

Alamance, Durham and Orange Eno-Haw Regional Hazard Mitigation Plan Meeting #3

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December 4, 2014



Agenda

- Welcome and introductions
- Risk assessment overview and preliminary findings
- Capability assessment overview and preliminary findings
- **Working Lunch**
- Public outreach update
- **Mitigation Strategy Exercise**
- Open discussion
- Next steps



Handouts and Attachments

- Meeting Agenda
- Meeting Sign-in Sheet

Risk Assessment Overview and Preliminary Findings



Population, Housing and Demographics Inventory

Summary of Population, Housing and Demographics				
Value	Alamance	Orange	Durham	State
Population, 2013 estimate	154,319	142,292	298,103	9,248,999
Population, 2010 (April 1) estimate base	151,219	133,274	269,874	9,535,471
Population, percent change, April 1, 2010 to July 1, 2013	2.1%	5.0%	6.7%	3.3%
Population, 2010	151,131	133,274	267,987	9,535,483
Persons under 5 years, percent, 2013	5.8%	4.8%	7.2%	6.2%
Persons under 18 years, percent, 2013	22.9%	20.5%	22.1%	23.2%
Persons 65 years and over, percent, 2013	15.7%	10.8%	10.6%	14.3%
Living in same house 1 year & over, percent, 2008-2012	85.3%	76.1%	76.5%	84.4%
Language other than English spoken at home, pct age 5+, 2008-2012	11.6%	15.9%	19.5%	10.8%
Mean travel time to work (minutes), workers age 16+, 2008-2012	23	22.1	21.4	23.5
Housing units, 2013	67,473	66,093	125,001	4,394,261
Homeownership rate, 2008-2012	67.5%	60.0%	55.0%	67.1%
Median value of owner-occupied housing units, 2008-2012	\$196,500	\$272,900	\$179,800	\$153,600
Households, 2008-2012	60,310	51,163	106,109	3,693,221
Persons per household, 2008-2012	2.44	2.42	2.34	2.51
Per capita money income in past 12 months (2012 dollars), 2008-2012	\$23,517	\$34,031	\$28,634	\$25,285
Median household income, 2008-2012	\$44,155	\$55,241	\$50,997	\$46,450
Persons below poverty level, percent, 2008-2012	17.3%	17.4%	18.0%	18.8%
Retail sales, 2007 (\$1000)	\$1,968,813	\$1,195,285	\$3,135,341	\$114,578,173
Retail sales per capita, 2007	\$13,595	\$9,583	\$12,257	\$12,641
Building permits, 2012	358	232	2,666	48,692
Land area in square miles, 2010	423.94	397.98	285.98	48,617.91
Persons per square mile, 2010	356.5	336.2	935.7	196.1



Building Inventory

Building Counts and Values		
Jurisdiction	Total Number of Buildings	Total Assessed Values of Buildings
Durham	79,379	\$18,147,382,851
Alamance County	41,853	\$8,964,127,972
Orange County	28,901	\$3,873,056,159
Burlington	24,527	\$5,077,655,761
Durham County	24,010	\$3,612,970,707
Chapel Hill	14,392	\$5,063,342,582
Graham	6,575	\$1,181,188,834
Carboro	5,360	\$1,303,953,518
Mebane	4,047	\$972,035,386
Hillsborough	2,843	\$605,568,373
Elon	2,513	\$695,276,824
Haw River	1,521	\$272,589,694
Gibsonville	1,112	\$142,020,580
Green Level	1,026	\$80,210,551
Sweepsonville	661	\$111,653,848
Alamance	497	\$73,313,682
Ossipee	354	\$139,783,779

Based on building footprint data derived from IRISK



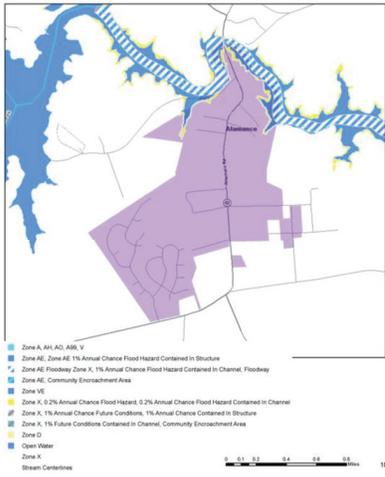
Critical Facilities Inventory

Critical Facility Types and Counts			
Critical Facility Type	Alamance	Orange	Durham
Emergency Operations Center	1	1	1
Fire Station	27	17	27
Police Station	9	9	16
Hospital	1	1	4
Community College	1	1	1
School (public and private)	44	39	86
University	1	0	3
Health Care	130	40	133
Senior Citizen	8	6	11
Power Plant	0	0	0
Treatment Plant	1	4	2
Substation	1	1	1
	218	192	190

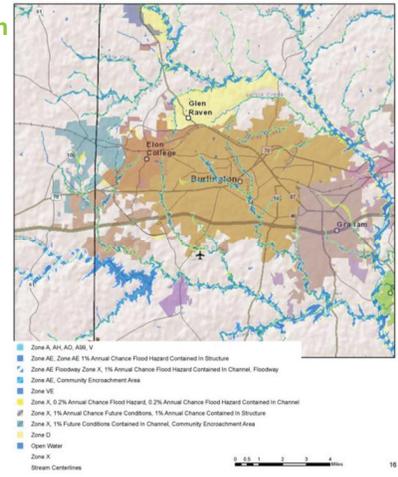
Based on NC Sparta



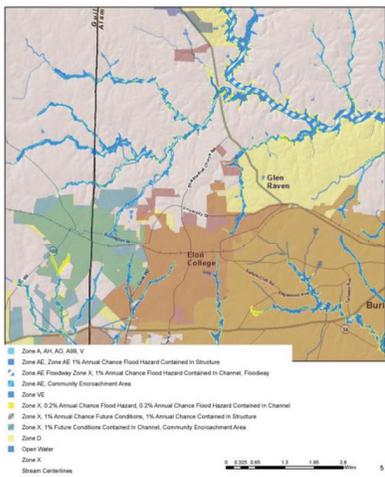
Town of Alamance



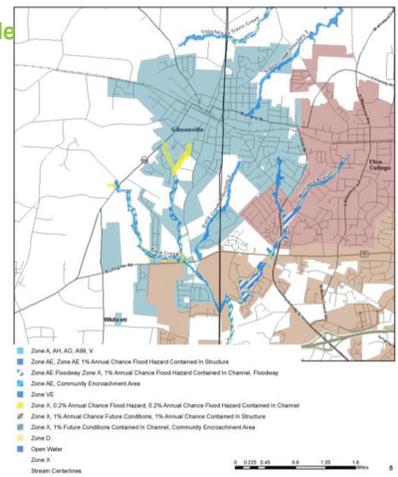
City of Burlington



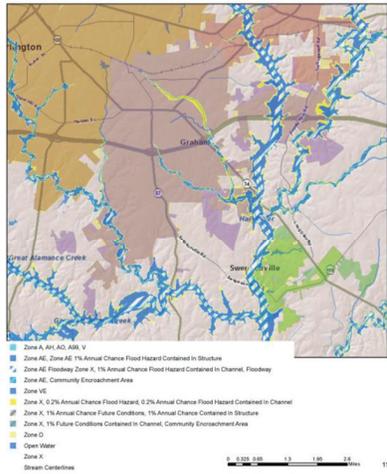
Town of Elon



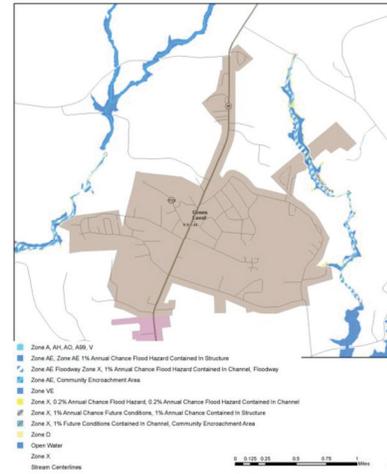
Town of Gibsonville



**Town of
Graham**



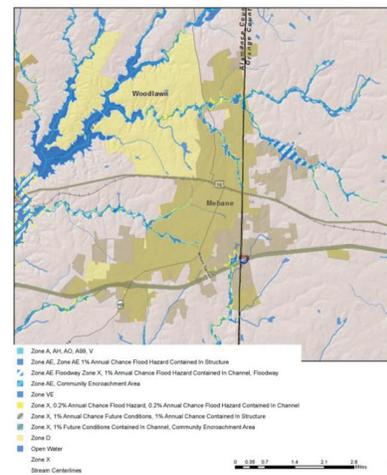
**Town of
Green Level**



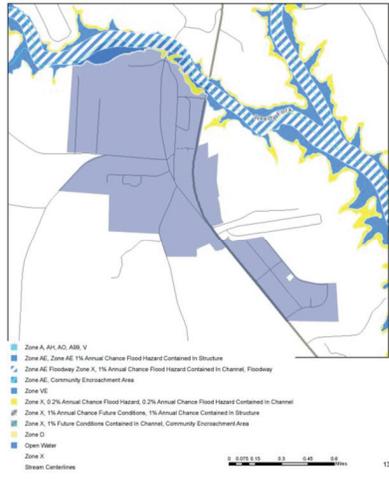
**Town of
Haw River**



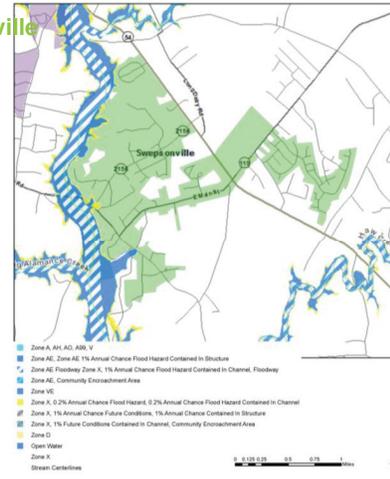
**City of
Mebane**



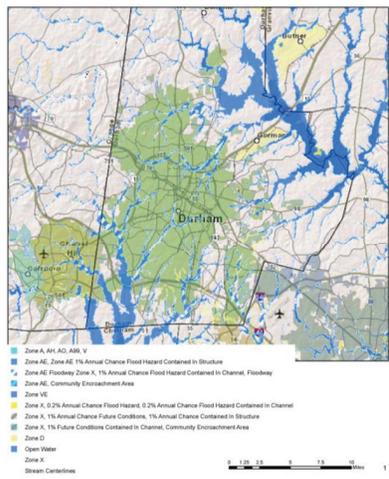
Town of Ossipee



Town of Swepsonville



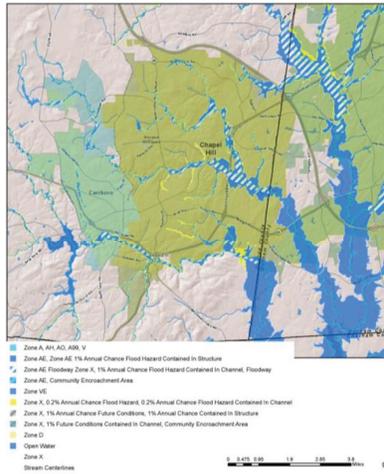
City of Durham



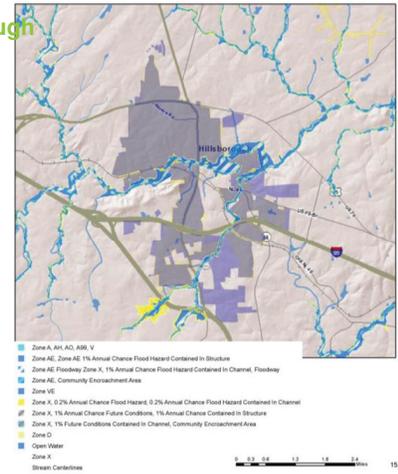
Town of Carrboro



Town of Chapel Hill



Town of Hillsborough



Flood Risk Calculations – Alamance

	Return Period	Count	Exposure (\$)
Unincorporated	100-year	284	\$293,698,871
	500-year	254	\$106,351,154
Alamance	100-year	3	\$13,066
	500-year	2	\$0
Burlington	100-year	354	\$84,253,135
	500-year	113	\$40,784,437
Elon	100-year	40	\$4,842,266
	500-year	6	\$3,652,535
Gibsonville	100-year	37	\$5,049,328
	500-year	0	\$0
Graham	100-year	61	\$29,492,751
	500-year	87	\$30,950,322
Green Level	100-year	0	\$0
	500-year	0	\$0
Haw River	100-year	23	\$27,511,975
	500-year	24	\$3,964,186
Mebane	100-year	50	\$6,214,764
	500-year	7	\$677,520
Oaspee	100-year	0	\$0
	500-year	2	\$5,000
Swepsonville	100-year	2	\$479,403
	500-year	9	\$4,262,006
Subtotal 100-year		854	\$451,815,559
Subtotal 500-year		504	\$190,647,180

Flood Risk Calculations – Orange

W/UNC	Return Period	Count	Exposure (\$)
Unincorporated	100-year	84	\$29,652,374
	500-year	41	\$7,454,735
Carrboro	100-year	96	\$16,733,580
	500-year	56	\$10,343,839
Chapel Hill	100-year	409	\$199,406,784
	500-year	72	\$36,157,142
Hillsborough	100-year	12	\$3,278,290
	500-year	7	\$1,400,088
UNC Chapel Hill	100-year	17	\$80,167,170
	500-year	17	\$186,385
Subtotal 100-year		618	\$329,298,208
Subtotal 500-year		193	\$55,542,189

W/O UNC	Return Period	Count	Exposure (\$)
Unincorporated	100-year	92	\$49,762,167
	500-year	44	\$7,530,250
Carrboro	100-year	96	\$16,733,580
	500-year	56	\$10,343,839
Chapel Hill	100-year	418	\$209,564,171
	500-year	86	\$36,268,012
Hillsborough	100-year	12	\$3,278,290
	500-year	7	\$1,400,088
Subtotal 100-year		618	\$329,298,208
Subtotal 500-year		193	\$55,542,189

Flood Risk Calculations – Durham

	Return Period	Count	Exposure (\$)
Unincorporated	100-year	313	\$206,467,097
	500-year	43	\$6,728,401
Durham	100-year	696	\$12,499,192
	500-year	1,142	\$37,874,774
Subtotal/ 100-year		1,009	\$218,966,289
Subtotal/ 500-year		1,185	\$44,603,175

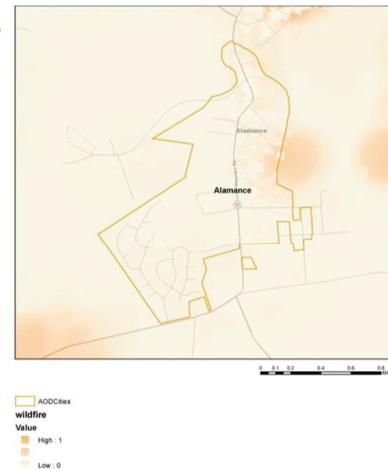


Flood Hazard History

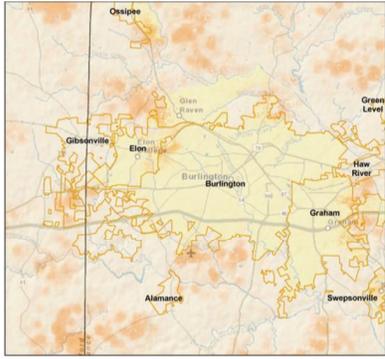
- 26 events reported per NCDC in Alamance County
 - 21 “Flash Flood” events
 - 5 “Flood” events
 - At least \$1.9 million in reported property damage
- 46 events reported per NCDC in Durham County
 - 43 “Flash Flood” events
 - 3 “Flood” events
 - Less than \$200,000 in reported property damage
- 21 events reported per NCDC in Orange County
 - 20 “Flash Flood” event
 - 1 “Flood” event
 - At least \$10.7 million in reported property damage



Town of Alamance

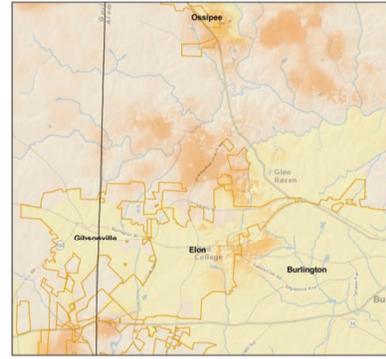


City of Burlington



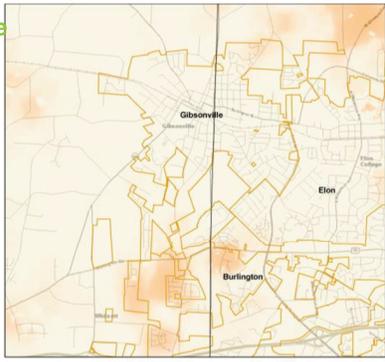
ADCCities
wildfire
Value
High: 1
Low: 0

Town of Elon



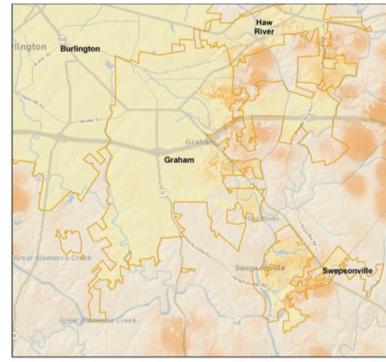
ADCCities
wildfire
Value
High: 1
Low: 0

Town of Gibsonville



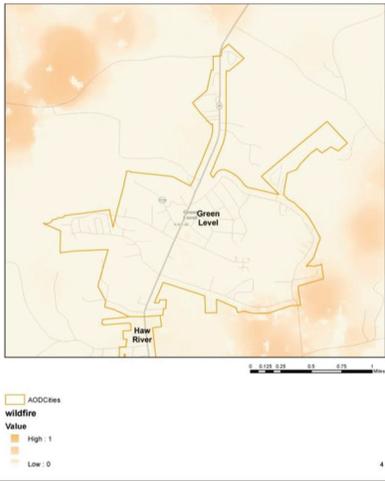
ADCCities
wildfire
Value
High: 1
Low: 0

Town of Graham

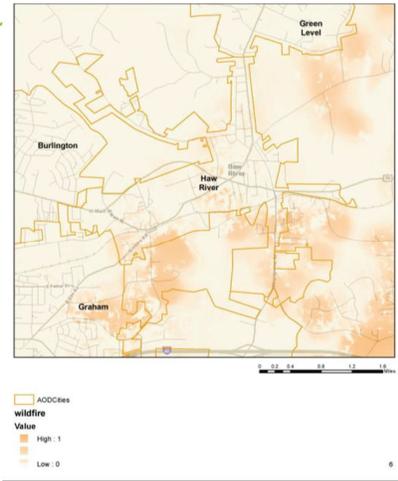


ADCCities
wildfire
Value
High: 1
Low: 0

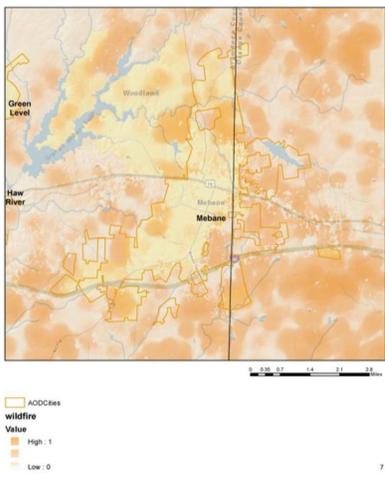
Town of Green Level



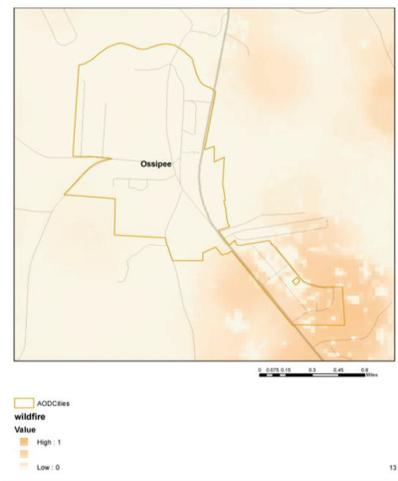
Town of Haw River



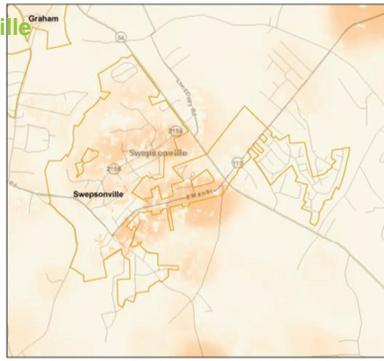
City of Mebane



Town of Ossipee

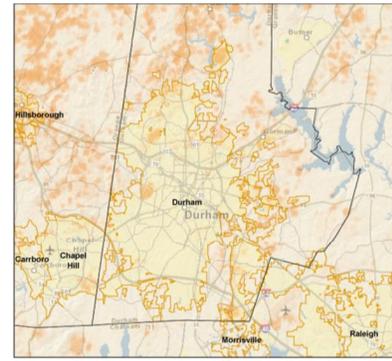


Town of Swepsonville



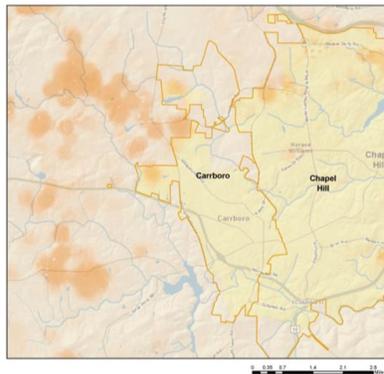
ADCCies
wildfire
Value
High: 1
Low: 0

City of Durham



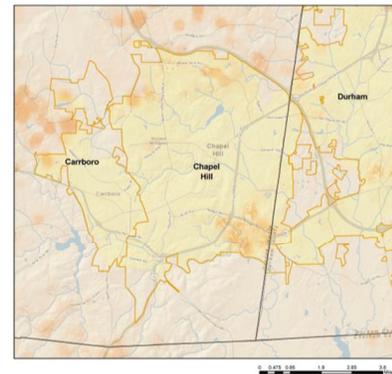
ADCCies
wildfire
Value
High: 1
Low: 0

Town of Carrboro



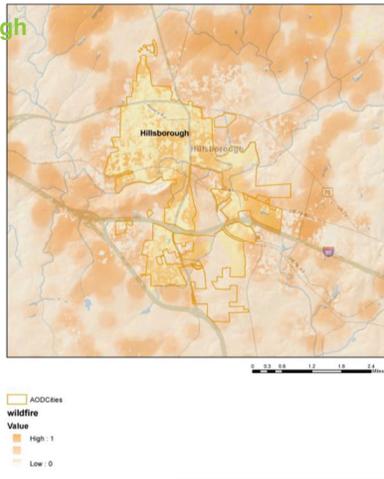
ADCCies
wildfire
Value
High: 1
Low: 0

Town of Chapel Hill



ADCCies
wildfire
Value
High: 1
Low: 0

Town of Hillsborough



Wildfire Risk Calculations – Alamance

	WFSI	Count	Exposure (\$)
Unincorporated	Moderate	925	\$119,973,287
	High	0	\$0
Alamance	Moderate	0	\$0
	High	0	\$0
Burlington	Moderate	0	\$0
	High	0	\$0
Elon	Moderate	0	\$0
	High	0	\$0
Gibsonville	Moderate	0	\$0
	High	0	\$0
Graham	Moderate	0	\$0
	High	0	\$0
Green Level	Moderate	0	\$0
	High	0	\$0
Haw River	Moderate	8	\$4,075,072
	High	0	\$0
Mebane	Moderate	144	\$106,171,352
	High	0	\$0
Oasipee	Moderate	3	\$402,012
	High	0	\$0
Swepsonville	Moderate	5	\$636,251
	High	0	\$0
Subtotal Moderate		1,085	\$231,257,974
Subtotal High		0	\$0



Wildfire Risk Calculations – Orange

WUNC	WFSI	Count	Exposure (\$)
Unincorporated	Moderate	2,363	\$225,430,321
	High	130	\$14,515,795
Carrboro	Moderate	0	\$0
	High	0	\$0
Chapel Hill	Moderate	0	\$0
	High	0	\$0
Hillsborough	Moderate	136	\$36,998,046
	High	0	\$0
UNC Chapel Hill	Moderate	0	\$0
	High	0	\$0
Subtotal Moderate		2,499	\$262,428,367
Subtotal High		130	\$14,515,795

Wildfire Risk Calculations – Durham

	WFSI	Count	Exposure (\$)
Unincorporated	Moderate	862	\$165,903,998
	High	0	\$0
Durham	Moderate	229	\$127,761,218
	High	0	\$0
Subtotal Moderate		1,091	\$293,665,216
Subtotal High		0	\$0

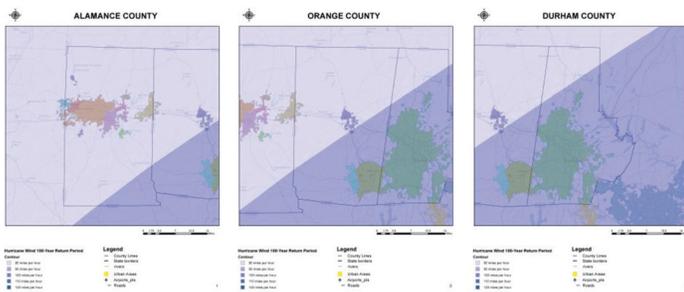


Wildfire Hazard History (2008-2014)

- No reported events on record according to the NCDC
- Currently researching forest service records



Hurricane/Tropical Storm Hazard Maps



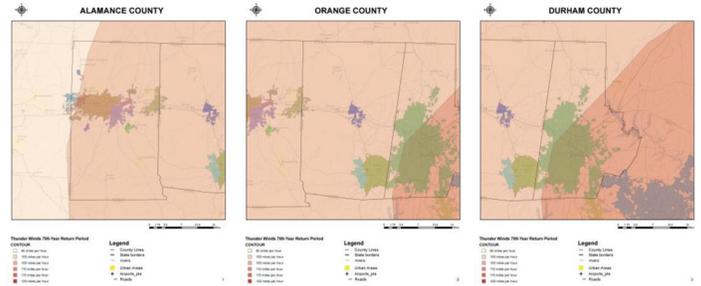
Hurricane/Tropical Storm Hazard History

- 3 events reported per NCDC in Alamance County
 - At least \$3 billion in reported property damage
 - At least \$503 million in reported crop damage
- 5 events reported per NCDC in Durham County
 - Less than \$250,000 in reported property damage
- 4 events reported per NCDC in Orange County
 - No reported property or crop damage

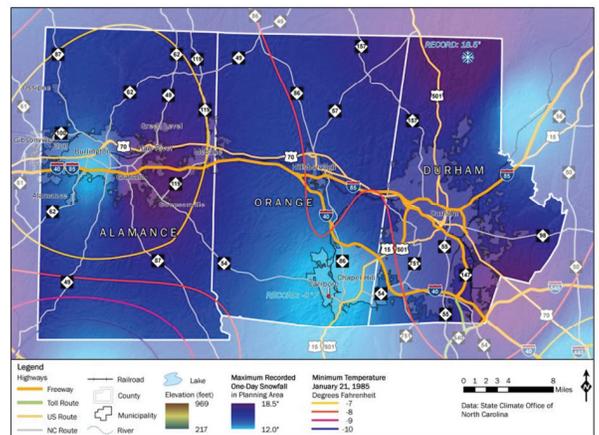




Thunderstorm Hazard Maps



Winter Storm Hazard Map

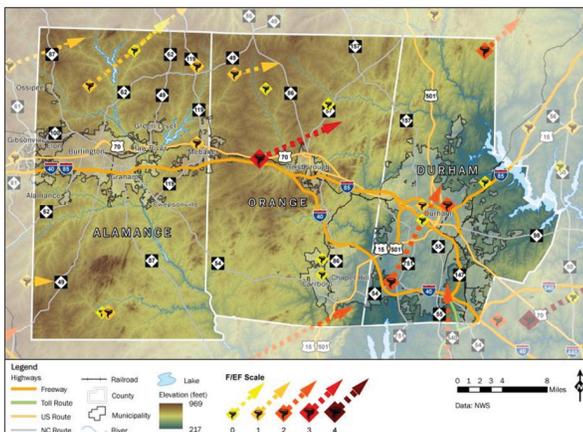


Winter Storm Hazard History (2008-2014)

- 24 events reported per NCDC in Alamance County
 - No reported property or crop damage
- 20 events reported per NCDC in Durham County
 - No reported property or crop damage
- 23 events reported per NCDC in Orange County
 - No reported property or crop damage



Tornado Hazard Map



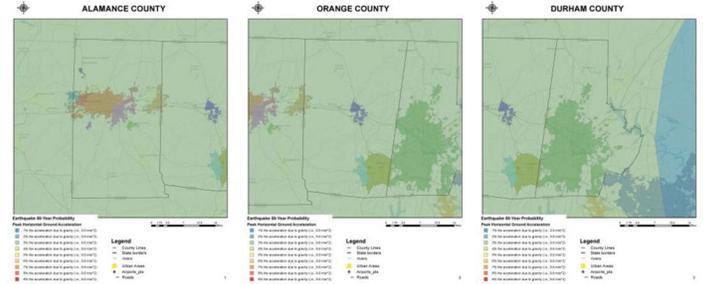
Tornado Hazard History

- 5 events reported per NCDC in Alamance County
 - At least \$1 million in reported property damage
 - Highest magnitude: F1/EF1
 - 1 injury reported
- 7 events reported per NCDC in Durham County
 - At least \$28.4 million in reported property damage
 - Highest magnitude: F2
 - 5 injuries reported
- 8 events reported per NCDC in Orange County
 - At least \$500,000 in reported property damage
 - Highest magnitude: F3
 - 2 deaths, 11 injuries reported





Earthquake Hazard Maps

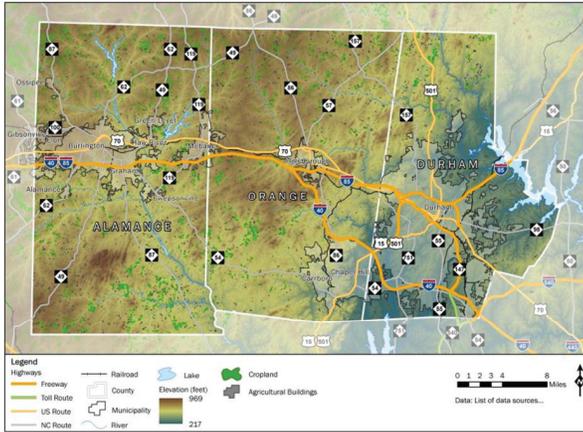


Earthquake Hazard History

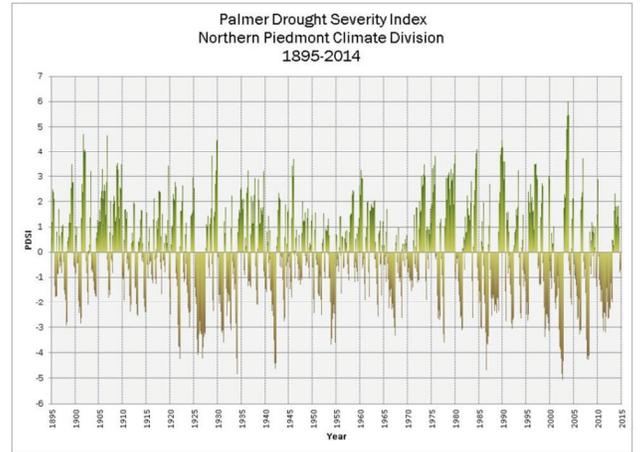
- 0.30% chance of a major earthquake within 50km of Durham within the next 50 years (USGS)
- The largest earthquake within 30 miles of Durham was a 2.7 magnitude in 1978 (USGS)
- There was another 2.7 magnitude earthquake that was felt 4.25 miles from Greensboro in 1993



Drought Hazard Map



Drought Hazard Severity Index

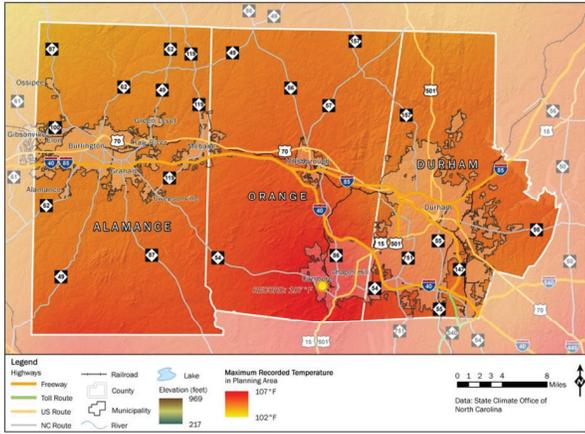


Drought Hazard History (2008-2014)

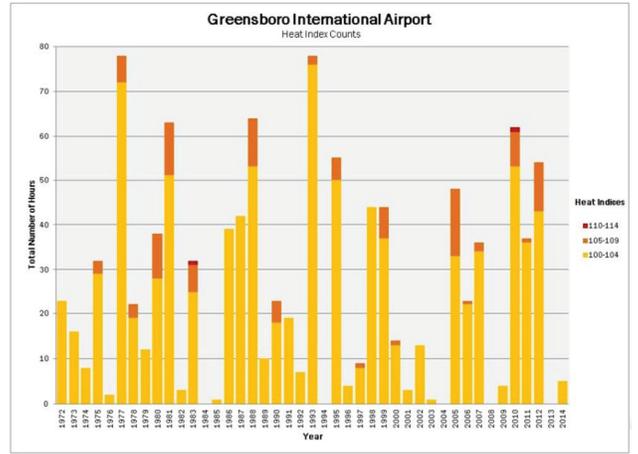
- 0 events reported per NCDC



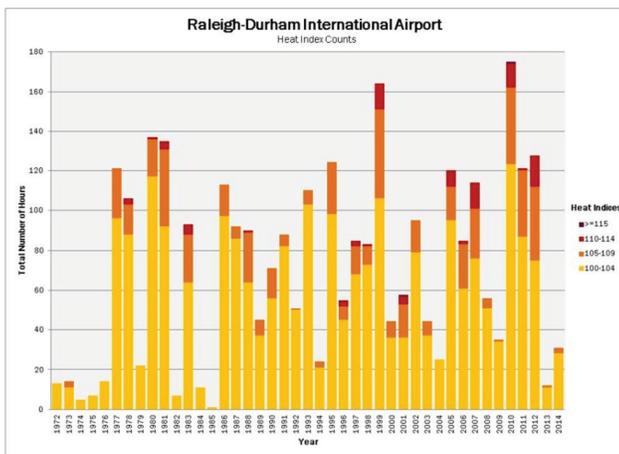
Extreme Heat Hazard Map



Extreme Heat Hazard Index Chart (1 of 2)



Extreme Heat Hazard Index Chart (2 of 2)

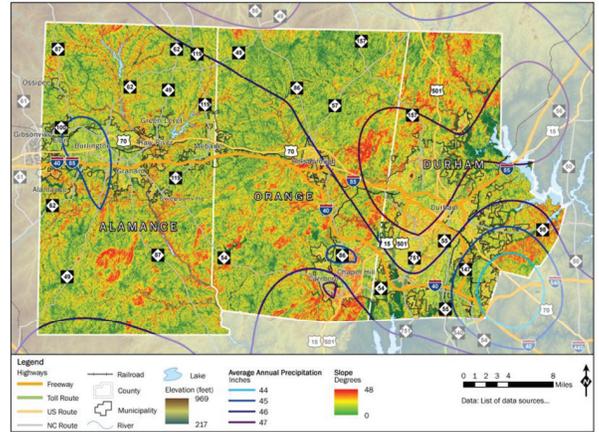


Extreme Heat Hazard History

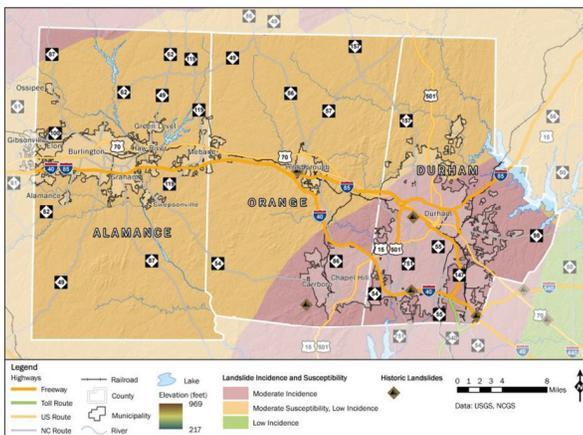
- 0 events reported per NCDC



Landslide Hazard Map (Slope and Precipitation)



Landslide Hazard Map (Susceptibility and Historic Occ.)

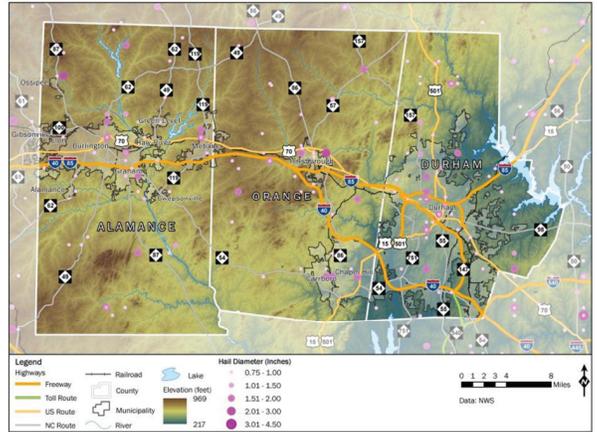


Landslide Hazard History (2008-2014)

- 0 events reported per NCDC



Hail Hazard Map

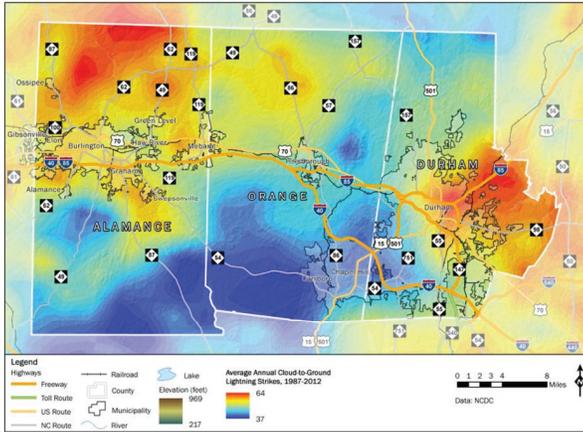


Hail Hazard History (2008-2014)

- 77 events reported per NCDC in Alamance County
 - At least \$100,000 in reported property damage
- 16 events reported per NCDC in Durham County
 - No reported property damage
- 70 events reported per NCDC in Orange County
 - No reported property damage



Lightning Hazard Map

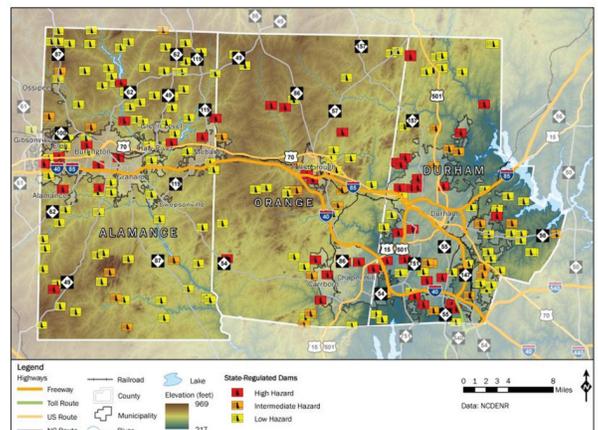


Lightning Hazard History

- 7 events reported per NCDC in Alamance County
 - At least \$225,000 in reported property damage
 - 1 death, 4 injuries reported
- 7 events reported per NCDC in Durham County
 - At least \$150,000 in reported property damage
 - 1 death reported
- 7 events reported per NCDC in Orange County
 - At least \$2.4 million in reported property damage
 - 2 deaths, 1 injury reported



Dam Locations and Hazard Levels



Dam Failure Hazard History

- No available history
- Not uncommon as this is typically a low probability/high consequence hazard with minimal hazard history



Hazards Ranked

Hazard	Alamance	Orange	Durham
Riverine Flood	HIGH	HIGH	HIGH
Winter Storm	HIGH	HIGH	HIGH
Tropical/ Extratropical Wind (Hurricane)	HIGH	HIGH	HIGH
Drought	MODERATE	MODERATE	MODERATE
Thunderstorm Wind	MODERATE	MODERATE	MODERATE
Dam Failure	MODERATE	MODERATE	MODERATE
Tornado	MODERATE	MODERATE	MODERATE
Wildfire	LOW	LOW	LOW
Earthquake	LOW	LOW	LOW
Extreme Heat	LOW	LOW	LOW
Landslide	LOW	LOW	LOW
Hail	LOW	LOW	LOW
Lightning	LOW	LOW	LOW



Capability Assessment Results

Local Capability Assessment Survey Methodology

- Planning and regulatory capability
- Administrative and technical capability
- Fiscal capability
- Education and outreach capability
- Political capability
- Self assessment



Local Capability Assessment Survey Methodology

- Point system for capability ranking
 - 0-24 points = Limited overall capability
 - 25-49 points = Moderate overall capability
 - 50-82 points = High overall capability



Local Capability Assessment Survey Results

- Participation so far: 50%

Jurisdiction	Capability Score	Capability Ranking	Self Assessment
Durham (City/County)	80	HIGH	MODERATE
Chapel Hill	77	HIGH	HIGH
Carboro	69	HIGH	HIGH
Alamance County	67	HIGH	MODERATE
Green Level	63	HIGH	MODERATE
Orange County	59	HIGH	DID NOT SPECIFY
Alamance	57	HIGH	HIGH
Graham	41	MODERATE	MODERATE
Burlington	PENDING	PENDING	PENDING
Mebane	PENDING	PENDING	PENDING
Hillsborough	PENDING	PENDING	PENDING
Elon	PENDING	PENDING	PENDING
Haw River	PENDING	PENDING	PENDING
Gibsonville	PENDING	PENDING	PENDING
Sweepsorville	PENDING	PENDING	PENDING
Oesipee	PENDING	PENDING	PENDING



Public Outreach Update

Public Outreach Update

- Public Participation Survey responses
 - Currently less than 50
 - <https://www.surveymonkey.com/s/aodhazardmitigation>
 - Handing out paper copies at next public meeting
- Public meeting schedule
 - Next meeting tonight from 6 to 8 p.m.



Mitigation Strategy Development

Vision Statement

“Through a coordinated regional planning effort, create and implement an effective hazard mitigation plan that will identify and reduce risk to natural hazards in order to protect the health, safety, quality of life, environment and economy of the Alamance, Orange, Durham county area.”



Organization of Mitigation Strategy Section

- Vision Statement
- Regional Hazard Mitigation Goals
- Mitigation Action Plans (MAPs) for each participating jurisdiction

Mitigation Strategy Section

- Keep it as holistic as possible
 - Address multiple hazards/objectives/issues, but should be focused on highest risks
- Keep it realistic in terms of local capabilities and resources
- Goals should be long-term in nature and should encompass at least a 5-year planning cycle
- Each mitigation action should be specific, actionable, measureable, and achievable



Mitigation Action Plans

- Purpose and nature of MAPs
- Information needed for 2015 plan update
 - Status updates for each action
 - Narrative explanations for each status update
 - New Mitigation Actions for each jurisdiction



Types of Mitigation Actions

- Local plans and regulations
 - Government authorities, policies, or codes that influence the way land and buildings are developed and built
- Structure and infrastructure projects
 - Modifying existing structures and infrastructure to protect them from a hazard or remove them from a hazard area
- Natural systems protection
 - Actions that minimize damage and losses and also preserve or restore the functions of natural systems
- Education and awareness programs
 - Actions that inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them
- Other types of actions
 - Actions that are related to mitigation in ways that make sense to the local government that do not fall into one of the categories above



Focus Question #1

What would have to happen for the Eno-Haw region to be more resilient to natural hazards?



Focus Question #2

What specific actions would need to be taken to accomplish this?



Focus Question #3

How do all of our ideas come together?



Open Discussion

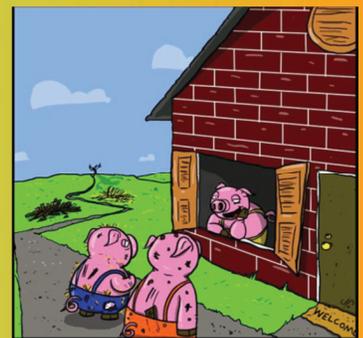
Next Steps

- Mitigation Action Plan “homework”
- For next meeting:
 - Present *Public Participation Survey* results
 - Present *Safe Growth Survey* results
 - Work on *Mitigation Action Plan* updates and mitigation action prioritization
 - Start working on *Plan Maintenance Procedures*



Thank You

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"Mitigation isn't so funny now, is it?"

