipal and county levels to plan and implement hazard mitigation projects, programs, and activities.
- Improve data collection, use, and sharing to reduce the impact of hazards.
- Protect the most vulnerable populations, buildings, and critical facilities through the implementation of cost-effective and technically feasible mitigation actions.

Mitigation Actions

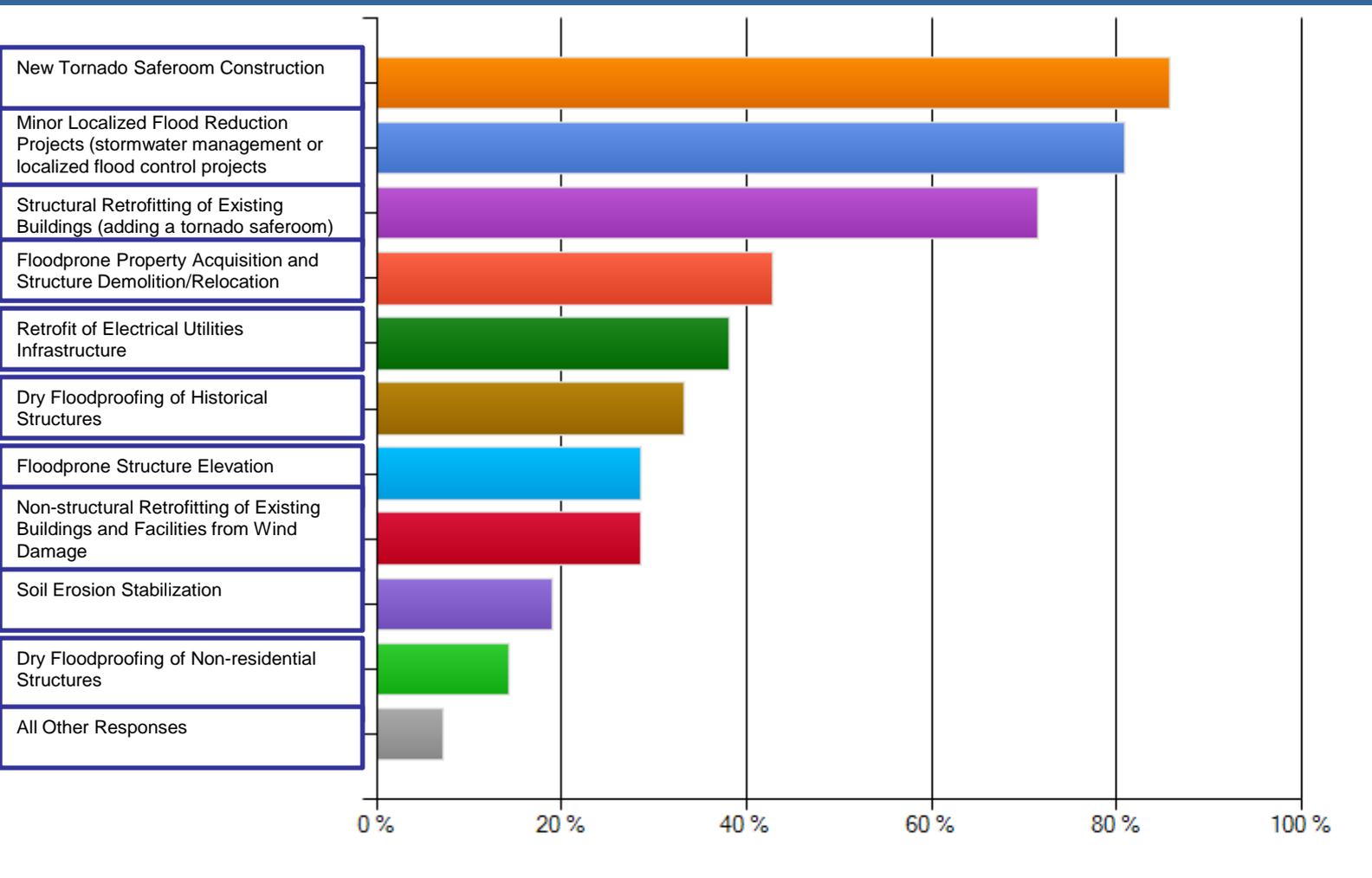
- Final Meeting on Jan. 9, 2014 will focus on update for existing actions and development of any new mitigation actions.
 - AM portion of meeting for RiskMap Meeting and Flood-related Actions
 - PM portion of meeting for Remaining Hazard Actions
- As you review the risk assessment, consider what mitigation actions could reduce/eliminate damages.
- Discuss with other representatives from your jurisdiction.
- Mitigation strategy should be comprehensive.....not just those that IA HS&EM / FEMA will fund.
- Each jurisdiction must have AT LEAST one action.
- Communities that participate in NFIP must have an ADDITIONAL action that relates to continued compliance.

State Mitigation Project Types From State Hazard Mitigation Plan

- Flood-prone Property Acquisition & Structure Demolition /Relocation
- Flood-Prone Structure Elevation
- Dry Floodproofing of Historical Residential Structures
- Dry Floodproofing of Non-residential Structures
- Minor Localized Flood Reduction Projects (storm water management or localized flood control projects)
- Structural Retrofitting of Existing Buildings (adding a tornado safe room)
- Non-structural Retrofitting of Existing Buildings, and Facilities from wind damage.
- New Tornado Safe Room Construction
- Electrical Utilities Infrastructure Retrofit
- Soil Erosion Stabilization
- Wildfire Mitigation

Polk County Multi-Jurisdictional Hazard Mitigation Plan

Initial Planning Area Public Opinion on Mitigation Actions



Next Steps

- Critical Facilities spreadsheet will be emailed if requested
- November 22—Critical Facility Validation/Risk Assessment Comments Due
- January 9—Final Meeting
- Mid February—Mitigation Actions Due
- Early March—Final Draft of Plan Update Document Available to HMPC
- Late March—Final Public Comment Period
- Early April—Submit Plan to IA HS&EM
- May—Submit Plan to FEMA
- June—Anticipate FEMA’s Approval Pending Adoption
- June-July—Jurisdictions Adopt Plan

- **Turn in Soft Match Forms at least once/month 😊**