

# Wake County Fire Commission, Administrative Sub-Committee

Creating a Standard  
for Fire Service in  
Wake County





# Wake County Board of Commissioners Goals and Objectives

- PS1.1 – Establish a County-wide standard for fire service in the unincorporated areas and develop a plan to achieve and sustain agreed upon service levels.



# Standards for Fire Service

Two things to keep in mind...

- Standard is for Rural “unincorporated” areas only.
- This standard will become measuring factors for decision making on increasing or decreasing fire service resources (Stations, staffing, equipment, etc.).



# Plan adopted by Administration Sub-Committee to create Standards...

Step 1 – Conduct a Risk Assessment

Step 2 – Perform Critical Task Analysis

Step 3 – Evaluate current response performance (baselines, distribution and concentration)

Step 4 – External Stakeholder Input Sessions

Step 5 – Determine and adopt response time and performance objective goals (above data and national standards).

# Let's begin with the end in mind...

## FIRE

The first arriving apparatus for all fire risk classifications responding emergency traffic with a minimum of three (3) qualified firefighters should be xx minutes xx seconds of travel time in the unincorporated districts of Wake County, 90 percent of the time.

The first arriving apparatus will be capable of proving 500 gallons of water with a pumping capability of 1,250 gallons per minute; establishing incident command procedures, proving initial size-up report; requesting additional resources if needed; initiate fire attack; perform any needed rescues.

The Effective Response Force (ERF) for any reported structure fire responding emergency traffic with a minimum of 19 qualified firefighters should be xx minutes xx seconds, 90 percent of the time.

The ERF for any structure fire will be capable of establishing a command post; establish personnel accountability; establish a safety officer; secure a continuous water supply; operate multiple hose lines; establish a rapid intervention crew; perform search and rescue operations; complete forcible entry; provide ventilation and utility control; perform any needed salvage and overhaul operations.



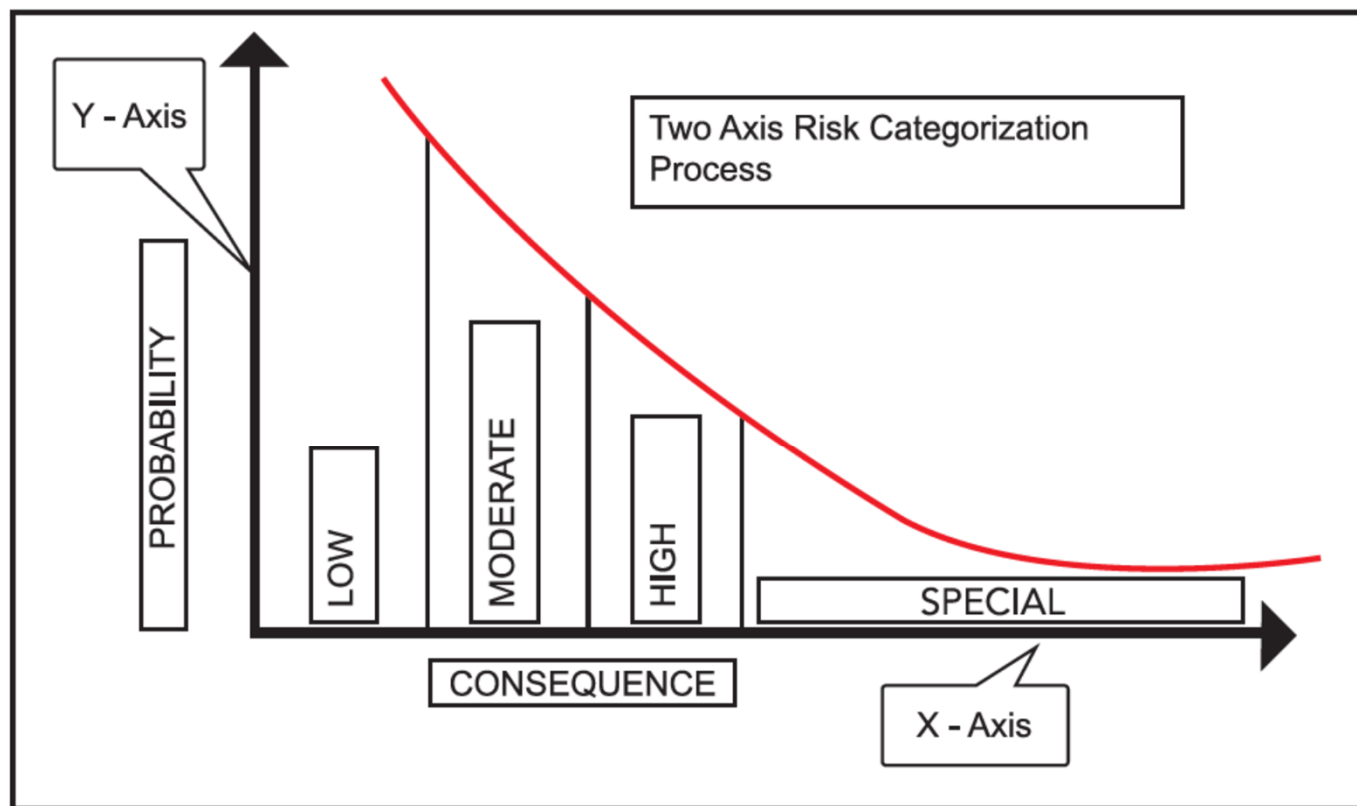
# Conducting a Risk Assessment

- Establish Risk Classifications (Fire, EMS, Hazmat, TR)
- For each classification, identify each possible risk (grass fire, vehicle fire, single family dwelling fire, gas leak, medical call, MVA, etc).
- Use a methodology to categorize each risk (low, moderate, high, maximum).
- Calculate for each rural response district (42)

# Building a Risk Assessment Classifications

FIRE	EMS	HAZMAT	TR
<ul style="list-style-type: none"><li>• Grass Fire</li><li>• Woods Fire</li><li>• Trash Fire</li><li>• Vehicle Fire</li><li>• Fire Alarm</li><li>• Sm non-dwelling</li><li>• Lg. non-dwelling</li><li>• Cooking Fire</li><li>• Chimney Fire</li><li>• Single Family</li><li>• Multi Family</li><li>• Comm. Fire</li><li>• Target Haz.</li></ul>	<ul style="list-style-type: none"><li>• Walk-in</li><li>• Lift Asst.</li><li>• Medical Call &lt; 6</li><li>• MVA &lt; 6</li><li>• Any medical call with 6 or more patients</li></ul>	<ul style="list-style-type: none"><li>• Investigations</li><li>• CO Incident</li><li>• Small Fuel Spill</li><li>• Lg. Fuel Spill</li><li>• LP or Natural gas leak</li><li>• Hazmat release requiring tech response or large evacuations</li></ul>	<ul style="list-style-type: none"><li>• Person locked in vehicle/building</li><li>• Elevator entrapment</li><li>• Vehicle/machinery extrication</li><li>• Swift water</li><li>• Trench</li><li>• Confined Space</li><li>• High/low angle</li></ul>

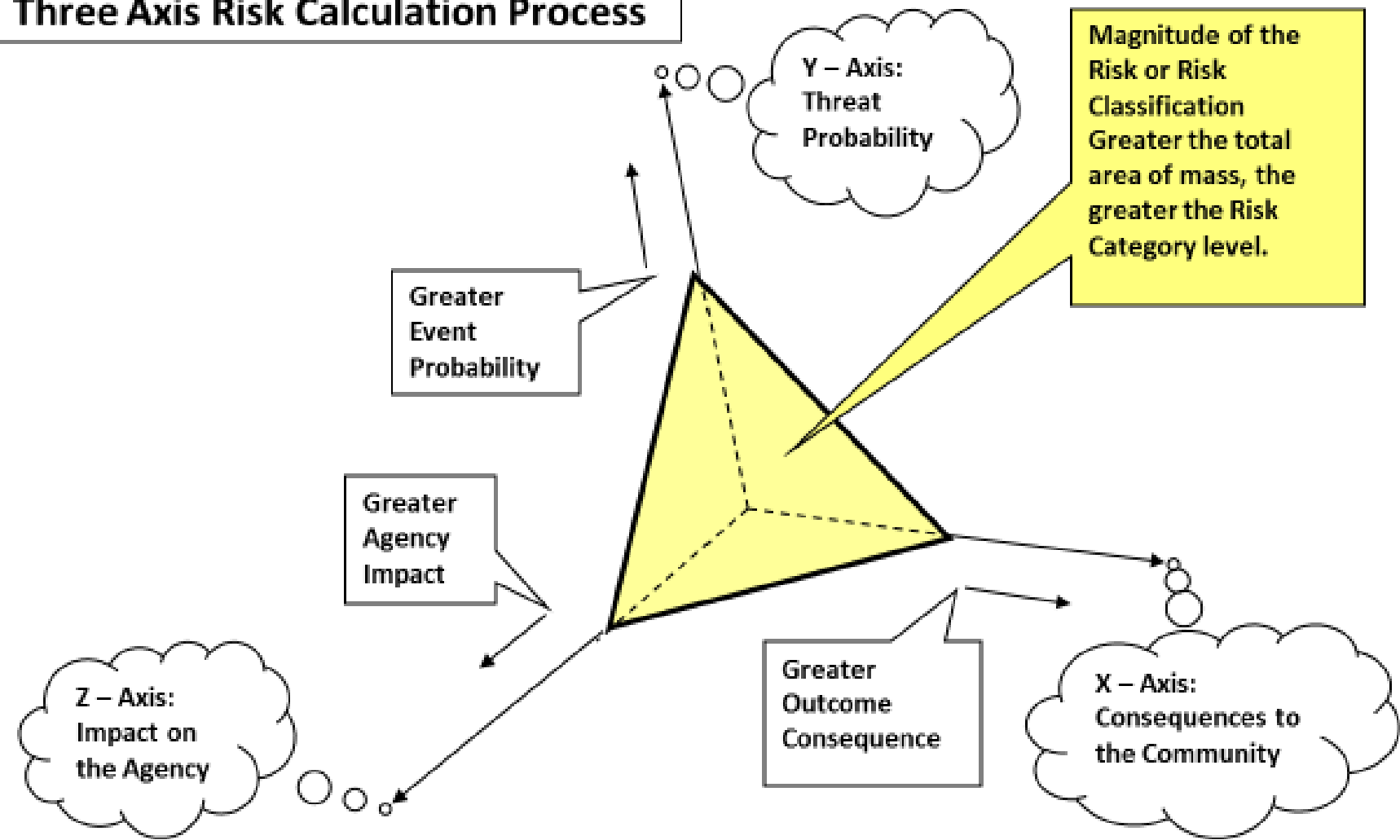
# How to measure Risk...



*Parabolic Two-Axis Risk Categorization Methodology*




## Three Axis Risk Calculation Process





# How to measure Risk...

- 3 Axis Approach, measuring:
  - Probability of a risk occurring
  - Consequence of the risk occurring
  - Impact on fire department resources if the risk occurs.



Probability - how often the risk occurs based off annual reporting of the type of situation found.

<b>Probability of Occurrence Annually</b>
2 = Quarterly/Yearly (0-4)
4 = Monthly (5-31)
6 = Weekly (32-364)
8 = Daily (365 or more)



# Consequence

- Consequence of incident occurring...
  - Life impact
  - Emotional impact
  - Financial impact
- How do you measure this...

# Measuring Consequence

Ranking	Life (50%)	Emotional (25%)	Financial (25%)
2	No Hazard	No Emotional Impact	\$0 - \$49,999
4	Less than 6 life loss potential	Single real property/single person	\$50,000 - \$499,999
6	6 or more life loss potential	Multi real property/multiple people	\$500,000-\$999,999
8	Life loss potential for civilian and firefighters	Community/Historic/Tax base loss	\$1,000,000 and greater

	Weight	Ranking	Risk Score
Life	50%	2	1
Emotional	25%	2	0.5
Financial	25%	2	0.5
		Total Score	2

# Impact to FD Resources

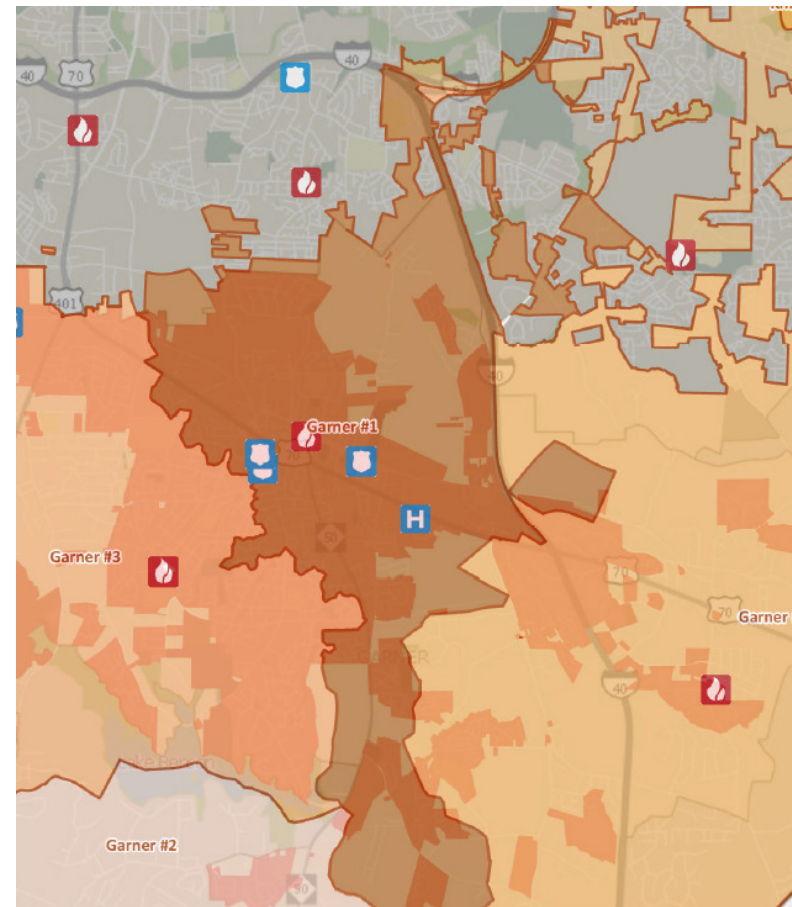
- Measured per department or area (system)

Impact to Resources (Personnel)					
2	Low (2-3 personnel with staffed crew)				
4	Moderate (6-12 personnel using staffed and volunteer crews)				
6	High (13-15 personnel using staffed, volunteers, and auto-aid)				
8	Maximum (16 or more personnel staffed, volunteers, auto-aid, mut-aid, coverage needed)				

# Risk Assessment Example

## Garner Station 1 Rural

- 35 road miles
- 6.642 Square miles
- 1,538 population
- 232 per sq. mile



# Example Risk Assessment

## Wake County Fire Risk Assessment

Fire	Probability	Consequence	Impact	Risk Score	Risk Assessment
Electrical Problem	4	2	2	8.49	Low
Grass/Woods/Trash Fire	6	2	2	12.33	Low
Vehicle Fire	2	2	2	4.90	Low
Automatic Alarms	4	2	2	8.49	Low
Chimney Fire	2	3	6	15.87	Moderate
Cooking Fire, contained	2	3	6	15.87	Moderate
Structure Fire (Less than 5,000 sqft)	2	4	8	25.92	High
Structure Fire (5,001-10,000 sqft)	2	5	8	31.27	Maximum
Structure Fire (greater than 10,000 sqft)/Target Hazards	2	8	8	48.00	Maximum
Fire Department:	Garner FD				
Station District:	1 (rural)				
Years Evaluated:	2015-2018				





## Step 2, Critical Task Analysis

- How many firefighters does it take to put out a structure fire?
- The number is called the Effective Response Force (ERF).
- How do you determine this?
  - National Standards (NFPA 1710, Standard for the deployment of Fire Suppression Operations).
  - Center for Public Safety Excellence, Standards of Cover and Community Risk Assessments.
  - Fire Service Experience

# Rural Structure Fire Example...

Critical Task	Number of Personnel
Command/Safety/Accountability	1
Fire Attack Hose line	2
Back up Hose line	2
Rapid Intervention Crew (RIC)	3
Search/Rescue	2
Vent/Utilities (Ladder Ops)	2
Pump operations	1
ERF	13
3 Engines, 1 Rescue or Ladder, 1 Chief	
<b>Non Hydrant Response add:</b>	
Tanker Response (3 - 2,000 gal.)	3
Water Supply Engine	3
ERF with Tankers	19



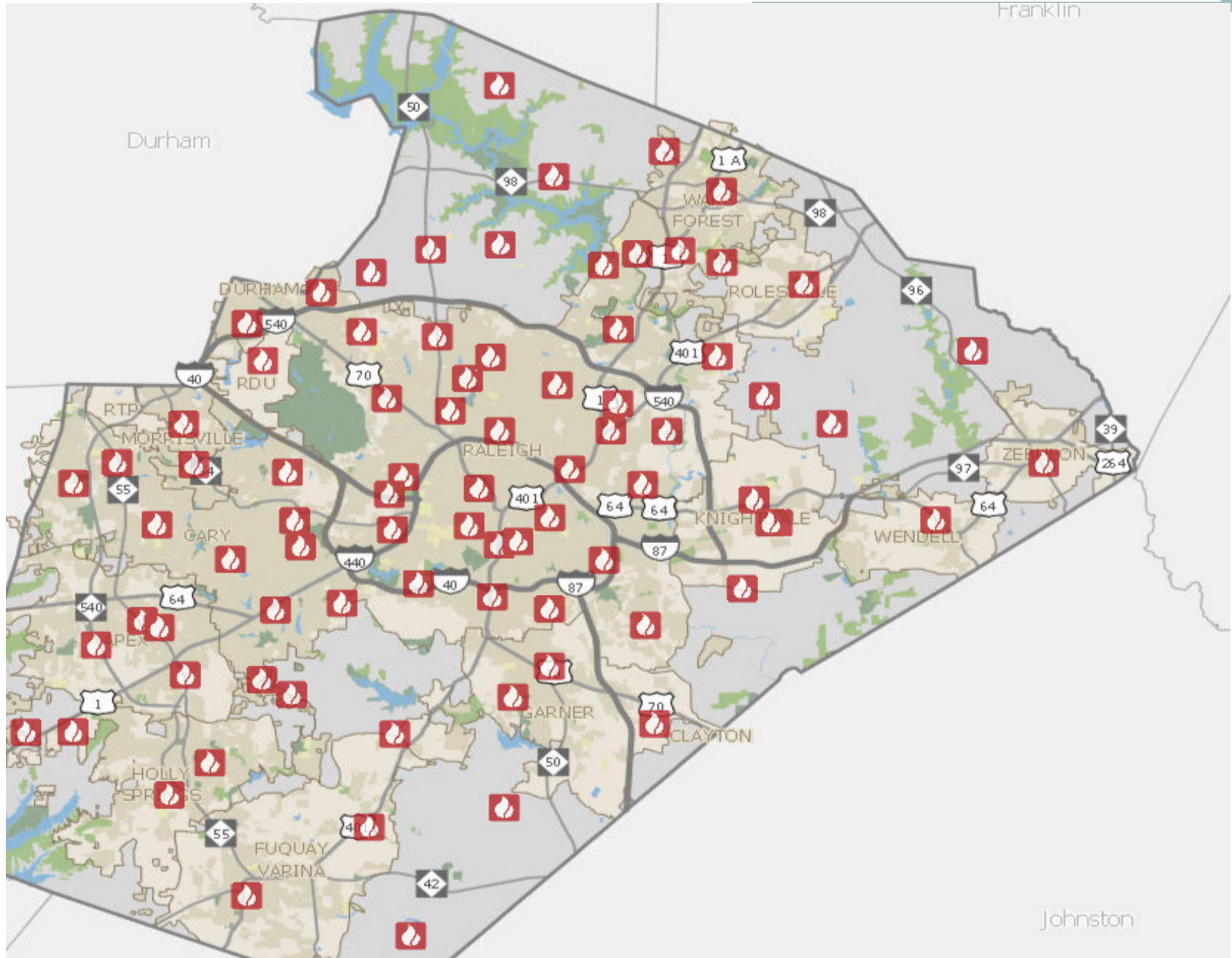
## Step 3 - Current Performance Eval

- Before we can create a standard of service, we must know what we are doing now (baselines).
- Sounds simple...but with 18 fire departments using different record management systems, different procedures and a new computer aided dispatch system, this has been and continues to be a challenge.
- The committee decided to only evaluate 2 call types, medical calls and structure fires, why?



## Distribution and Concentration of Resources

- Distribution – How long does it take for 1 fire resource to respond (basic station location analysis).
- Concentration – How long does it take for the effective response force to respond (multiple fire stations and/or more than 1 resource at 1 fire station).



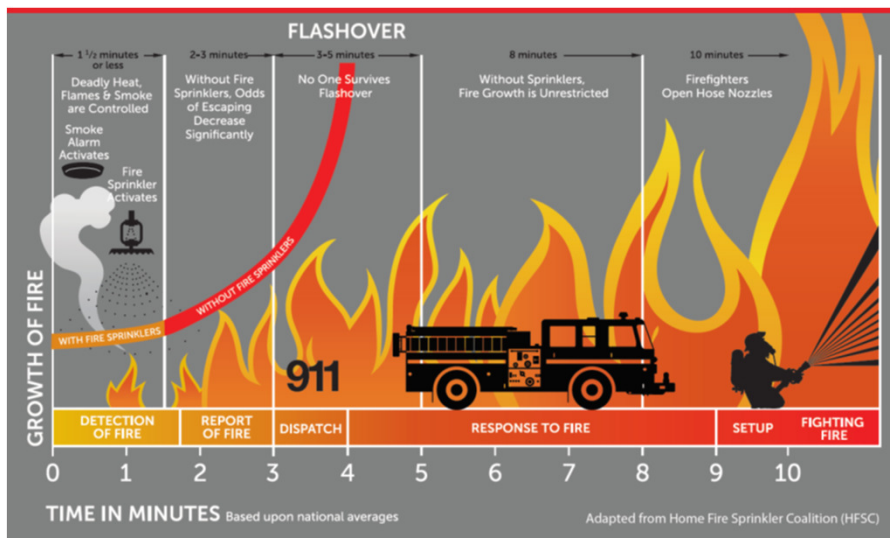


## Step 4 - External Stakeholder Input

- Online Surveys
- Focus group meetings within each Fire Service Region.
- Information will provide input on response time expectations.

# Step 5 - Determine and adopt response time and performance objective goals

- How do we determine these goals?
  - Evaluation of Baseline Performance
  - National Standards
  - Driving time factors of fire and medical statistics



# Step 5 - Determine and adopt response time and performance objective goals

## FIRE

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# Where are we now?

- ✓ Step 1 – Conduct a Risk Assessment
- ✓ Step 2 – Perform Critical Task Analysis

Work in  
progress!!  
check back soon...

Step 3 – Evaluate current response performance (baselines, distribution and concentration)

Work in  
progress!!  
check back soon...

Step 4 – External Stakeholder Input Sessions

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Step 5 – Determine and adopt response time and performance objective goals (above data and national standards).

Questions...