Fire Services Deployment Study Briefing

Department of Public Safety

Presented on October 30, 2018

CITYGATE ASSOCIATES, LLC
FIRE & EMERGENCY SERVICES

The Business of Better Government

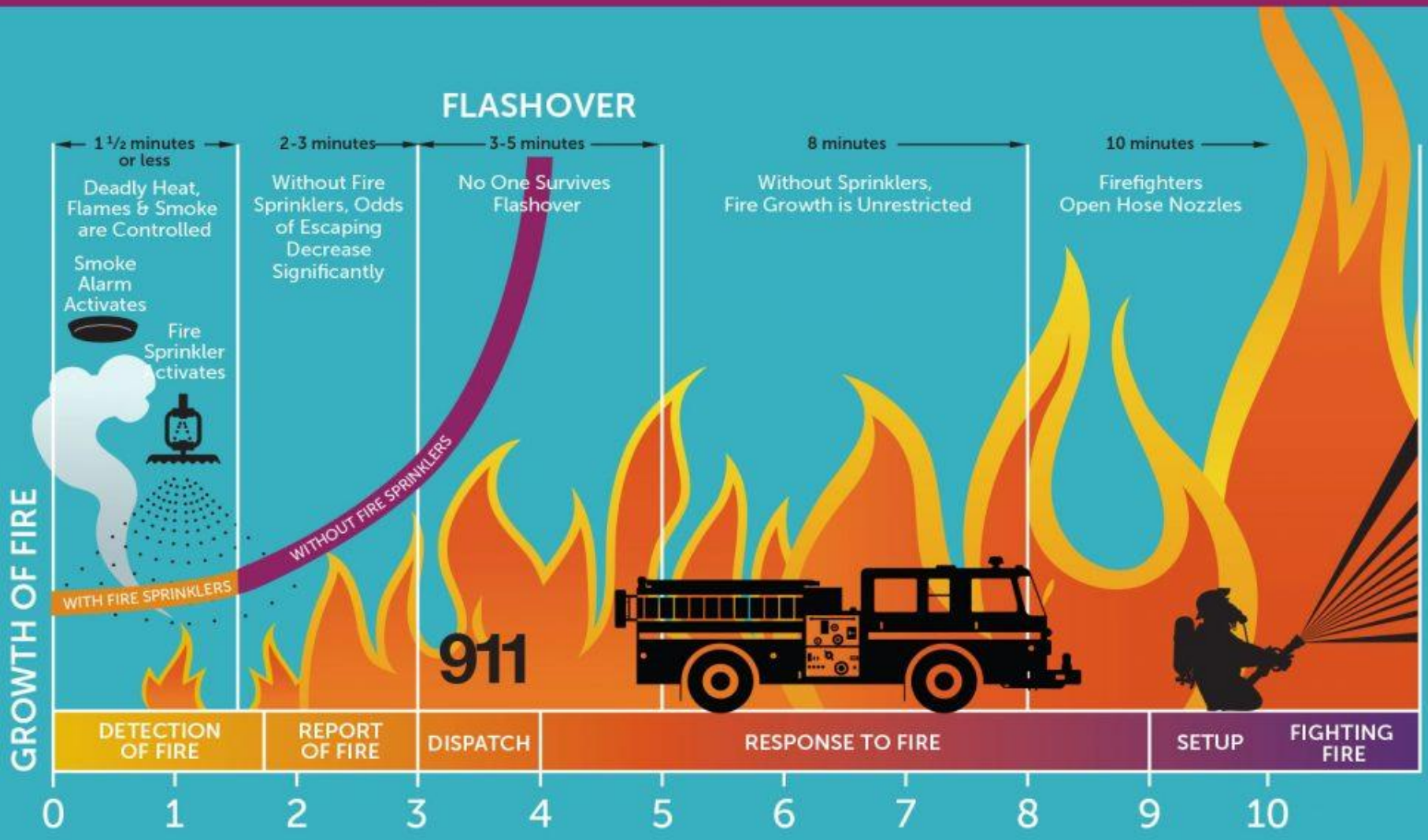
Fire Service Delivery Policy Choices

- There are no mandatory federal or state regulations directing the level of fire service response times and outcomes. Thus, communities have the level of service they desire and can afford.
- The body of regulations on the fire service provides that *if fire services are provided at all, they must be done so with the safety of the firefighters and citizens in mind*.
- Deployment is about the **speed** and **weight** of the response:
  - **Speed** = single neighborhood-based units
  - **Weight** = multiple units amassing quickly enough to stop serious fires

Service-Level Goals

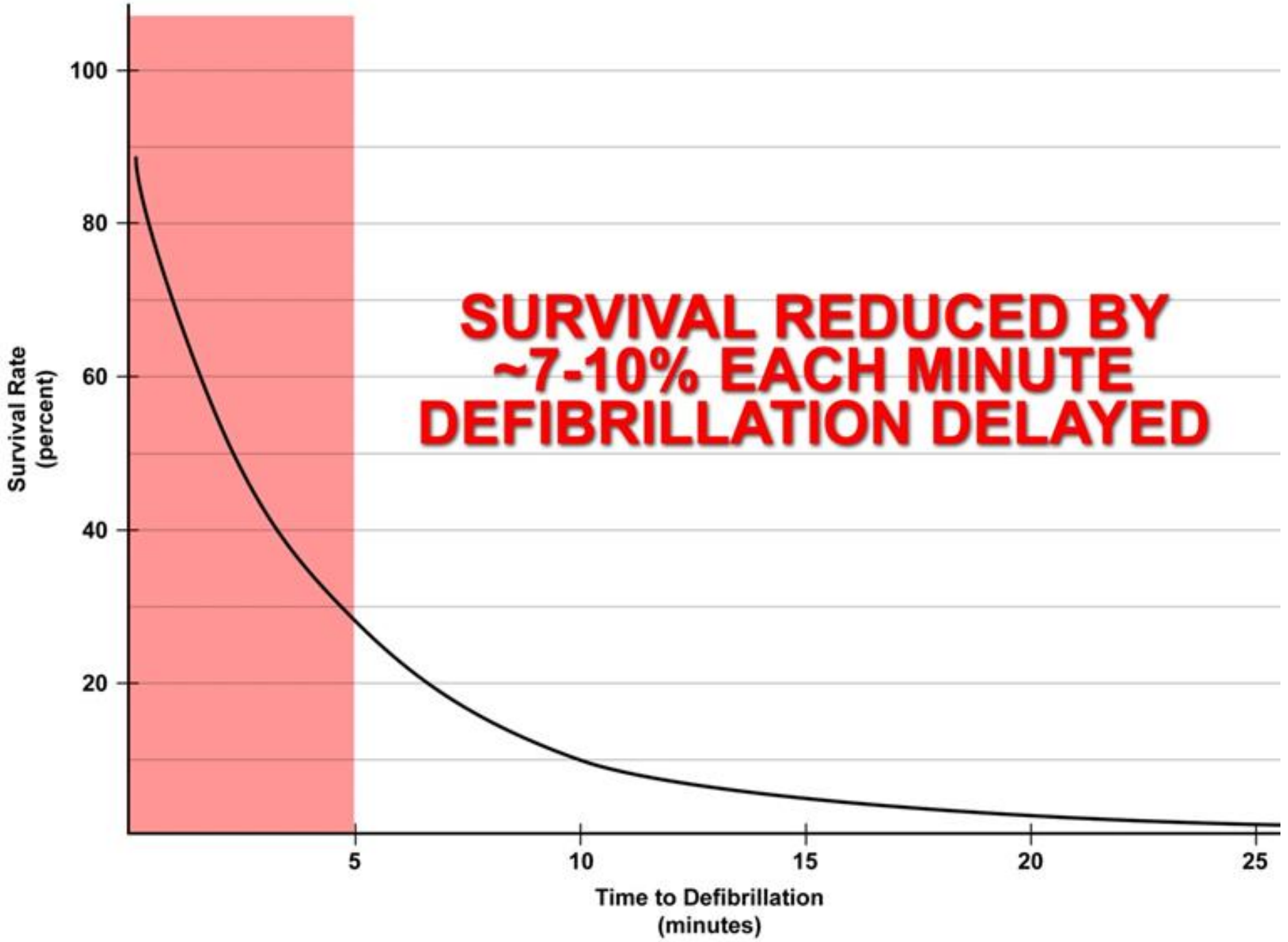
- Time-temperature curve in building fires
- EMS survivability in full arrest
- Suppress other outdoor fires before they spread to buildings and wildland areas
- Keep small fires small
- Save people with potentially fatal medical emergencies
- This study deals with response time goals for fires and technical rescue. The County sets ambulance response time goals
- Policy goal – Provide adequate response times *to all similar risk and population density neighborhoods.*

HOME FIRE TIMELINE



TIME IN MINUTES Based upon national averages

Home Fire Sprinkler COALITION
Protect What You Value Most®
HomeFireSprinkler.org


100
80
60
40
20
Survival Rate
(percent)
SURVIVAL REDUCED BY
~7-10% EACH MINUTE
DEFIBRILLATION DELAYED
5
10
15
20
25
Time to Defibrillation
(minutes)

Risks to be Protected

- Typical of a suburban city in an urban area
- Modest on-going population growth
- Mix of residential, commercial, office, and research/industrial buildings
- Significant economic values at risk as identified
- Overall risks for the City range from ***Moderate*** to ***High***

Hazard		Overall Risk
1	Building Fire	***Moderate***
2	Medical Emergency	***Moderate***
3	Hazardous Material	***Moderate***
4	Technical Rescue	***Moderate***
5	Earthquake	***High***
6	Flood	***High***

Response Time Measure Advice

- Adopt as policy, updated response time goals
- DPS was using an average response time goal
- Best practice advice in this study:
  - NFPA #1710 for substantially career departments
  - Insurance Services Office (ISO)
  - Commission on Fire Accreditation International (CFAI)
  - International City Managers Association (ICMA)
  - Citygate experience

Response Time Measure Advice (cont.)

- Best practice advice:
  - Total response time from fire dispatch receipt to unit arrival(s)
  - Measures and goals for dispatch, crew turnout, and travel time
  - Tied to risks and outcomes
  - Reflect population density and taxation economics
- All the above used by elected officials to evualate agency goals
- Citygate-tested urban population density response times:
  - Total response of 1:30 dispatch + 2:00 crew turnout + 4:00 travel =
    - 7:30 minutes/seconds for first-due neighborhood-based unit
    - 11:30 minutes/seconds for multiple units to serious emergencies.

Citywide Call to Arrival Response Times to 90% for Fire/EMS Incidents

Station	Time
Department-Wide	07:30
Station ST1	07:05
Station ST2	07:20
Station ST3	07:28
Station ST4	06:49
Station ST5*	08:05
Station ST6	07:17

- Times are faster than the recommended 7:30 min/sec
- Measures indicate the strength of the six-station system; because most stations are close to incident activity clusters, traffic congestion does not impede most response times

* Station 5 data is from the prior Station location 2013/2015.

Travel Time by Station

Best Practice Urban Goal – 4 Minutes

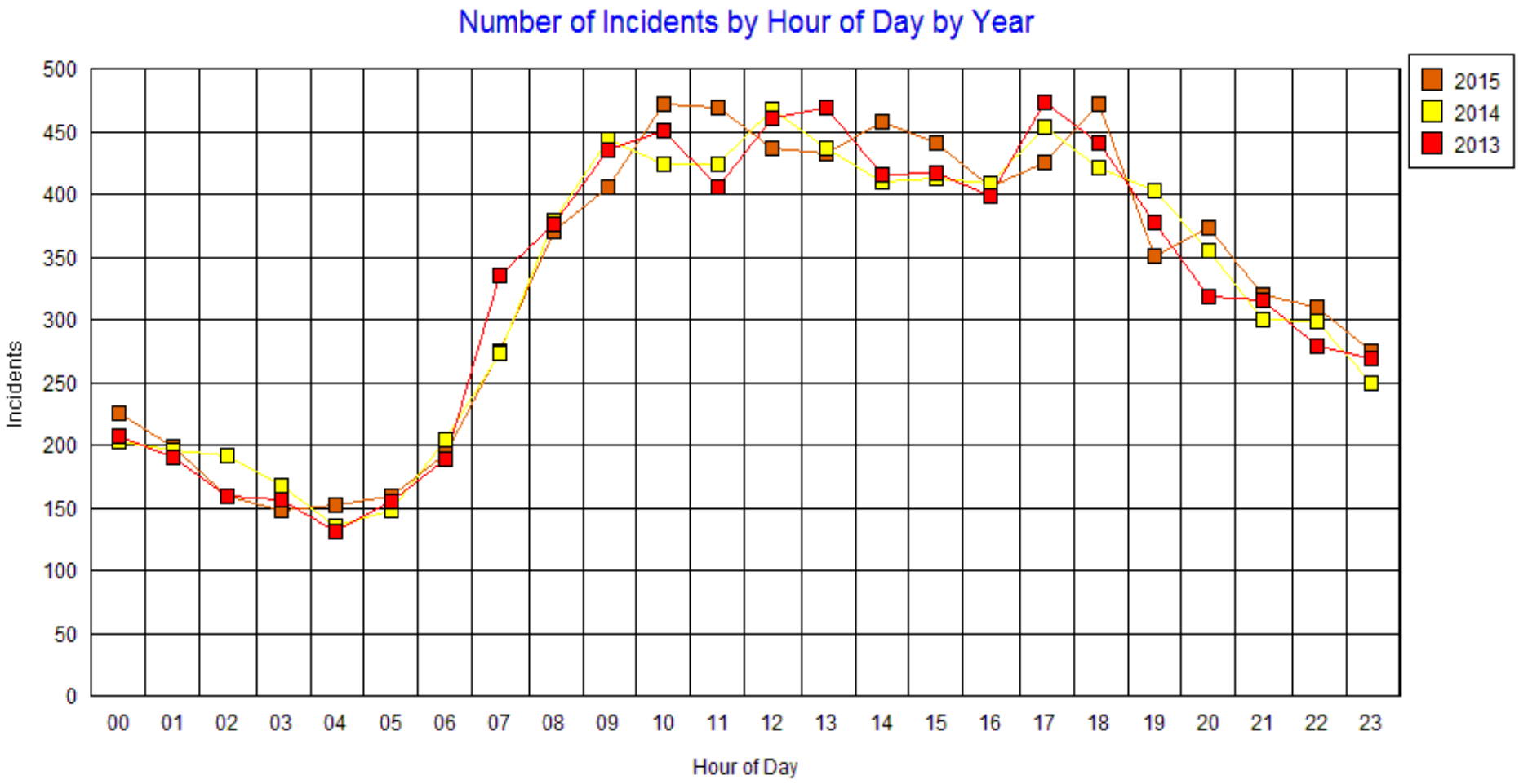
Station	2017
Department-Wide	**4:04**
Station 1	3:34
Station 2	3:56
Station 3	4:11
Station 4	3:30
Station 5*	4:32
Station 6	3:37

* Station 5 data is from the prior Station location 2013/2015.

Incident Statistics Overview

- Incidents by time-of-day, day-of-week, and month follow typical urban area patterns
- Incident volumes are typical, reflecting the demographics and population density
- Daily demand of 21.76 incidents
- 68.24% of the incidents are medical events
- Fires account for 1.73% of all incidents
- Very slow incident growth across 3-years from 2013 through 2015.

Incident Demand Trends by Hour of Day By Year



Simultaneous Incidents

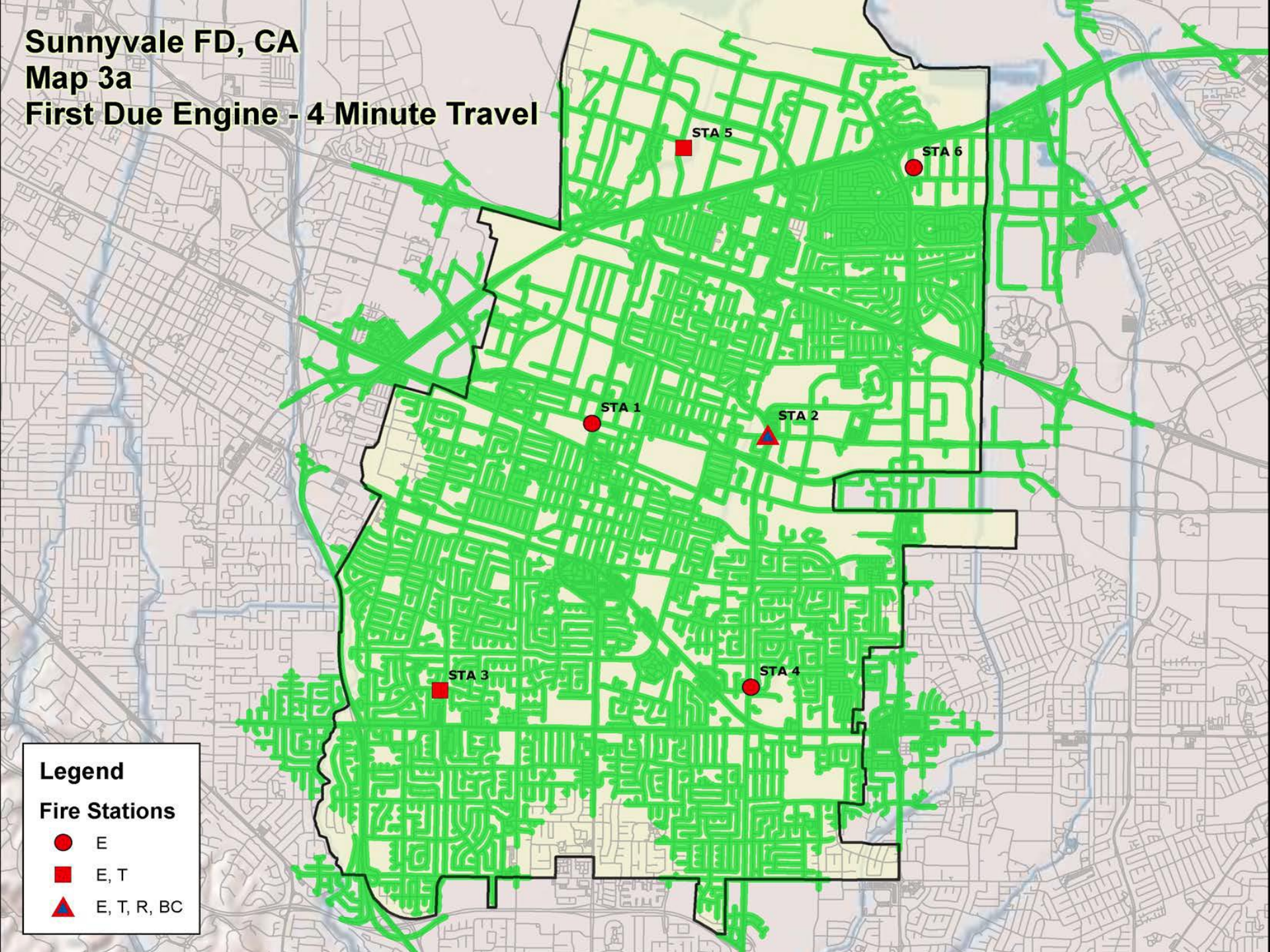
Number of Incidents Underway	Proportion of Occurrence
1 or more simultaneous incidents	31.65%
2 or more simultaneous incidents	6.20%
3 or more simultaneous incidents	0.91%

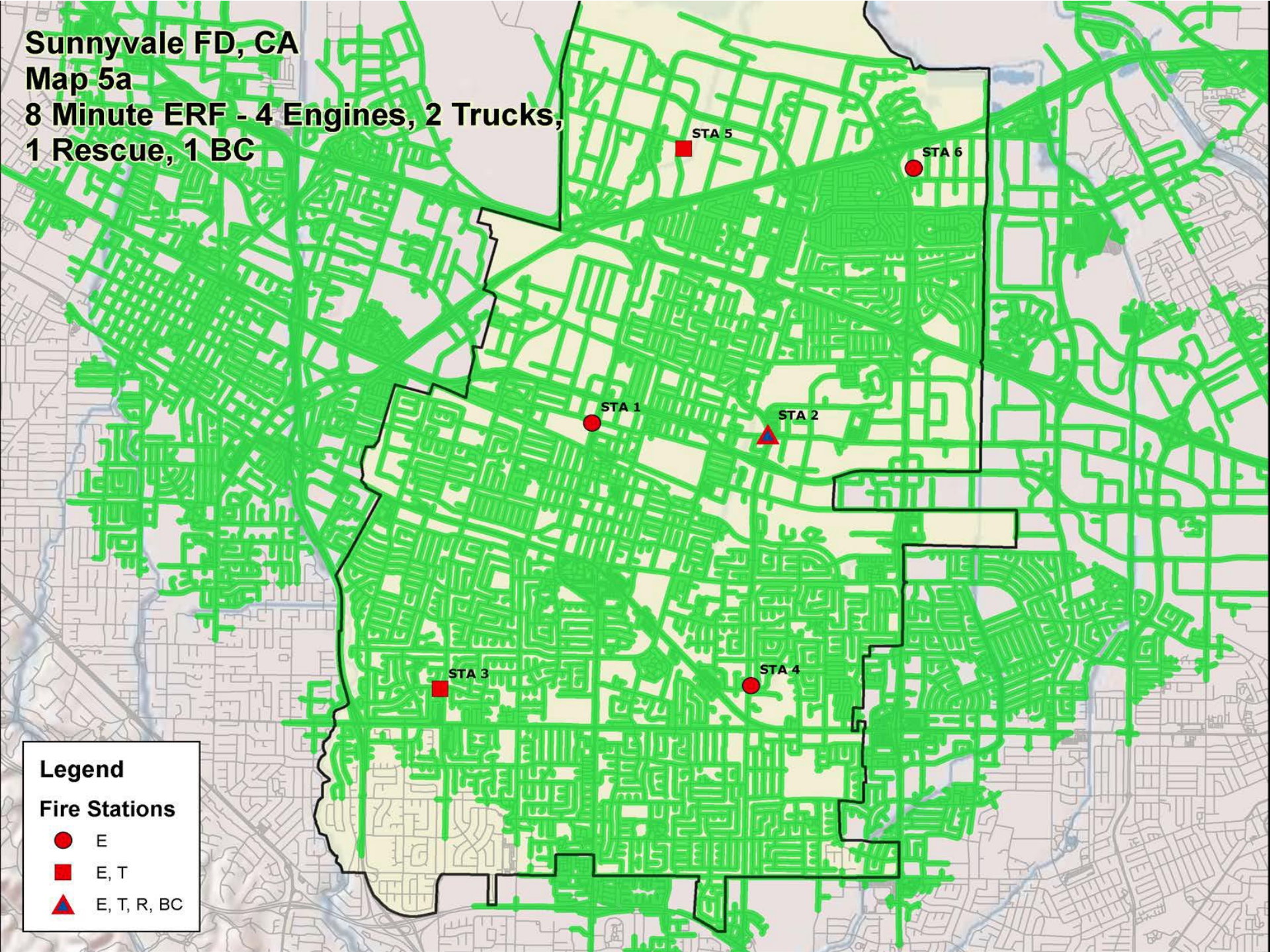
- In a combined public safety model, monitoring the impacts of simultaneous incidents is critical for *both* fire and police combined daily staffing to ensure there is a reasonable quantity of staffing for multiple unit needed firefighting.

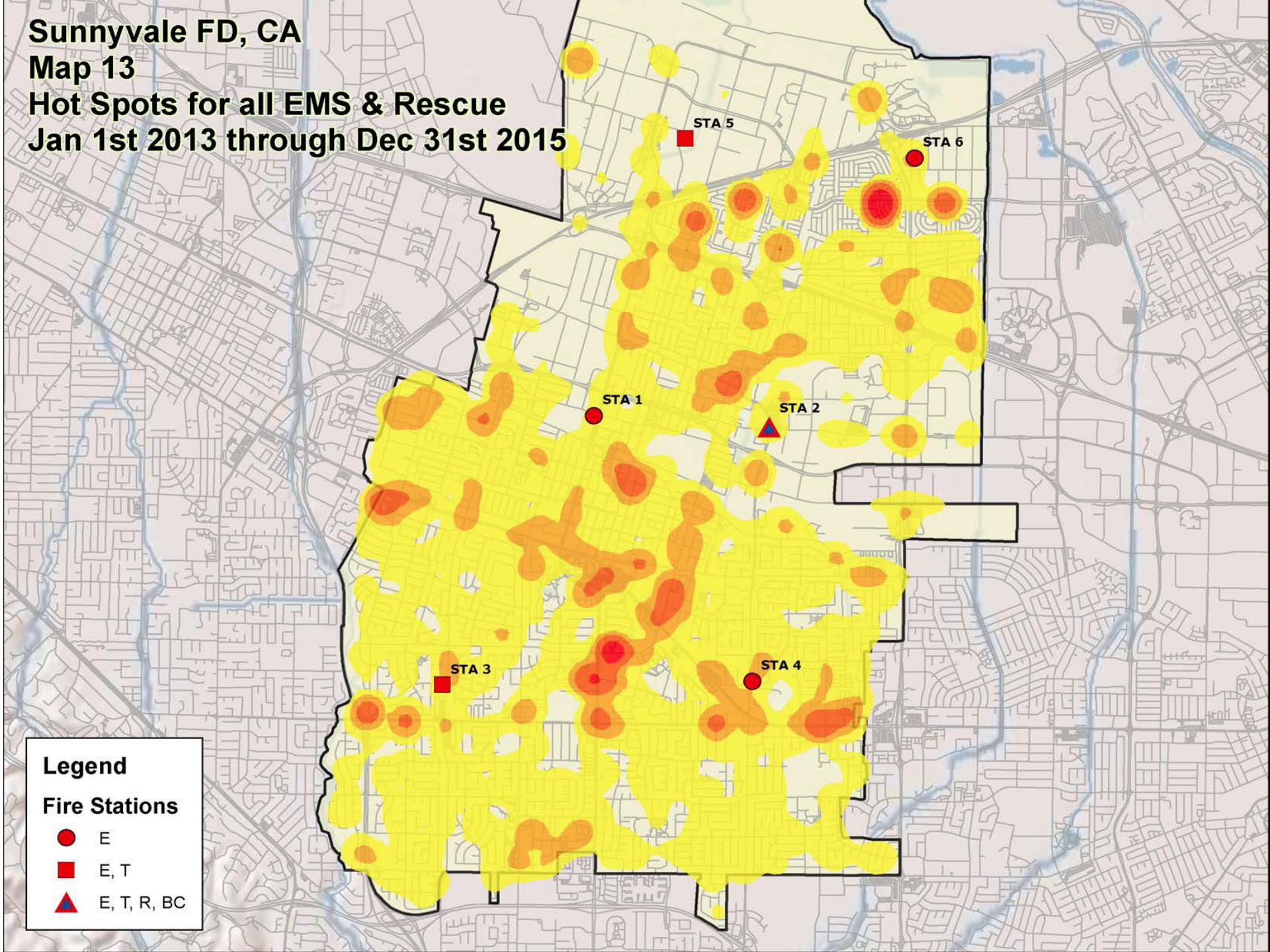
Engine Unit-Hour Utilization – 2016

Hour	EN244	EN243	EN41	EN42	EN246	EN44	EN43	EN45	EN46
00:00	4.66%	4.74%	3.96%	3.86%	2.91%	1.63%	1.46%	1.78%	1.61%
01:00	5.35%	5.82%	3.21%	5.01%	1.83%	2.86%	2.00%	1.63%	0.57%
02:00	3.58%	3.79%	2.65%	2.81%	1.90%	1.67%	1.28%	2.14%	0.41%
03:00	3.64%	2.61%	2.55%	2.70%	2.05%	1.04%	0.39%	1.03%	0.03%
04:00	3.86%	4.77%	6.29%	3.87%	1.96%	0.73%	1.49%	2.05%	1.42%
05:00	6.00%	5.37%	3.33%	3.72%	2.42%	3.55%	3.60%	1.73%	0.82%
06:00	3.46%	4.47%	4.17%	2.42%	2.84%	2.05%	1.93%	3.05%	1.59%
07:00	6.06%	8.05%	3.37%	2.81%	3.31%	1.33%	1.99%	1.83%	0.58%
08:00	6.66%	8.13%	4.64%	4.50%	4.09%	4.68%	3.64%	3.06%	2.47%
09:00	7.78%	7.56%	6.63%	6.37%	5.12%	6.08%	5.46%	3.51%	3.60%
10:00	8.02%	7.37%	6.62%	7.58%	6.24%	6.64%	7.57%	3.25%	6.17%
11:00	9.63%	7.21%	6.44%	7.55%	5.48%	7.57%	6.54%	4.46%	5.37%
12:00	9.56%	6.54%	6.94%	7.31%	6.59%	6.31%	3.47%	5.09%	5.20%
13:00	6.57%	7.03%	7.08%	7.96%	6.01%	3.90%	4.25%	4.88%	2.93%
14:00	8.38%	6.48%	8.09%	7.18%	4.33%	6.99%	5.26%	5.13%	4.26%
15:00	5.31%	6.87%	9.10%	7.89%	5.38%	6.32%	4.51%	5.39%	4.60%
16:00	7.82%	8.99%	7.12%	8.62%	4.96%	5.14%	4.85%	4.39%	2.50%
17:00	9.60%	8.11%	5.99%	6.13%	5.98%	4.74%	4.56%	4.75%	3.80%
18:00	8.29%	8.68%	8.64%	7.70%	4.94%	4.25%	3.74%	3.89%	1.86%
19:00	7.41%	7.61%	6.22%	5.43%	4.15%	2.76%	3.33%	3.02%	1.72%
20:00	9.75%	7.91%	8.35%	6.21%	4.80%	4.71%	2.43%	1.80%	1.63%
21:00	7.53%	5.75%	6.03%	5.81%	4.21%	3.30%	2.36%	2.58%	0.95%
22:00	6.35%	7.98%	5.87%	5.14%	3.68%	2.38%	2.12%	1.32%	0.87%
23:00	6.09%	4.35%	5.30%	3.92%	4.05%	1.75%	1.05%	2.21%	1.14%

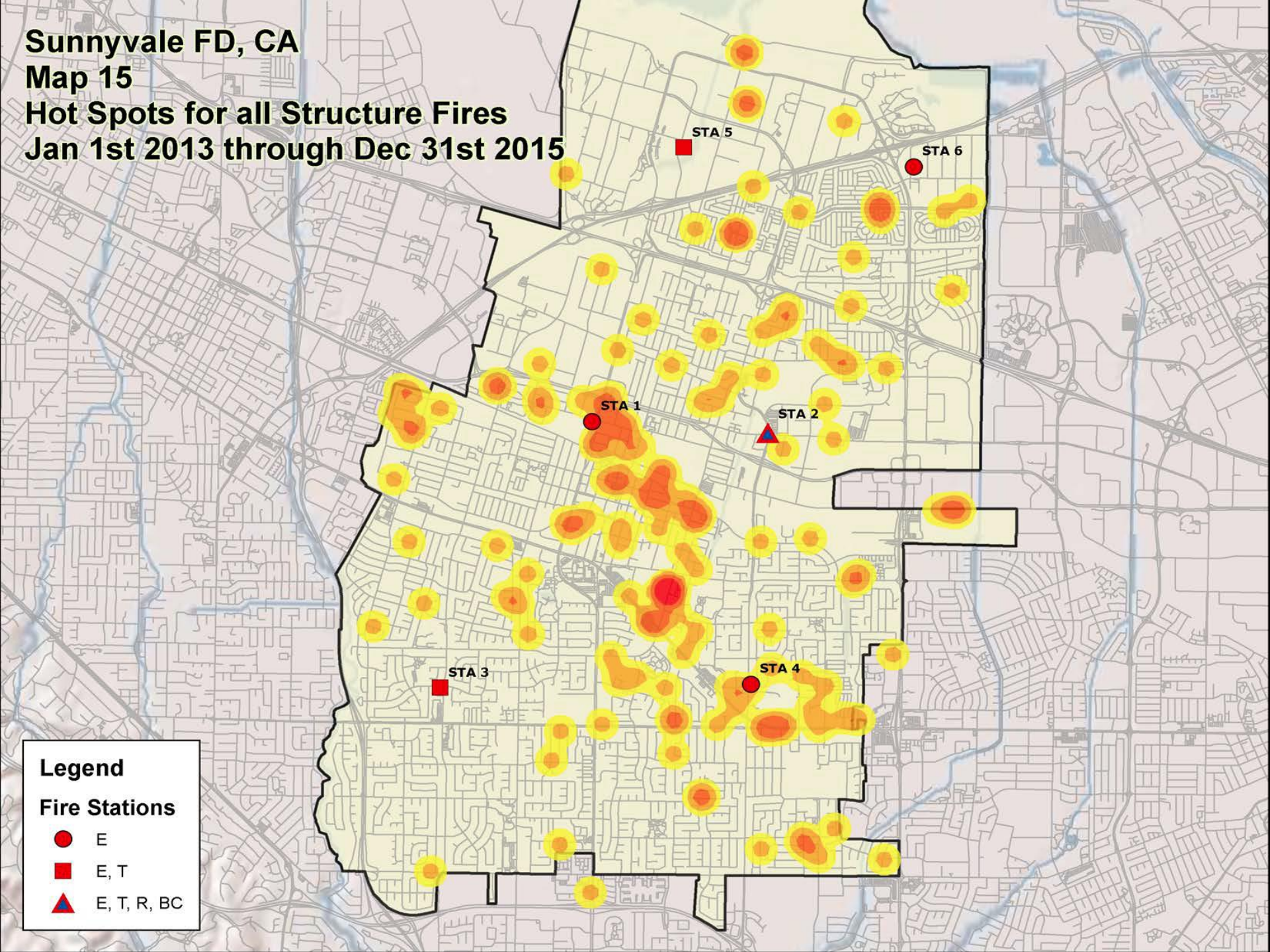
Review GIS Coverage Mapping


Sunnyvale FD, CA
Map 3a
First Due Engine - 4 Minute Travel
STA 5
STA 6
STA 1
STA 2
STA 3
STA 4
Legend
Fire Stations
E
E, T
E, T, R, BC


Sunnyvale FD, CA
Map 5a
8 Minute ERF - 4 Engines, 2 Trucks,
1 Rescue, 1 BC
STA 5
STA 6
STA 1
STA 2
STA 3
STA 4
Legend
Fire Stations
E
E, T
E, T, R, BC


Sunnyvale FD, CA
Map 13
Hot Spots for all EMS & Rescue
Jan 1st 2013 through Dec 31st 2015
STA 5
STA 6
STA 1
STA 2
STA 3
STA 4
Legend
Fire Stations
E
E, T
E, T, R, BC

Sunnyvale FD, CA
Map 15
Hot Spots for all Structure Fires
Jan 1st 2013 through Dec 31st 2015



Deployment Findings

Deployment Findings

- The current number of six fire stations can reach 91 percent of the street segments within 4 minutes travel time if traffic congestion is not present. This is excellent coverage in an urban area
- The City's time-of-day and day-of-week calls for service demands are very consistent. This means the City needs to operate a fairly consistent 24/7/365 response system
- The City is adding vertical and more dense development, which increases incident demand per square mile and *may* increase unit workload to the point where a part-time company could be needed to cover daytime peak-hour workload.

Overall Service Provision Findings

- The DPS needs a second, dedicated, full-time EMS Program Clinical Supervisor and Educator
- Relocating Station #1 slightly improves northwest City coverage
- Fire station facilities range from zero to 56 years of age, averaging 44.33 years of age for all stations, and 53.2 years of age excluding the new Station #5.

Recommendations

1. Maintain qualified Incident Commander coverage 24/7/365
2. Restore the 2nd operator to Rescue 42
3. Add a clinical educator position
4. Keep a watch on patrol non 911-incident commitment to ensure a patrol Fire/EMS capability
5. Adopt updated percent of goal response time measures by risk type.

Recommendations Continued -

6. Consider the relocation of Station #1
7. Maintain stations to regulatory standards
8. Improve the oxygen refilling system to a room meeting standards
9. As major remodels occur, consider retrofitting fire sprinklers to the older stations
10. Consider developing a long-range Facilities Master Plan that addresses, at a minimum, facility replacement or relocation and addition criteria, priority, timing, estimated costs, and funding options.

Next Steps

- Absorb the policy recommendations of this fire services study and adopt updated City performance measures to drive the on-going deployment of firefighting and EMS resources
- Consider the expanded headquarters staffing suggestions in this study
- Work towards a permanent replacement and relocation of Fire Station #1.

Questions