NAVIGATING THE FLAMES
Unlocking the Power of GIS for the Local Fire Service
LUCAS LYONS
Systems Performance Analyst
CHARLOTTESVILLE FIRE DEPARTMENT

PUSHPA JHA
GIS Analyst
CHARLOTTE FIRE DEPARTMENT

KAT BOYLE
Management Analyst
CHARLOTTE FIRE DEPARTMENT

CHIEF JEFF DULIN
Strategic Advisor
INT’L ASSOCIATION OF FIRE CHIEFS
Navigating the Flames: Unlocking the Power of GIS for the Local Fire Service
Objective

Explore how and why Charlottesville Fire Dept. created a GIS neighborhood risk assessment.
Charlottesville Fire Department
Community Risk Assessment

- Demographic profile
- Weather patterns
- Transportation
- Special hazards
- Built environment
The right people for the job...

Joe Powers, Former CFD Deputy Chief of Community Risk Reduction

Doug Caldwell, GIS volunteer
The Charlottesville Fire Department provides fire and other emergency services to residents and visitors to the City of Charlottesville and the University of Virginia. The department also provides contractual fire and emergency services support to the County of Albemarle.

Daily, the Charlottesville fire department operates out of 3 city fire stations staffing a combination of 4 fire engines, two aerial devices, two ALS transport ambulances, a fire marshal, and a chief officer in a command vehicle. CFD staff suppression apparatus with a minimum of three, medics with two. Both the battalion chief and CRR captains ride as single resources.
Nuts and Bolts of CFD’s Neighborhood Risk Assessment Hub Site
Two Examples

Wildfire Evacuation Planning

Volunteer Firefighter Recruitment & Retention
Wildfire Problem

• Wildfire threats to communities continue to grow.
• Communities are moving closer and into the WUI.
• As such, more people are needing to be evacuated in shorter periods of time, more frequently as the fires are growing larger and more common.
• Rural communities often lack access to innovative technologies.
An interactive web-based **Wildfire Evacuation Planning Toolkit** (targeted to rural departments with limited resources) to aid local jurisdictions in evacuation planning. The Evacuation Planning Toolkit allows users to:

1. Assess their current capabilities  
   (Wildfire Evacuation Capability Assessment)
2. View evacuation resources and create a post-assessment action plan  
   (Post Assessment Action Plan)
3. Explore their community within a map-based application to create evacuation zones  
   (Evacuation Zone Pre-Planning Application)
Wildfire Evacuation Capability Assessment

• The Wildfire Evacuation Capability Assessment serves as a checklist for agencies to assess their current capability and readiness for conducting evacuations.
  – Online (Survey123) & PDF download walks an agency through the Planning, Organizing, Equipping, Training, and Exercising (POETE) process as it pertains to evacuation planning.
  – Developed by the stakeholder group, with input from the broader IAFC Wildfire community, to determine items to be included in the capability assessment.
Introduction

The International Association of Fire Chiefs (IAFC) and its Wildland Fire Policy Committee have created this Wildfire Evacuation Planning Toolkit, aiding local jurisdictions in evacuation planning. The Wildfire Evacuation Planning Toolkit contains three distinct pieces:

1. **The Capabilities Assessment** serves as a checklist for agencies to assess their current capability and readiness for conducting evacuations.
2. **The Post Assessment Action Plan** contains a checklist of materials to aid in jurisdictional evacuation planning efforts.
3. **The Evacuation Zone Pre-Planner** is a map-based platform for agencies to draw pre-planned evacuation areas.

This application is intended to be easy to use without any previous experience with geospatial technologies or platforms.

- Users can explore their community within a map-based environment to make informed decisions on evacuation zone sizes and locations.
- Within the application, users can create, save, edit, and export evacuation zones.
- To support interoperability, users can download their evacuation zones in KML/KMZ or shapefiles for use in external evacuation systems.

**Capabilities Assessment**

**Post Assessment Action Plan**

**Evacuation Zone Pre-Planner**

*If you do not have access to the Pre-Planner, you can request access by completing this short form: IAFC Application Access.*
Wildfire Evacuation Capability Assessment

The IACF Wildfire program created the Wildfire Evacuation Capability Assessment to serve as a checklist for your agency to assess its current capability and readiness for conducting evacuations during a wildfire. You should take time to work through and is not intended to be an encompassing tool for preparing for the evacuation planning process.

General Information

Name: [Name]
Affiliation: [Affiliation]
Address: [Address]
Phone: [Phone]
Fax: [Fax]
Email: [Email]

Risk Assessment

1. Have you conducted a risk assessment for your community within the last 5 years? [ ] Yes [ ] No
2. Have you identified all potential evacuation routes or safe zones? [ ] Yes [ ] No
3. Have you identified the nearest evacuation centers and transportation routes? [ ] Yes [ ] No
4. Have you identified the potential evacuation routes and transportation routes for your community? [ ] Yes [ ] No

Relationships

If you begin this process it is important that you have all the right partners at the table. Every jurisdiction is different in approach to evacuation. However, the following list of possible partners should be considered:

Traditional:
- [ ] Neighbors and residents
- [ ] Law enforcement (city, county, state)
- [ ] Emergency management
- [ ] Land management agencies (BPR, BLM, BUA, LCRP, State, etc.)
- [ ] Surface management
- [ ] Tribal nations
- [ ] Non-Traditional:
- [ ] Public works
- [ ] Planning/Planning directors
- [ ] Water department/chief engineer
- [ ] Fire department/department chief
- [ ] Multi-agency planning
- [ ] Community Wildfire Protection Plan (CWPP) Partners
- [ ] Interagency agreement (mutual aid agreements)
- [ ] Wildlife
- [ ] Gas
- [ ] Police
- [ ] Electric
- [ ] Rural and remote
- [ ] Non-governmental organizations
- [ ] Emergency management agencies
- [ ] Field and tactical
- [ ] IT/IT systems
- [ ] Identify agency contacts and process for ensuring notifications of traffic and/or disasters:
- [ ] High-risk wildland areas
- [ ] High-risk urban areas
- [ ] High-risk rural areas
- [ ] High-risk cultural sites
- [ ] Health and human services
- [ ] Animal rights advocates
- [ ] Religious groups
- [ ] Tactical/strategic
- [ ] [ ] National Weather Service
- [ ] [ ] National Geographic Society
- [ ] [ ] [ ] National Geographic Society

Do you have a good understanding of all the partners who need to be involved in your jurisdiction? [ ] Yes [ ] No

Communications

Communications between responders and agencies is critical during the response to wildfires and during evacuations:

1. Do you have a radio system in your jurisdiction that has separate command and tactical frequencies that are approved and all responders can access? [ ] Yes [ ] No
2. Do you have a radio system in your jurisdiction that has separate command and tactical frequencies that are approved and all responders can access? [ ] Yes [ ] No
3. Do you have a radio system in your jurisdiction that has separate command and tactical frequencies that are approved and all responders can access? [ ] Yes [ ] No
4. Do you have a radio system in your jurisdiction that has separate command and tactical frequencies that are approved and all responders can access? [ ] Yes [ ] No
5. Do you have a radio system in your jurisdiction that has separate command and tactical frequencies that are approved and all responders can access? [ ] Yes [ ] No
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7. Do you have a radio system in your jurisdiction that has separate command and tactical frequencies that are approved and all responders can access? [ ] Yes [ ] No
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9. Do you have a radio system in your jurisdiction that has separate command and tactical frequencies that are approved and all responders can access? [ ] Yes [ ] No
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Download as PDF
Wildfire Evacuation Planning Toolkit

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- To support interoperability, users can download their evacuation zones in KML/KMZ or shapefiles for use in external evacuation systems.

Capabilities Assessment

Post Assessment Action Plan

Evacuation Zone Pre-Planner

*If you do not have access to the Pre-Planner, you can request access by completing this short form: IAFC Application Access.
To help fill gaps addressed in the Wildfire Evacuation Capability Assessment, relevant wildfire evacuation planning resources are provided.
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Evacuation Zone Pre-Planner

Find address or place

Instructions
This web-mapping application features several "widgets" (tools) to help you create evacuation zones to aid the public in the event of an emergency.

Create Evacuation Zones Workflow
Creating custom evacuation zones for pre-planning purposes is straightforward:

1. Click the Create Evac Zones and Add Points widget.
2. Select the Evacuation Zones new feature in the bottom pane.
3. Click on the map to start drawing a polygon shape, each click is a corner of the shape. Double click on final corner to complete the polygon.
4. Add applicable information on the right side pane within the empty text boxes. Be descriptive but concise.
5. Click Save at the bottom.

Follow the same steps above to place a Point of Interest, one click will place the point.

Export Data Workflow
The common operating workflow for creating exported Shapefiles, KMLs, CSVs and more within this webapp proceeds as follows:

1. Use the Create Evac Zones and Add Points widget to add points of interest and draw custom evacuation zones particular to your efforts. Fill in all applicable information on the side to annotate the features.
2. Use the Filter and Select widgets to pare down the evacuation zones to the ones wished to export outside the...
Explore Your Community to make data-driven decisions about evacuation planning!

- Population Centers
- Local EOCs
- Law Enforcement
- Fire Stations
- Cell Towers
- Schools
- Hospitals
- Nursing Homes
- Roads
Draw, save, and edit evacuation zones within a map-based environment.
View data about the zones:
- Acreage
- Building Estimates
- Population Estimates
- FEMA Shelters
- Fire Stations
- Hospitals
- Nursing Homes
- Schools
New Wildfire Risk Data:
- USFS Wildfire Risk to Structures
- Wildfire Hazard Potential (USFS)
Export KML/KMZ files as well as shapefiles for use in external public alerting systems.
✓ Draw an Evacuation Zone Guide
✓ View Information (Data) Guide
✓ Add Information (Data) Guide
✓ Copy Features Guide
✓ Edit Evacuation Zone Guide
✓ Export Evacuation Zone Guide
✓ Cut One Evacuation Zone into Two Guide
✓ Combine Two Evacuation Zones into One Guide
✓ Reshape Evacuation Zone

One-Pager Help Guides
Volunteer Firefighter Recruitment & Retention

• More and more CFDs are losing firefighters and they are not being replaced.

• The pool for candidates is changing.

• We have not provided tools to identify those changes and how to find the new candidates.
North Carolina Volunteer Firefighter Recruitment & Retention

Total Survey Submissions: 516
Number of Departments with Survey Submissions: 99

Select a Region to see number of submissions
Select a County to see number of submissions
Select a Department to see number of submissions
### View 3: Recruitment Locations

![Map showing recruitment locations](image-0x0-to-960x540)

#### Closest Address
114-118 Lockhart St, High Point, North Carolina, 27263

<table>
<thead>
<tr>
<th>Location Type</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Veteran and Military Organizations</td>
<td>1</td>
</tr>
<tr>
<td>Clubs</td>
<td>4</td>
</tr>
<tr>
<td>Public Schools</td>
<td>13</td>
</tr>
<tr>
<td>Trade and Vocational Schools</td>
<td>1</td>
</tr>
<tr>
<td>Sporting Goods Stores</td>
<td>5</td>
</tr>
</tbody>
</table>

- **Highland Golf of Archdale**: 2.09 mi
- **Race Dia Racing Apparel**: 2.2 mi
- **Team Connections Inc**: 3.16 mi
- **Hibbert Sports**: 3.45 mi
- **Fishing Fever Tackle**: 4.07 mi
<table>
<thead>
<tr>
<th>Location</th>
<th>Experience</th>
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</thead>
<tbody>
<tr>
<td>Gyms</td>
<td>Day Time, Week Day, I showed up</td>
</tr>
<tr>
<td>Hunting Stores</td>
<td>Night Time, Weekend, It was great</td>
</tr>
<tr>
<td>Camp Grounds</td>
<td>Day Time, Holiday, Used Smokey the bear</td>
</tr>
<tr>
<td>Schools</td>
<td>Day Time, Week Day, Had hot dogs</td>
</tr>
<tr>
<td>Camp Grounds</td>
<td></td>
</tr>
</tbody>
</table>

**What Would You Do Different Next Time?**

- **Gyms**: Advice to improve next time: Work out with the guys
- **Hunting Stores**: Advice to improve next time: Give away Hunting licenses
- **Camp Grounds**: Advice to improve next time: Get a cooling vest
- **Schools**: Advice to improve next time: Make homemade Chilli
- **Camp Grounds**: Advice to improve next time: Go with bear spray
- **Schools**: Advice to improve next time: Take Candy for the kids
- **Gyms**
Questions?

Jeff Dulin Strategic Advisor IAFC
jdulin@iafc.org
THANKS!

napsgfoundation.org

@napsgfoundation