Emergency Response System Resilience:
Assessing Risk
Resource Capacity & Deployment Strategies
All Hazards Responders

- Fire Suppression
- EMS
- Rescue
  - Technical
  - Water
  - Confined Space
- HazMat
Assessing Community Risks

- Requires a **logical, systematic, and consistent methodology** that can be replicated over the entire community from year-to-year.

- Assess risks associated with **identified hazards** to determine potential **adverse impact** from fire, medical emergencies, hazardous materials incidents, technical rescue incidents or other incident types.

- Use stable and known data from the U.S. **Census** and information from the **Geographic Information System (GIS) parcels** to recognize increase or decrease in the risk factors.
Two Factors in Assessing Risks

- **Probability** or likelihood of an incident occurring

- **Consequence** (magnitude) measure of the outcome of an incident
Risk Levels Defined

- **Very High** - national leadership, houses of government, essential to national fiscal/monetary policy/ economic functions, greater than 250,000 sq ft / populations >750, areas of high crime, routine protests, and significant history of violence.

- **High-Risk** - High-rise buildings, hospitals, schools, nursing homes, houses of worship, explosive plants, refineries, structures with irreplaceable material, biological/chemical/radiological/medical research, public assembly occupancies between 100,000 - 250,000 sq ft. / population 250 - 750 in areas with moderate crime and history of violence.
Risk Levels Defined

- **Medium-Risk** - Apartments, offices, mercantile and industrial occupancies 10,000 - 100,000 sq ft / population between 100-250 in areas with low crime and non-adversarial public contact.

- **Low-Risk** - One-, two- or three-family dwellings and scattered small business and industrial occupancies up to 10,000 sq ft with population 1-100 in areas with little to no public contact, no history of violence.
Risk Ranking by Geographic Area

- Using CAD data - Incident types can be **categorized and counted** by census block (or tract).
  - Fire, EMS, HazMat, Rescue, etc...

- Once the incidents by type are quantified (eg. number of fires per census block)... **Census tracts or blocks can be sorted by number and magnitude of the incidents** in those tract/blocks, from the lowest to the highest.

- The **total risk rank** calculated based on the probability and consequence score of each block group. **This score can be mapped geographically to show high prob/high consequence areas.**
NEW Hazards/ NEW Assessment

- Active Shooter
- IED
- Rammings
- Civil Unrest
- Opioids
Threat Assessment

**Vulnerability Assessment**

- Identify where *infrastructure is vulnerable* to known and future risks

- Identify key dependencies (eg. Water) and *interdependencies* (eg. Police Response)
**NEXT: Threat Assessment**

(*Plan for the NEXT- Not the Last*)

- Assess Department Data for trends
- Assess Demographic changes annually
- Assess Structures/ Hazard levels by Response Zone

- **Stadiums, concert venues, airports, hospitals, government, worship places...**
- **Open-access events** - marathons, parades, protests, rallies, festivals, fireworks displays, farmers markets, and high-profile trials/verdicts, high-profile funerals and vigils or memorials.
DATA Sources

- Consult Fusion Centers
- NFORS – Call Type Geocoded location
- CDC 500 City Report
- CDC Social Vulnerability Index
ISIS’ reiterates recommendation to use vehicle to carry out ramming attacks

Video features images of aftermath of attacks in Brussels, Belgium; Paris, France; and Westminster, UK
Ramming in New York

- On October 31, 2017, an Islamic terrorist drove a rented pickup truck into cyclists and runners for about one mile of the Hudson River Park bike path in Lower Manhattan.

- The vehicle-ramming attack killed eight people and injured eleven others.
RAMMING in Toronto

- **April 23, 2018** - A vehicle ramming attack, using a rented Ryder white van, killed 10 people and injured a reported 15 others at a busy street in Toronto, Ontario, Canada

- The **lack of a connection** to Islamist extremism, to a terrorist group, or to another form of extremist group raises a disturbing prospect.

- The profile garnered by vehicle ramming attacks in inflicting casualties internationally, including in Canada and the United States, and **bringing attention to their perpetrators**, may be prompting emulation by individuals motivated by criminal intent, personal grievances, or mental disturbances.
Pulse Shooting

- The response to the Pulse nightclub massacre in 2016 followed protocol, but more training and better coordination are needed.
- Could have done better, including coordination, organization and communication among first responders.
- First responders were *ill-equipped to protect themselves*.
- Orlando Fire Department and EMS were *not* included in the command center.
Church Shooting in Texas

- On 5 November 2017, 26-year-old Devin Patrick Kelley shot and killed 26 parishioners and wounded another 24 at the First Baptist Church in Sutherland Springs, Texas.

- As Kelley exited the church, a local resident engaged Kelly with a long-gun, striking him twice.

- Kelley fled in his SUV but shortly thereafter crashed. Kelley was found dead in his vehicle from apparent self-inflicted gunshot wound.
Mass Gathering

- United Kingdom. On 22 May 2017, a homemade bomb was detonated as people were leaving Manchester Arena following a concert.
- Twenty-three people were killed and over 500 were injured.
Las Vegas Shooting

- Oct. 1, 2017 shooting that killed 58 people and wounded 851.

- Occurred between 10:05 and 10:15 p.m. PDT

- 64-year-old Stephen Paddock of Mesquite, NV, fired more than 1,100 rounds from his suite on the 32nd floor of the nearby Mandalay Bay Hotel.

- Still no motive known for the attack.
Most Common Risk Factors

- Access to weapons
- Emotional distress
- Social, personal, or racial grievance
- Online posting ("leakage")
- History of law enforcement contacts
- Verbal statements ("leakage")
- Signs of possible mental health issues
- Internet searches on grievances, targets
- Loss of a relationship or job
- Difficulties with relationships, finances
- Alcohol or substance abuse
- Extremist media consumption
- Violence toward others
- Suspicious travel
- Military or civilian weapons training
- Ideological identification
Assessing RISK: Driving Factors

- **CRIMINAL/VIOLENT HISTORY** | previous criminal convictions, violent behavior, or substance abuse issues
- **MENTAL HEALTH** | Combined with other risk factors, may push an individual toward radicalization or extremist engagement.
  - **Lone offenders** have a significantly higher mental illness rate than group-based terrorists.
- **IDENTITY** | Struggle to identify and define a life purpose and meaning
  - Extreme belief systems
- **BELONGING** | Social isolation and a sense of being cut off from structure and community due to problematic interpersonal conflicts
- **GRIEVANCES** | Dualistic thinking
  - (us vs. them; wrong vs. right; good vs. evil)
  - **Strongly-felt, perceived injustice, disrespect, humiliation, or persecution**
High Rise- High Hazard

- **Grenfell Tower**
  - June 14, 2017- Fire broke out at the 24-storey Grenfell Tower block of public housing flats in North Kensington, West London.
  - Caused **71 deaths and over 70 injuries**.
  - The first call was at 12:54 a.m., Six minutes later, as the first firefighters reached the scene, brigade veterans struggled to fathom the speed of the blaze.
Weather Events

- Hurricane Harvey

“We staffed everything we have available,” ...despite encountering three disastrous floods in as many years, the department has remained in the same position: woefully lacking adequate equipment and funding to train and certify more firefighters to respond to major flooding events.
Multiple Simultaneous Fires

- **Firefighters battle two fires less than two miles apart** in Fairfax County, VA.

- The first fire—at a senior living facility—80 firefighters battled the blaze before it was brought under control.
  - “When you have seniors...have two firefighters on a wheelchair so it takes more effort”.

- The second fire was in a neighborhood of townhouses

- More than 60 firefighters fought the blaze. One firefighter was injured.
Opioids

- Opioids leading to EMS responses Daily

- What about--- Fentanyl or Carfentanil as a weapon?

- 2002 Melnikov Theatre incident, Russian special forces used aerosol chemical to end siege with hostages- the aerosol “likely” contained Carfentanil.

- (U) Fentanyl and Carfentanil are readily available from China manufacturers - could possibly be aerosolized as a weapon.

- Shipped and delivered in postal envelopes or packages - -If it packs it ships!- -Airline Ghosting luggage/packages

MORTALITIES

174 Americans die from drug overdose each day.¹

66,817 People died from drug overdose for the 12 months ending June 2017.²

16.3% Increase in overdose deaths between June 2016 and June 2017.³
Resources to Consider - HIDTA

- Opioid tracking
- Overdose (Narcan Administered data)
- Partnering with NFORS

Contact
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Responses- Key Variables

✓ Initial and Ongoing Assessment(s)

✓ Pre-Incident Planning

- Preparation
  - Resources
  - Training

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✓ Respond
  - Execute
Response Performance

There are three basic components of fire department response performance.

- **Availability** — The degree to which the resources are ready and available to respond.

- **Capability** — The abilities of deployed resources to manage an incident.

- **Operational Effectiveness** — A product of availability and capability. It is the outcome achieved by the deployed resources or the ability to match resources deployed to the risks to which they are responding.
Response: Telling the Story

- The **CAD** provides a treasure trove of information including geocoded addresses for visualization of response data.

- **CAD** also records the type of call, times for crew dispatch, in route, arrival on scene and termination of the response.

- Together these data **Tell the Story**!
NFPA 1710

Applying the Standard to the Job
Controllable Impact on Response

- **Call processing time** is the time the call being received at the PSAP to the dispatching of the first unit.

- **Turnout Time** is the elapsed time from when a unit is dispatched until that unit changes their status to ‘responding’.

- **Travel time** is the elapsed time from when a unit begins to respond until its arrival on the scene.
1710
Performance Times

- **Call processing Time**
  - 64 seconds /90 percent
  - 106 seconds 95 percent

- **Turnout Time** =
  - 60 sec EMS
  - 80 sec Fire

- **Travel Time**
  - 240 sec first engine
  - 480 sec initial alarm
  - 610 sec initial alarm (high-rise)
1710 Operating Units

- **Engine** = minimum 4
- **Truck** = minimum 4
- **High volume/geographic restrictions** = 5 minimum
- **Tactical hazards dense urban area** = 6 minimum on duty
NFPA 1710
Hazard Levels / Effective Response Force

- **Initial Alarm Deployment**
  - **Low Hazard** = 15 FF in 8 Min
  - **Medium Hazard** = 28 FF in 8 Min
  - **High Hazard** = 43 FF in 10:10 Min
Multiphase Study on Firefighter Safety and the Deployment of Resources

www.firereporting.org
Scenario-Based Planning

- Develop Incident Response Plans
- Back to Basics
- Roles and responsibilities

- High Threat Response
  - Active Shooter Rescue Task Force
  - Fire as a Weapon
  - Explosive
  - Ramming
  - Edged Weapons
NFPA 3000 Responding to Active Shooter/Hostile Events

Provisional Standard

Released May 1, 2018
1.1 Scope. The scope of this standard is limited to the necessary functions and actions related to preparedness, response, and recovery from an active shooter/hostile event response (ASHER).

3.3.5 Active Shooter/Hostile Events Response (ASHER) Program. A community-based approach to preparedness, mitigation, response, and recovery from an ASHER incident, including public and private partnerships, emergency management, the medical community, emergency responders, and the public.
8.4 Establishing Unified Command. The AHJ for those agencies responsible for ASHER mitigation shall establish practices to ensure early integration of the Unified Command process.
14.3.1* Body armor provided shall be at minimum a **Level III-A ballistic vest** as defined by the National Institute of Justice (NIJ) Standard-0101.06, *Ballistic Resistance of Body Armor*.

14.3.1.1* Body armor shall be NIJ certified, and the model shall be on the NIJ compliant products list.

14.3.2* Personnel assigned to an integrated response team shall be equipped at a minimum with Level III-A body armor tested to NIJ, FBI, and Drug Enforcement Administration (DEA) standards, **means of communication**, and an **identifying garment**.

14.3.2.1 RTF shall consider a ballistic helmet, a flash light, medical exam gloves, an individual first-aid kit (IFAK), a radio with shoulder strap, and remote microphones with earpieces for communication.
NFPA 3000 Responding to Active Shooter/Hostile Events

3.3.49* Rescue Task Force (RTF). A combination of fire and/or EMS personnel and law enforcement who provide force protection.

The RTF shall provide threat-based care, triage, and extracting victims to a casualty collection point or other designated location.

A.3.3.49 Rescue Task Force (RTF). The law enforcement officers (LEO) are assigned as force protection for this team and should not separate from the fire and/or EMS personnel.
Build in Redundancy

- Build in Redundancy (in case of localized failure or surge---

- *AVOID single point of failure*-part of a system that, if it fails, will stop the entire system from working

- If the proper level of redundancy is not built into the system to maintain timely and adequate response the department’s response reliability decreases.

- The response strategy should consider, at the least, redundancy or duplication of essential personnel, critical systems, equipment, information, operations, and material (NFPA 1600)
Assure Manual Overrides for Automated Systems

- (CAD/Dispatch/Communication)
- Truncated Radio Communication
- Mobile Data Transmitter (MDT) / Mobile Communication Terminal (MCT)
- AVL
- Logistics
Planning and Preparedness

- Have a plan - predetermined assignments
- Make plan specific to your location/structures
- Plan should be scalable
- Train to the plan
- Plan must not depend on hierarchal structure - Need modular (ICS) - rely on expertise not rank (authority/expectation)
- There won’t be enough emergency personnel to care for all of the wounded. (*Train in tourniquet use - and have them available)
Practice the Plan

- Recruit Training
- “No-notice”
- Battalion training
- LE Integrated training
- Tabletop new game changing incidents
- EMS specific skills refresher
Ongoing Participation: Operations

- Incident Command
  - Establish Unified Command
- Area coordination
- Officer Assignments
- Accountability
Operations

- On Scene Assignments
  - Zones of Operation
    - Use apparatus as safety barriers
  - Communication
    - Complicated within unified command structure
    - Methods to be used
      - Existing system (what is used daily)
      - Cell phones
- Mutual Aid
  - Indications for use
  - Communication and Assignment
Outside Communications

• Overwhelmed dispatch: pre-build way to communicate with employees AND their family and friends.

Continuity of operations begins with IC.
  • Be engaged with unified command; indicate your needs
  • Prepare for alternate work sites for various job functions
  • You need a media person AT the scene
    • Coordinated messaging must include unified command
Deployment Strategies

- Asset location
- Deployment
- Resilience
FireCARES

- Staffing Tables
- Coverage Capability
- GIS - Response Mapping
System Resilience

- **Resilience** is the capacity to *recover quickly* from difficulties or stresses.

- **Excess capacity** to assure that they are resilient in the face of excess demand.

- Many departments have elaborated systems of move-ups and mutual aid agreements to accommodate this need. *RE-CHECK your SOPs*
Surge Capacity

- Surge capacity is a measurable representation of ability to manage a sudden influx of call volume.

- Surge planning for immediate response resource availability should be critical components of every fire departments emergency plan.
“We have never done it that way”

1960’s-1970’s
“We have never done it that way”
1980’s
“We have never done it that way”

1990’s
“We have never done it that way”

2000’s
“WE HAVE TO DO IT THIS WAY”

2010’s
Response & System Resilience

Have A Plan