

March 2019

Executive Summary



**Rochester Fire Department
Rochester, NY**

Prepared by:



FITCH & ASSOCIATES, LLC
2901 Williamsburg Terrace #G ■ Platte City ■ Missouri ■ 64079
816.431.2600 ■ www.fitchassoc.com

CONSULTANT REPORT

Rochester Fire Department Rochester, NY

TABLE OF CONTENTS

| | |
|--|------------------|
| <i>Executive Summary</i> | <i>1</i> |
| Community Profile | 1 |
| Budgetary Analysis..... | 2 |
| Operating Budget: Expenditures..... | 2 |
| Operating Budget: Revenues | 3 |
| Capital Improvement Program | 3 |
| Department Profile | 4 |
| Current Performance | 5 |
| Modeling Performance..... | 12 |
| Opportunities for Improvement | 13 |
| Risk Analyses and the Distribution of Risk | 14 |
| Risk Analysis for Each Station by Demand and Occupancy Risk | 16 |
| Inter-Jurisdictional and National Best Practice Comparisons | 17 |
| <i>Analysis of Fire and EMS Stations, Apparatus, and Resource Configurations to Meet Both Current and Future Needs.....</i> | <i>21</i> |
| alternatives for consideration | 21 |
| Establishing Desired Performance – 4-Minute Travel Time..... | 21 |
| Marginal Utility of Optimized Resource Allocation – 4-Minute Travel Time | 21 |
| Alternative 1 – 16 Stations and 22 Units..... | 24 |
| Alternative 2 – 15 Stations and 21 Units..... | 24 |
| Peak Hour Units | 25 |
| Establishing Desired Performance – 5-Minute Travel Time..... | 25 |
| Marginal Utility of Optimized Resource Allocation..... | 25 |
| Alternative 3 – 12 Stations and 18 Units..... | 27 |
| Alternative 4 – 14 Stations and 20 Units..... | 28 |
| Effective Response Force | 28 |
| Adjusting Minimum Staffing Thresholds..... | 29 |
| Optimal Fire Station Locations and Utilization | 30 |
| 4-Minute Travel Time..... | 30 |
| Optimized 5-Minute Travel Time | 32 |

| | |
|---|-----------|
| Balanced Approach to Staffing Strategies | 34 |
| Alternative 5 – 4-Minute 16 Stations and 22 Units..... | 36 |
| Staff Schedules and Potential Alternatives | 36 |
| Current Staffing Levels..... | 36 |
| Shift Schedules / Work Weeks | 36 |
| <i>Conclusion</i>..... | 40 |

Attachments:

PowerPoint

Survey Results

Appendices:

A - Data Report and GIS Report

EXECUTIVE SUMMARY

The City of Rochester, NY released a request for proposal to solicit a public safety-consulting firm to conduct an organizational effectiveness and efficiency evaluation of the Rochester Fire Department's fire suppression and special operations models that focuses primarily on the deployment of engines and trucks.

Fitch conducted three meetings with the city administration, elected officials, fire department administration, department staff, and labor leadership from the Rochester fire fighter bargaining unit (IAFF Local 1071). These stakeholder interviews were conducted in an effort to seek to understand the unique local conditions and perspectives, and to gain feedback from key stakeholders on iterative work products.

This comprehensive summary report includes an executive summary, presentation slide deck, quantitative data report, and geographic information system report. Overall, *Fitch's* strategy is to provide City administration and the elected officials with sufficient objective data from which to establish policy. Therefore, all alternatives and recommendations are grounded in the data analysis and best practices.

COMMUNITY PROFILE

Rochester, NY is a city of 210,693 population as of 2017, down approximately 1.3% since the 2010 Census.¹ Rochester is the seat of Monroe County and the third most populous city in New York state, after New York City and Buffalo.² The metropolitan area has a population of just over 1 million people. Rochester is located in Monroe County, midway between Buffalo and Syracuse, on the southern shore at the mouth of Lake Ontario. Rochester has approximately 22 miles of shoreline along Lake Ontario, the Genesee River, and the Erie canal.³

Rochester's economy benefits from many advantages, including an ample supply of fresh water from Lake Ontario and the pristine Finger Lakes, a central location among the population centers of the Northeastern United States and the innovative foundations laid by

¹ U.S. Census Bureau (2017). Accessed from <https://www.census.gov/quickfacts/fact/table/rochestercitynewyork/PST045217#PST045217> on October 25, 2018

² Ibid

³ Comprehensive Plan for the city of Rochester. Accessed from <http://www.cityofrochester.gov/comprehensiveplanupdate/> on October 26, 2018

such firms as Kodak, Xerox, and Bausch and Lomb. A host of colleges and universities, including the University of Rochester and the Rochester Institute of Technology, produce an educated workforce and generates cutting-edge research that drives the City's innovation and technology sectors. Rochester is emerging as the imaging, optics, and photonics capital of the world and in 2015 the White House announced that the new Integrated Photonics Institute for Manufacturing Innovation would be located in Rochester. Other growing industries include food-and-beverage manufacturing, biotechnology, and green innovation.⁴

Rochester's housing is affordable and according to U.S. Census data, the median value of owner-occupied housing is \$77,800. According to the Census, approximately 36 percent of Rochester's housing was owner occupied. Rochester's population is diverse and according to Census data, 46% of the city population is white, 41% is Black or African American, and the remainder is Hispanic and Asian.⁵ According to U.S. Census 2016 data, median household income is \$32,684 and per capita income is \$19,830.⁶ Rochester's residents are educated, with 80% having received a high school diploma or higher and 23% having received a bachelor's degree or higher.⁷

BUDGETARY ANALYSIS

Data were obtained from the City's website⁸ and from information provided directly by the City's Office of Management and Budget. For purposes of this analysis, we utilized the City's publicly available 2018-2019 Approved Budget (FY2019).

The City's fiscal year runs from July 1st through June 30th each year. The following discussion utilizes this fiscal year perspective.

OPERATING BUDGET: EXPENDITURES

RFD's operating budget totals \$51,569,200 for FY2019, of which \$47,947,900 is allocated to personnel costs and represents 93.0% of the Department's budget. Not included in personnel costs are certain fringe benefits – most specifically the City's contribution to pension, social security, and health insurance. Considering the entire department, these additional personnel costs are estimated at \$29,775,300.

⁴ <http://cityofrochester.gov> on October 26, 2018

⁵ <https://www.census.gov/quickfacts/fact/table/rochestercitynewyork/PST045217#PST045217> on October 25, 2018

⁶ Ibid

⁷ Ibid

⁸ Accessed at <https://www.cityofrochester.gov/citybudget/> on March 25, 2019.

The budget supports a total of 521.5 full-time equivalent (FTE) employees who are assigned to one of three bureaus.

OPERATING BUDGET: REVENUES

The Department also has some revenues related to existing service contracts, intergovernmental transfers from state and federal sources which includes grants, and fees for service related to fire prevention permits. The Department's budget also reflects a first responder franchise fee and ambulance service contract fines. In total, the estimated revenues for FY2019 are \$3,662,900, representing 7.1% of the operating budget. The detail of revenues by major category is reflected in the table below.

TABLE 1: FY 2018-2019 FIRE DEPARTMENT REVENUES

| Category | Revenue |
|--|---------------------|
| Departmental Income (includes service contracts) | \$ 2,785,000 |
| Intergovernmental - Federal | \$ 178,400 |
| Intergovernmental - State | \$ 43,000 |
| Fines & Forfeitures | \$ 300,000 |
| Miscellaneous | \$ 356,500 |
| Total | \$ 3,662,900 |

CAPITAL IMPROVEMENT PROGRAM

The budget reflects a Capital Improvement Program (CIP) total authorization of almost \$3.9 million for FY2019. This includes \$2.26 million for fire apparatus, which equals the stated revenues derived from debt service. This and other expenditure areas are reflected in the table below.

TABLE 2: FY 2018-19 FIRE CAPITAL IMPROVEMENT BUDGET

| CIP Projects | Fiscal Year 2019 |
|--|-----------------------------|
| P-1 Fire Fighting Apparatus | \$ 2,260,000 |
| P-3 Small Equipment: Firehouse | \$ 50,000 |
| P-3 Small Equipment: SCBA Replacement | \$ 65,000 |
| P-3 Small Equipment: Small Equipment RFD | \$ 460,000 |
| P-3 Small Equipment: Turnout Gear | \$ 650,000 |
| P-5 Technology: Communications Equipment | \$ 60,000 |
| P-6 Fire Motor Equipment | \$ 190,000 |
| Business Equipment: Firehouse Security | \$ 120,000 |
| Total | \$ 3,855,000 |
| CIP Revenues | |
| CDBG – Purchase of Smoke and Carbon Monoxide Detectors | \$ 55,000 |
| General Cash Capital | \$ 1,540,000 |
| General Debt | \$ 2,260,000 |
| Total | \$ 3,855,000 |

DEPARTMENT PROFILE

Rochester Fire Department (RFD) provides emergency response to fire, first response emergency medical services (EMS), hazardous materials, and technical rescue incidents. Fire and EMS are the vast majority of community driven incident activity. EMS accounts for 50.3% and fire accounts for 48.6% of the incidents. RFD answered nearly 35,000 calls for service in 2017. Over the past three years, RFD has had similar demand for service annually--the average calls for service per day was 94.4 in 2015, 94.0 in 2016, and 95.6 in 2017.

RFD currently operates from 16 fixed facility fire stations and has an average travel time of 3.2 minutes system wide for fire calls and 2.8 minutes for EMS calls. RFD does have a variation in service demand by month, with the busiest month being August for EMS calls and March for fire related calls. Similar to many communities, the demand for service is greater during the mid-day while the overnight hours are the least busy.

CURRENT PERFORMANCE

Overall, RFD made 47,218 responses, with total busy hours of 13,712.1 during 2017. The station-level demand is more reflective for deployment decisions, and workload will help evaluate the utilization of physical apparatus and assist with apparatus procurement or maintenance decisions (Table 3).

RFD's station at 1215 N. Clinton Avenue was the busiest station based on number of incoming calls for the station's area (3,394 calls). Units assigned to 704 Hudson Avenue responded to the greatest number of calls across the Department (4,689 calls), regardless of where the calls originated, whereas units assigned to 272 Allen Street made the greatest number of responses (6,022 responses to 4,631 calls), regardless of where the calls originated. RFD's station at 704 Hudson Avenue had the greatest number of total busy hours during 2017 (1,865.6 hours; Table 4).

E2 was the top utilized engine based on number of responses (3,415 responses), followed by E5 (3,265 responses) and E16 (3,036 responses; Table 5). E2, E17, and E16 were the top utilized engines based on total busy hours (904.1, 842.4, and 821.1 hours, respectively). T5 and T10 were the top utilized trucks based on number of responses (2,428 and 1,879 responses, respectively) and total busy hours (660.3 and 588.0 hours, respectively; Table 5).

TABLE 3: NUMBER OF CALLS, NUMBER OF RESPONSES, AND TOTAL BUSY TIME BY PROGRAM

| Program | Number of Calls ¹ | Number of Responses ² | Average Responses per Call | Responses with Time Data ³ | Total Busy Hours | Average Busy Minutes per Response | Percentage of Total Busy Hours |
|-----------------------------|------------------------------|----------------------------------|----------------------------|---------------------------------------|------------------|-----------------------------------|--------------------------------|
| EMS | 17,518 | 18,467 | 1.1 | 18,033 | 4,453.8 | 14.8 | 32.5 |
| Fire | 16,454 | 26,272 | 1.6 | 24,244 | 8,666.3 | 21.4 | 63.2 |
| Hazmat | 8 | 12 | 1.5 | 12 | 6.2 | 30.9 | 0.0 |
| Rescue | 383 | 2,321 | 6.1 | 2241 | 538.4 | 14.4 | 3.9 |
| Not Identified ⁴ | 83 | 146 | 1.8 | 138 | 47.6 | 20.7 | 0.3 |
| Total | 34,446 | 47,218 | 1.4 | 44,668 | 13,712.1 | 18.4 | 100.0 |

¹“Number of Calls” reflects an adjusted number of unique incidents to correspond with data provided in the unit-level data file (as opposed to data provided in the CAD data files that did not contain unit-level data, as represented in the preceding table), regardless of calculated busy time.

²“Number of Responses” reflects the total number of entries in the unit-level data file, regardless of calculated busy time.

³“Responses with Time Data” reflects the number of responses in the unit-level data file with available and logically sequenced dispatch and release times.

⁴There were 83 unique incident numbers corresponding to 146 unique responses in the unit-level data file that did not appear in the CAD data files to allow mapping of call details; all call details related to these 83 incidents are unknown.

TABLE 4: OVERALL WORKLOAD BY STATION

| Station (Company) | Number of Calls Incoming to Station's Area ¹ | Number of Calls Responded to by Units Assigned to Station ¹ | Number of Responses Made by Units Assigned to Station ² | Responses with Time Data ³ | Total Busy Hours | Average Busy Minutes per Response | Percentage of Total Busy Hours |
|---------------------------------------|---|--|--|---------------------------------------|------------------|-----------------------------------|--------------------------------|
| 1051 Emerson Street (E3) | 1,084 | 1,421 | 1,421 | 1,309 | 469.2 | 21.5 | 3.4 |
| 1215 N. Clinton Avenue (E2) | 3,394 | 3,415 | 3,415 | 3,253 | 904.1 | 16.7 | 6.6 |
| 1261 South Avenue (T3) | 1,290 | 1,637 | 1,637 | 1,558 | 478.1 | 18.4 | 3.5 |
| 1477 Dewey Avenue (E10, T2) | 2,660 | 3,360 | 3,792 | 3,508 | 1,131.1 | 19.3 | 8.2 |
| 160 Wisconsin Street (E12) | 1,433 | 1,661 | 1,661 | 1,539 | 487.0 | 19.0 | 3.6 |
| 185 N. Chestnut Street (DC, E17, R11) | 2,619 | 3,705 | 4,352 | 4,184 | 1,367.0 | 19.6 | 10.0 |
| 2695 W. Henrietta Road (E8) | 968 | 1,073 | 1,073 | 1,042 | 320.5 | 18.5 | 2.3 |
| 272 Allen Street (B2, E13, T10) | 2,518 | 4,631 | 6,022 | 5,761 | 1,839.3 | 19.2 | 13.4 |
| 315 Monroe Avenue (Car 99, E1) | 2,434 | 3,598 | 3,990 | 3,832 | 1,105.9 | 17.3 | 8.1 |
| 4090 Lake Avenue (E19) | 1,124 | 933 | 933 | 858 | 293.8 | 20.5 | 2.1 |
| 450 Lyell Avenue (E5) | 3,032 | 3,265 | 3,265 | 3,065 | 780.2 | 15.3 | 5.7 |
| 57 Gardiner Avenue (T5) | 2,023 | 2,428 | 2,428 | 2,246 | 660.3 | 17.6 | 4.8 |
| 704 Hudson Avenue (B1, E16, T6) | 3,115 | 4,689 | 5,882 | 5,561 | 1,865.6 | 20.1 | 13.6 |
| 740 N. Goodman Street (E9) | 2,742 | 2,806 | 2,806 | 2,653 | 759.2 | 17.2 | 5.5 |
| 873 Genesee Street (E7) | 2,577 | 2,720 | 2,720 | 2,560 | 715.2 | 16.8 | 5.2 |
| 977 University Avenue (T4) | 1,287 | 1,781 | 1,781 | 1,717 | 516.6 | 18.1 | 3.8 |
| Not Identified ⁴ | 146 | -- | -- | -- | -- | -- | -- |
| Admin on Call (Car 1) | -- | 22 | 22 | 11 | 9.7 | 52.7 | 0.1 |
| Admin on Call (Car 2) | -- | 18 | 18 | 11 | 9.5 | 51.9 | 0.1 |
| Total | 34,446 | -- | 47,218 | 44,668 | 13,712.1 | 18.4 | 100.0 |

TABLE 5: OVERALL WORKLOAD BY UNIT

| Station | Unit | Unit Type | Number of Responses ¹ | Responses with Time Data ² | Total Busy Hours | Average Busy Minutes per Response |
|------------------------|---------------|-----------|----------------------------------|---------------------------------------|------------------|-----------------------------------|
| 1051 Emerson Street | E3 | Engine | 1,421 | 1,309 | 469.2 | 21.5 |
| | Station Total | | 1,421 | 1,309 | 469.2 | 21.5 |
| 1215 N. Clinton Avenue | E2 | Engine | 3,415 | 3,253 | 904.1 | 16.7 |
| | Station Total | | 3,415 | 3,253 | 904.1 | 16.7 |
| 1261 South Avenue | T3 | Truck | 1,637 | 1,558 | 478.1 | 18.4 |
| | Station Total | | 1,637 | 1,558 | 478.1 | 18.4 |
| 1477 Dewey Avenue | E10 | Engine | 2,166 | 2,007 | 643.7 | 19.2 |
| | T2 | Truck | 1,626 | 1,501 | 487.4 | 19.5 |
| | Station Total | | 3,792 | 3,508 | 1,131.1 | 19.3 |
| 160 Wisconsin Street | E12 | Engine | 1,661 | 1,539 | 487.0 | 19.0 |
| | Station Total | | 1,661 | 1,539 | 487.0 | 19.0 |
| 185 N. Chestnut Street | E17 | Engine | 2,954 | 2,861 | 842.4 | 17.7 |
| | R11 | Rescue | 1,156 | 1,098 | 347.7 | 19.0 |
| | Station Total | | 4,110 | 3,959 | 1,190.1 | 18.0 |
| 2695 W. Henrietta Road | E8 | Engine | 1,073 | 1,042 | 320.5 | 18.5 |
| | Station Total | | 1,073 | 1,042 | 320.5 | 18.5 |
| 272 Allen Street | E13 | Engine | 2,696 | 2,555 | 695.9 | 16.3 |
| | T10 | Truck | 1,879 | 1,810 | 588.0 | 19.5 |
| | Station Total | | 4,575 | 4,365 | 1,283.9 | 17.6 |
| 315 Monroe Avenue | E1 | Engine | 2,848 | 2,721 | 733.2 | 16.2 |
| | Station Total | | 2,848 | 2,721 | 733.2 | 16.2 |
| 4090 Lake Avenue | E19 | Engine | 933 | 858 | 293.8 | 20.5 |
| | Station Total | | 933 | 858 | 293.8 | 20.5 |
| 450 Lyell Avenue | E5 | Engine | 3265 | 3065 | 780.2 | 15.3 |
| | Station Total | | 3265 | 3065 | 780.2 | 15.3 |
| | T5 | Truck | 2,428 | 2,246 | 660.3 | 17.6 |

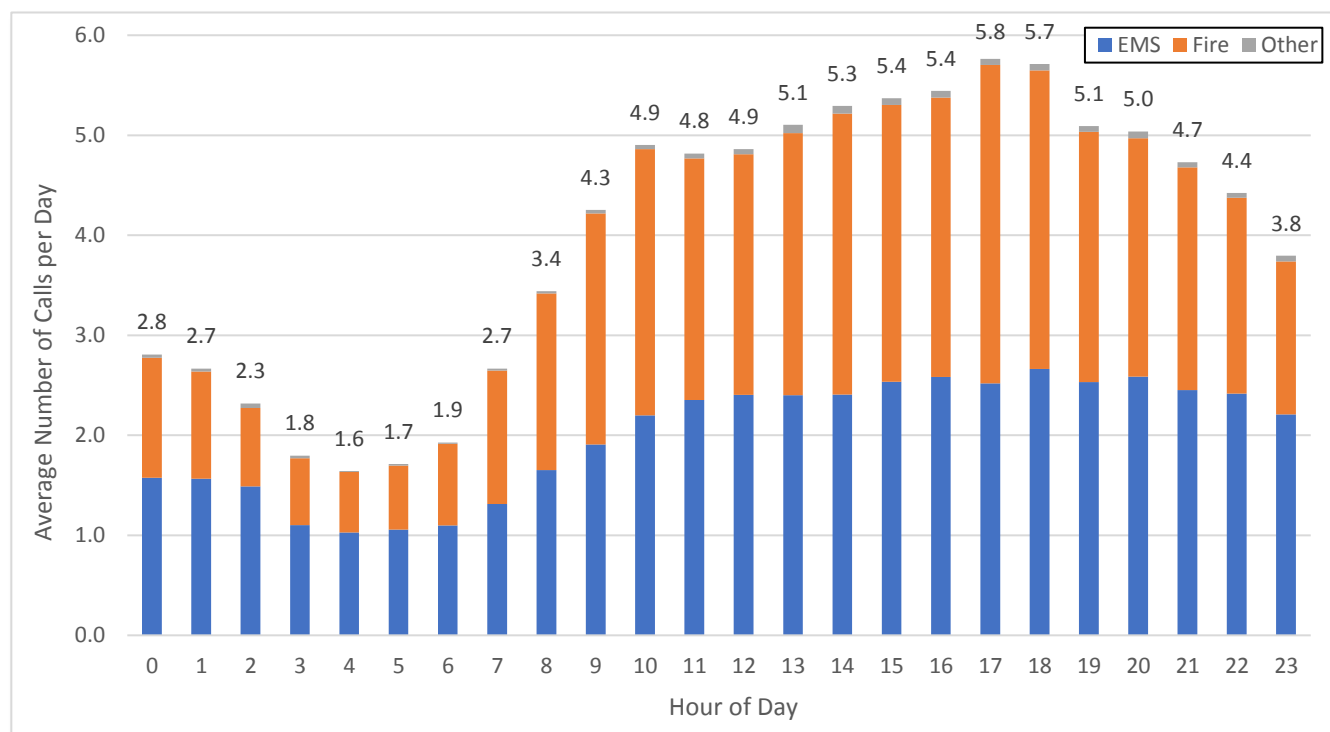
| Station | Unit | Unit Type | Number of Responses ¹ | Responses with Time Data ² | Total Busy Hours | Average Busy Minutes per Response |
|-----------------------|---------------|-----------------|----------------------------------|---------------------------------------|------------------|-----------------------------------|
| 57 Gardiner Avenue | Station Total | | 2,428 | 2,246 | 660.3 | 17.6 |
| 704 Hudson Avenue | E16 | Engine | 3,036 | 2,852 | 821.1 | 17.3 |
| | T6 | Truck | 1,797 | 1,698 | 533.8 | 18.9 |
| | Station Total | | 4,833 | 4,550 | 1,354.9 | 17.9 |
| 740 N. Goodman Street | E9 | Engine | 2,806 | 2,653 | 759.2 | 17.2 |
| | Station Total | | 2,806 | 2,653 | 759.2 | 17.2 |
| 873 Genesee Street | E7 | Engine | 2,720 | 2,560 | 715.2 | 16.8 |
| | Station Total | | 2,720 | 2,560 | 715.2 | 16.8 |
| 977 University Avenue | T4 | Truck | 1,781 | 1,717 | 516.6 | 18.1 |
| | Station Total | | 1,781 | 1,717 | 516.6 | 18.1 |
| Admin on Call | Car 1 | Car | 22 | 11 | 9.7 | 52.7 |
| | Station Total | | 22 | 11 | 9.7 | 52.7 |
| Admin on Call | Car 2 | Car | 18 | 11 | 9.5 | 51.9 |
| | Station Total | | 18 | 11 | 9.5 | 51.9 |
| Other ³ | B1 | Battalion Chief | 1,049 | 1,011 | 510.8 | 30.3 |
| | B2 | Battalion Chief | 1,447 | 1,396 | 555.3 | 23.9 |
| | Car 99 | Car | 1,142 | 1,111 | 372.7 | 20.1 |
| | DC | Line Deputy | 242 | 225 | 176.9 | 47.2 |
| Department Total | | | 47,218 | 44,668 | 13,712.1 | 18.4 |

¹“Number of Responses” reflects the total number of entries in the unit-level data file, regardless of calculated busy time.

²“Responses with Time Data” reflects the number of responses in the unit-level data file with available and logically sequenced dispatch and release times.

To provide a more granular understanding of the community's demand for services, this temporal analysis included the average number of calls per hour. In other words, when referring to the figure below, the busiest hour is at 1700 with 2,104 calls occurring during that hour in 2017. The average number of calls per hour is a daily average for those 2,104 calls if they were distributed equally across the year (i.e., $2,104/365 = 5.8$). Therefore, the busiest hour per day would be at 1700 with an average hourly call volume at 5.8 calls per day. The second busiest hour occurred at 1800 with 2,085 calls during that hour in 2017, with an average hourly call volume of 5.7 calls per day. For ease of presentation, values displayed in the figure below have been rounded to one decimal place.

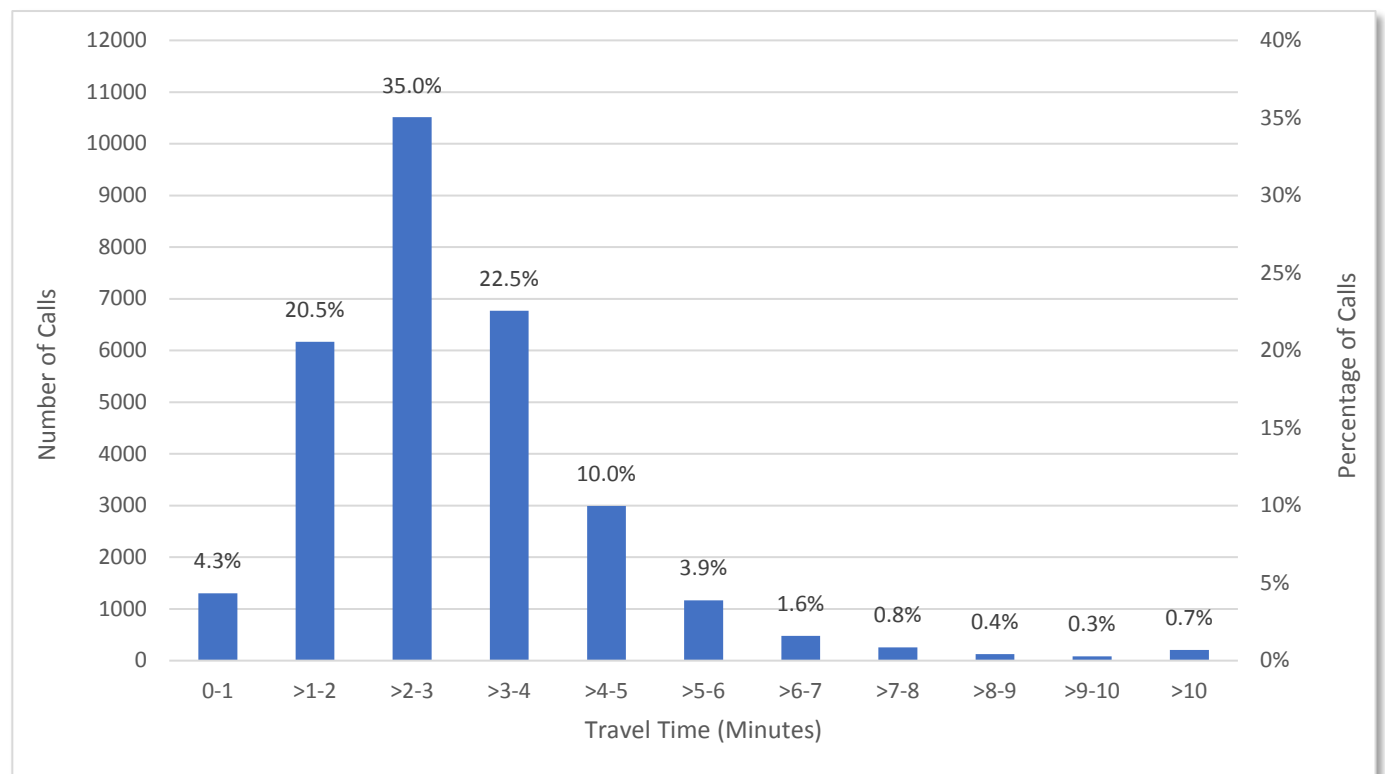
Figure 1: Overall: Average Calls per Day by Hour of Day



RFD had an overall average dispatch time of 2.5 minutes (median = 1.6 minutes), and a dispatch time of 3.0 minutes at the 90th percentile. Overall, RFD had an average turnout time of 1.5 minutes (median = 1.5 minutes), and a turnout time of 2.3 minutes at the 90th percentile. A total of 20.9% of calls experienced turnout times of one minute or less, and 80.6% of calls experienced turnout times of two minutes or less. The overall average travel time was 3.0 minutes (median = 2.7 minutes); performance at the 90th percentile for travel time was 4.7 minutes. A total of 59.8% of calls experienced travel times of three minutes or less, and 82.3% of calls experienced travel times of four minutes or less. The average response time was 6.9 minutes (median = 6.0 minutes); performance at the 90th percentile for response time was 8.5 minutes.

TABLE 6: DESCRIPTION OF FIRST ARRIVING UNIT EMERGENCY RESPONSE PERFORMANCE IN MINUTES

| Measure | Average | Median | 90th Percentile |
|---------------|---------|--------|-----------------|
| Dispatch Time | 2.5 | 1.6 | 3.0 |
| Turnout Time | 1.5 | 1.5 | 2.3 |
| Travel Time | 3.0 | 2.7 | 4.7 |
| Response Time | 6.9 | 6.0 | 8.5 |

FIGURE 2: DISTRIBUTION OF TRAVEL TIME OF FIRST ARRIVING UNIT – ALL CALLS

Another measure, time on task, is necessary to evaluate best practices in efficient system delivery and to consider the impact workload has on personnel. Unit Hour Utilization (UHU) values represent the proportion of the work period that is utilized responding to requests for service.

Historically, the International Association of Fire Fighters (IAFF) has recommended that 24-hour units utilize 0.30, or 30% workload as an upper threshold.⁹ In other words, this recommendation would have personnel spend no more than 7.2 hours per day on

⁹ International Association of Firefighters. (1995). *Emergency Medical Services: A Guidebook for Fire-Based Systems*. Washington, DC: Author. (p. 11)

emergency incidents. These thresholds take into consideration the necessity to accomplish non-emergency activities such as training, health and wellness, public education, and fire inspections. The 4th edition of the IAFF EMS Guidebook no longer specifically identifies an upper threshold. However, *Fitch* recommends that an upper unit utilization threshold of approximately 0.30, or 30%, would be considered best practice. In other words, units and personnel should not exceed 30%, or 7.2 hours, of their work day responding to calls. These recommendations are also validated in the literature. For example, in their review of the City of Rolling Meadows, the Illinois Fire Chiefs Association utilized a UHU threshold of 0.30 as an indication to add additional resources.¹⁰ Similarly, in a standards of cover study facilitated by the Center for Public Safety Excellence, the Castle Rock Fire and Rescue Department utilizes a UHU of 0.30 as the upper limit in their standards of cover due to the necessity to accomplish other non-emergency activities.¹¹

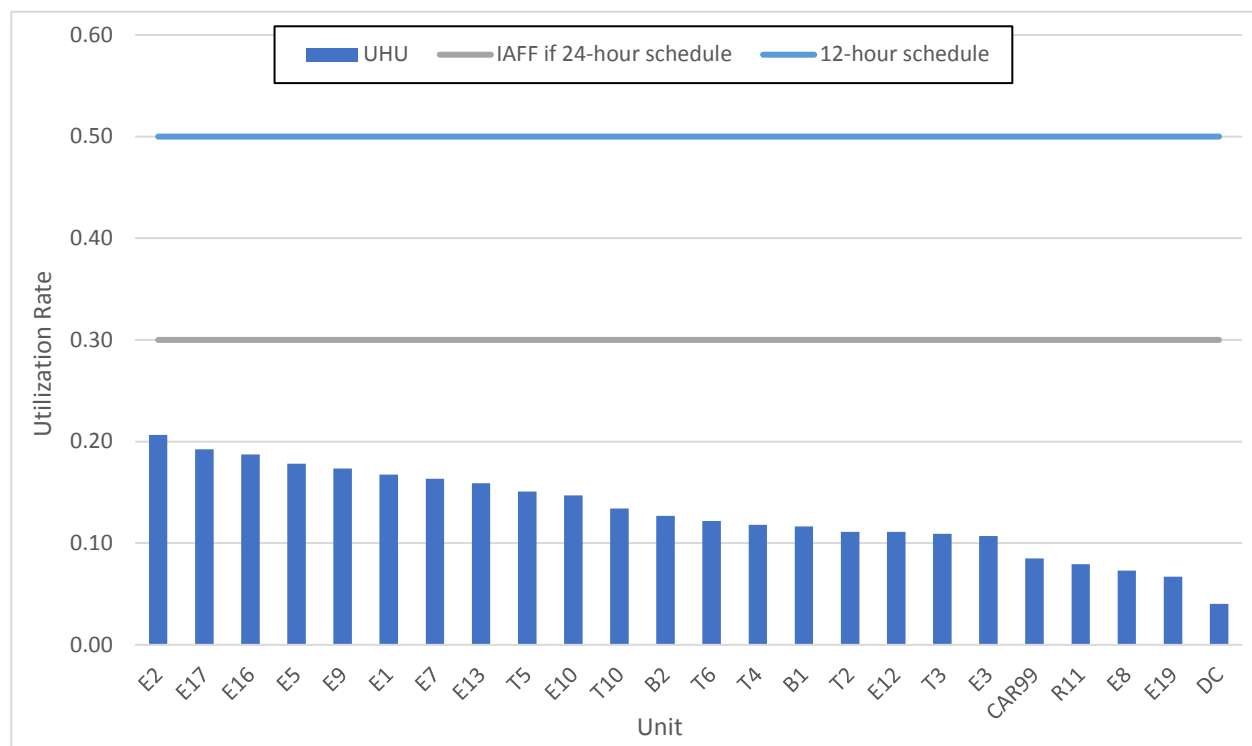
Currently, RFD utilizes a split shift schedule where the maximum scheduled shift is either 10 or 14 hours at a time. Within this schema, the upper workload threshold could be as high as 0.50 since fatigue related issues with the 24-hour shift may not be as significant.

UHU analyses included all response units; as admin on-call units, Car 1 and Car 2 were not included in these analyses. All units had UHU values below 0.30 (figure below).

¹⁰ Illinois Fire Chiefs Association. (2012). *An Assessment of Deployment and Station Location: Rolling Meadows Fire Department*. Rolling Meadows, Illinois: Author. (pp. 54-55)

¹¹ Castle Rock Fire and Rescue Department. (2011). *Community Risk Analysis and Standards of Cover*. Castle Rock, Colorado: Author. (p. 58)

FIGURE 3: UNIT HOUR UTILIZATION



MODELING PERFORMANCE

The first step in this analysis is to utilize the historical performance to validate the planning analyses utilized by the GIS system. The historical performance demonstrated a 4.7-minute overall Department travel time performance and a 5.1-minute fire travel time capability from the existing fire stations at the 90th percentile. Utilizing average road speeds, the planning assessments estimated approximately 90% of the incidents could be responded to within 4 minutes travel time from the existing fire stations. With respect to a 5-minute travel time, the Department should be able to respond to nearly 98% of the incidents with 5 minutes or less. In other words, there is a high degree of agreement between the quantitative analyses and the GIS planning analyses. Therefore, considerable confidence can be maintained across the various GIS modeling.

Measures of total response time can be significantly influenced by both internal and external influences. For example, the dispatch time, defined as the time from pick up at the 911-center to the dispatching of units, contributes to the customer's overall response time experience. Another element in the total response time continuum is the turnout time, defined as the time from when the units are notified of the incident until they are actually responding. Turnout time can have a significant impact on the overall response time for the

customer and is generally considered under management’s control. However, the travel time, defined as the period from when the units are actually responding until arrival at the incident is a factor of the number of fire stations, the ability to travel unimpeded on the road network, the existing road network’s ability to navigate the community, and the availability of the units. Largely, travel time is the most stable variable to utilize in system design regarding response time performance.

Therefore, these GIS planning analyses will focus on travel time capability as the unit of measure. The calendar year 2017 (January 1, 2017 – December 31, 2017) performance for travel time across program areas is provided below. Overall, the travel time is 4.7 minutes or less for 90% of the incidents.

TABLE 7: 90TH PERCENTILE DISPATCH, TURNOUT, TRAVEL, AND RESPONSE TIMES BY PROGRAM – FIRST ARRIVING UNITS

| Program | Dispatch Time (Minutes) | Turnout Time (Minutes) | Travel Time (Minutes) | Response Time (Minutes) | Sample Size ¹ |
|--------------|----------------------------|---------------------------|--------------------------|----------------------------|--------------------------|
| EMS | 2.9 | 2.3 | 4.4 | 8.3 | 17,084 |
| Fire | 3.2 | 2.4 | 5.1 | 8.9 | 14,299 |
| Hazmat | -- | -- | -- | -- | 8 |
| Rescue | 4.8 | 2.2 | 4.0 | 9.6 | 370 |
| Total | 3.0 | 2.3 | 4.7 | 8.5 | 31,761 |

¹Sample sizes reflect the number of responses made by first arriving primary front-line units to emergency calls; due to missing time data, sample sizes corresponding to individual table metrics may be smaller.

OPPORTUNITIES FOR IMPROVEMENT

While the department’s travel time is excellent, there are two opportunities to improve the overall response time; dispatch and turnout time, respectively. As discussed throughout the project, the best practice recommendation for dispatch times is 90 seconds, or 1.5 minutes, 90% of the time for fire related events and EMS incidents that do not require or involve Medical Priority Dispatching/Emergency Medical Dispatching (EMD).¹²

Additionally, if following NFPA 1710, the best practice for turnout time is 80 seconds for a fire or special hazard response (technical rescue or hazmat) and 60 seconds, or 1.0 minutes, for EMS incidents.¹³ The Commission on Accreditation International (CFAI) maintains the 60

¹² National Fire Protection Association. (2010). NFPA 1710, *Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments*. Boston, MA: National Fire Protection Association.

¹³ Ibid.

second threshold for EMS incidents but allows up to 90 seconds on all fire and special operations responses.¹⁴

Typically, the level of investment, and subsequent return on investment, is exponentially greater to invest in the communications center as compared to response personnel, apparatus, and facilities to receive a commensurate level of improvement through the customer's lens. In other words, a minute's improvement or greater in the communication center would be equivalent to a multi-million-dollar investment in the field to improve by the same time in travel time alone.

Turnout time has an even greater degree of return on investment as typically there are no costs associated with the improvement, but rather management lead. If the department met best practice, the citizens could enjoy over a minute faster response time for EMS calls and nearly one minute on fire and special operations incidents.

Therefore, it is recommended that the City and Department work to better align dispatch and turnout times with best practices.

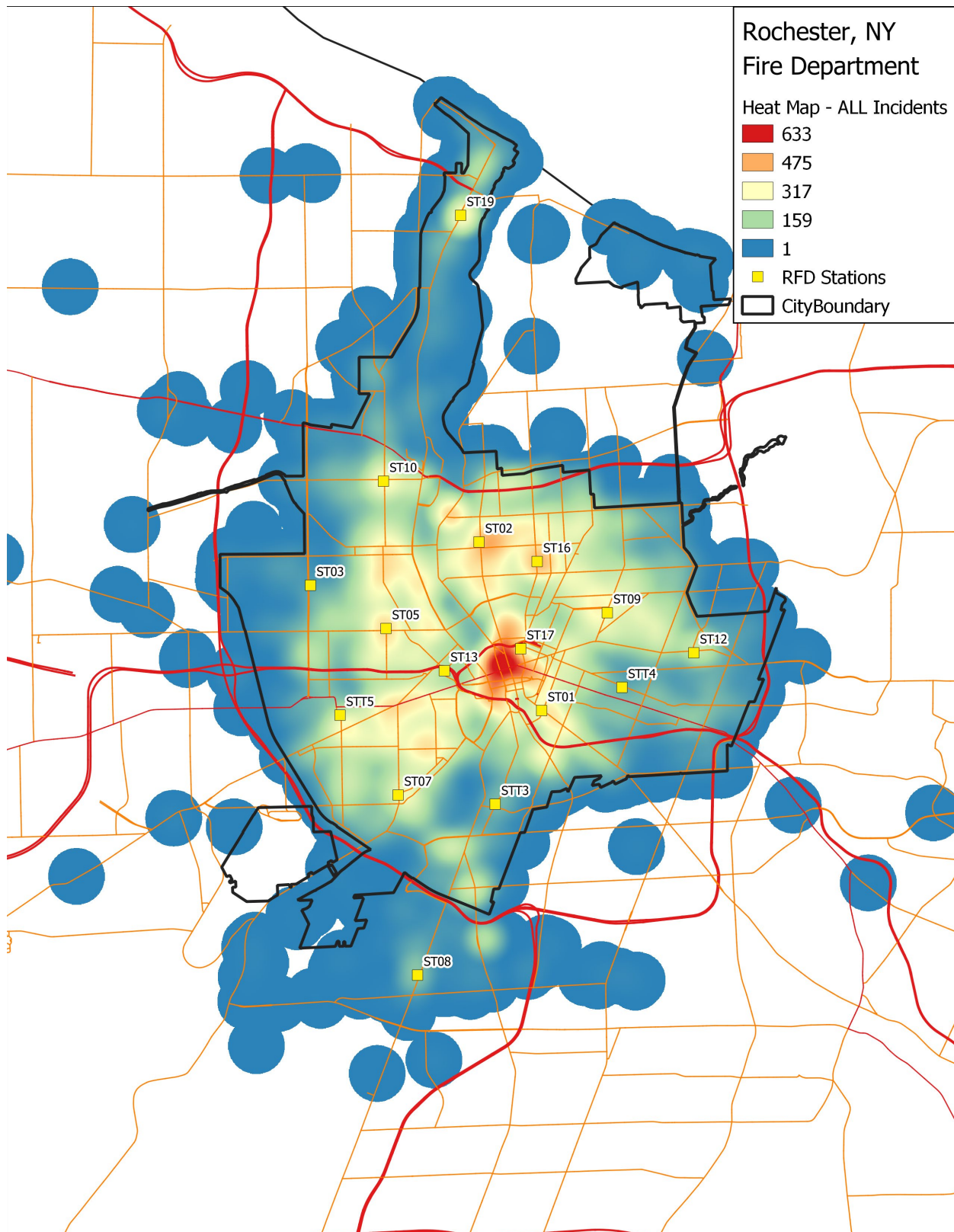
RISK ANALYSES AND THE DISTRIBUTION OF RISK

Heat maps were created to identify the concentration of the historic demand for services. The following figure presents the relative concentration of service demands for all calls. The blue areas have the least concentration of demand and the dark red areas have the highest concentration of demand. Fire and EMS are the largest call loads and are very similar in distribution.

When reviewing the heat maps, it is clear that the greatest relative density of service demands is generally located near the downtown area, with little variation over the program areas.

¹⁴ CFAI. (2015). Fire & emergency service self-assessment manual: Supplemental Interpretation Guide, (9th ed.). Chantilly, Virginia: Author.

FIGURE 4: HEAT MAP FOR ALL INCIDENTS



RISK ANALYSIS FOR EACH STATION BY DEMAND AND OCCUPANCY RISK

Analyses were conducted to describe and measure the relative concentration of risks in each of the fire station demand zones. Therefore, a station demand zone risk matrix was developed to quantitatively evaluate the relative risk by including measures for the frequency of moderate and high-risk occupancies in each fire demand zone that are directly correlated to the necessity of higher concentrations of resources. In addition, several measures that both serves the distribution aspect of the risk evaluation, but also contributes to the need for higher concentrations of resources were utilized. For example, a higher call volume may serve to drive the need for additional resources to cover the community's demand.

The variables included in the risk matrix are the demand for services for each station demand zone, the number of high- and moderate-risk occupancies, and the impact of simultaneous events in each station demand zone. All measures were weighted equally; however, two variables have surrogate relationships with historical community demands and one variable is dedicated to prospective occupancy risk. Community demands were rated more heavily in an effort to provide a realistic balance between the risk potential with historical experience. The risk tool and the scoring template are provided below.

TABLE 8: STATION DEMAND ZONE RISK CONCENTRATION MATRIX

| STATION FDZ | COMMUNITY DEMAND | CALL CONCURRENCY | HIGH/MODERATE RISK OCCUPANCIES | TOTAL RISK SCORE | RISK RATING |
|-------------|------------------|------------------|--------------------------------|------------------|-------------|
| 1 | 7 | 3 | 10 | 55.86 | HIGH |
| 2 | 6 | 4 | 4 | 26.53 | MODERATE |
| 3 | 3 | 2 | 4 | 11.05 | LOW |
| 5 | 6 | 3 | 8 | 40.02 | HIGH |
| 7 | 5 | 3 | 3 | 16.29 | LOW |
| 8 | 5 | 4 | 1 | 14.85 | LOW |
| 9 | 5 | 3 | 4 | 19.61 | MODERATE |
| 10 | 7 | 4 | 6 | 39.52 | HIGH |
| 12 | 3 | 3 | 5 | 16.29 | LOW |
| 13 | 10 | 3 | 2 | 25.85 | MODERATE |
| 16 | 10 | 4 | 4 | 41.57 | HIGH |
| 17 | 8 | 3 | 3 | 24.83 | MODERATE |
| 19 | 2 | 5 | 3 | 13.44 | LOW |
| T3 | 5 | 4 | 3 | 19.61 | MODERATE |
| T4 | 3 | 3 | 3 | 11.02 | LOW |
| T5 | 5 | 3 | 5 | 23.18 | MODERATE |

Overall, the risk assessment identified that Stations 1, 5, 10, and 16 are high-risk stations and Stations 2, 9, 13, 17, T3, and T5 are moderate-risk stations. The remaining stations were categorized as low-risk. This would indicate that higher-risk stations would have a higher concentration of resources than the lower-risk stations.

INTER-JURISDICTIONAL AND NATIONAL BEST PRACTICE COMPARISONS

There are two notable national references for travel time available to the fire service in National Fire Protection Association (NFPA) 1710¹⁵ and the Commission on Fire Accreditation International (CFAI)¹⁶. NFPA 1710 suggests a 4-minute travel time at the 90th percentile for first due arrival of Basic Life Support (BLS) and fire incidents; the CFAI recommends a 5 minute and 12 seconds travel time for first due arrival in an urban/suburban population density and 13 minutes travel time for rural populations of less than 1,000 per square mile. The arrival of an Advanced Life Support (ALS) unit is recommended at 8 minutes travel time by NFPA 1710. It is important to note that the latest edition (9th edition) of the CFAI guidelines have de-emphasized response time and only reference the legacy standards with a separately provided companion document.¹⁷

Additional analyses were completed to attempt to compare the City of Rochester with other like and/or regional agencies. *FITCH* and the city staff collaborated on a survey instrument that was distributed to other upstate NY agencies (Albany, Syracuse, Buffalo, and Yonkers) and eight out of state agencies (Worcester, MA; Springfield, MA; Providence, RI; Patterson, NJ; New Haven, CT; Jersey City, NJ; Elizabeth, NJ; and Bridgeport, CT). The surveys were distributed by the Office of Management and Budget from the City of Rochester. Three agencies provided feedback; Syracuse, Buffalo, and Worcester, MA. Information was sought that would describe the geographic size, population, and budget information. In addition, the ISO Rating for each agency is presented and the cost per capita was a calculated field (total budget/population). The feedback was consolidated and summarized below.

It is understood that these are self-reported data points by the participating agencies. All data were utilized as reported and summarized.

¹⁵ National Fire Protection Association. (2016). NFPA 1710, *Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments*. Boston, MA: National Fire Protection Association.

¹⁶ CFAI. (2009). *Fire & emergency service self-assessment manual*, (8th ed.). Chantilly, Virginia: Author. (page 71)

¹⁷ CFAI. (2016). *Fire & emergency service self-assessment manual*, (9th ed.). Chantilly, Virginia: Author.

TABLE 9: SUMMARY OF ORGANIZATIONAL SURVEY RESULTS

| | Syracuse | Buffalo | Worcester | Rochester |
|-----------------------------------|-----------------|----------------------|------------------|------------------|
| Square Miles | 25 | 44 | 40 | 37 |
| Population | 144,000 | 261,310 | 182,000 | 211,977 |
| Annual Budget¹⁸ | \$34,916,022 | \$59,710,171 | \$40,000,000 | \$51,569,200 |
| ISO Rating | 1 | NR - 3 ¹⁹ | 2 | 1 |
| Cost per Capita | \$242.47 | \$228.50 | \$219.78 | \$243.28 |

A second source of comparators was utilized to compliment the survey results. A benchmarking effort was completed for multiple state of New York cities utilizing the Local Government and Spending database.²⁰ The comparison provided per capita fire protection costs for the Cities of Albany, Buffalo, Rochester, Syracuse, and Yonkers. Emergency Medical Services per capita costs were not included and/or reported separately as each agency had a \$0 value in the benchmarking material.

Results have more consistency than the Rochester Survey results, therefore, the methodology may have been more uniformly applied. Results suggest that the City of Rochester is less than the 2017 average of \$258.40 for the comparators utilized.

TABLE 10: PER CAPITA RATE FOR FIRE PROTECTION SERVICES²¹

| Year | Albany | Buffalo | Rochester | Syracuse | Yonkers |
|-------------|---------------|----------------|------------------|-----------------|----------------|
| 2016 | \$218 | \$232 | \$233 | \$224 | \$329 |
| 2017 | \$208 | \$253 | \$235 | \$248 | \$348 |

The Rochester survey also sought some generalized operational data such as the number of fire stations, workload, staffing, and fire loss. Results are provided below.

¹⁸ Data represent fiscal year 2019, and exclude benefits. Considerable variance in reporting processes may be included in the data.

¹⁹ The ISO Rating was not reported by the agency, therefore, NA was utilized. However, for context, in 2010 the City of Buffalo was reported to have an ISO Rating of 3. It would be assumed that the rating would be 3 or better.

²⁰ Retrieved on March 26, 2019 from <https://www.seethroughny.net/benchmarking/local-government-spending-and-revenue/#>.

²¹ Ibid.

TABLE 11: SUMMARY OF SURVEY RESULTS FOR OPERATIONAL DATA

| | Syracuse | Buffalo | Worcester | Rochester |
|------------------------------------|---------------|----------------------|------------------|--------------------|
| ISO Rating | 1 | NR - 3 ²² | 2 | 1 |
| Staffed Stations | 11 | 19 | 10 | 16 |
| Staffed Apparatus | 15 | 29 | 21 | 20 |
| # Engines | 9 | 19 | 13 | 13 |
| # Ladder/Trucks | 5 | 9 | 7 | 6 |
| Quints | 0 | 0 | 0 | 0 |
| Squad/Rescue | 1 | 1 | 1 | 1 |
| EMS/Medic Units | 0 | 0 | 0 | 0 |
| BC | 3 | 4 | 2 | 2 |
| Minimum Daily Staffing | 69 | 117 | 38 | 87 |
| Minimum Unit Staffing | 4 | 4 | 3 | 4 |
| Continuous Staffing | Yes | Yes | Yes | Yes |
| Average Work Week | 40 | 42.5 | 44 ²³ | 40 |
| Accredited | No | No | No | Yes |
| Emergency Medical Transport | Backup to AMR | No | No | No |
| First Response for Medical | BLS | BLS | BLS | BLS |
| Number of Incidents in 2017 | | | | |
| Emergency Medical | 9,963 | 22,734 | 24,117 | 17,539 |
| Total All Emergency Calls | 20,797 | 34,745 | 33,162 | 34,886 |
| Fire Loss - 2017 | | | | |
| Total | \$3,306,168 | \$13,916,065 | 9,399,726 | N/A ²⁴ |
| Response Time Average | NR | 3:48 | 4:15 | 4:30 ²⁵ |

Comparisons such as presented have to be utilized with some degree of caution as they are both self-reported as well as do not provide the rich contextual relationships to other variables. For example, the number of stations over the geographic area is not only a

²² The ISO Rating was not reported by the agency; therefore, NR was utilized. However, for context, in 2010 the City of Buffalo was reported to have an ISO Rating of 3. It would be assumed that the rating would be 3 or better.

²³ Calculated value. The survey stated 24/48, 24/96. Assuming a bi-weekly payroll begins on Sunday, three distinct schedules emerged that averaged 48, 44, and 40 hour schedules respectively for an average experience of 44 hours per week.

²⁴ Historically, the Rochester Fire Department does not report fire loss.

²⁵ While all values were provided by the external municipalities, the summation of turnout and travel times were used to maintain consistency across the reporting methods from the agencies. Rochester's average turnout and time was summed via the Fitch reported values.

function of the travel and response time capabilities but also is influenced by the robustness of the available road network, impedance, and topographical challenges.

With this understanding, the following standardized observations are provided for review. First, the City of Rochester has a station approximately every 2.31 miles which is more robust than the comparator's average of 2.73. Second, the minimum daily staffing of firefighters per 10,000 population in Rochester is 4.10 which is above the comparator's average of 3.87. However, all of the NY municipalities were above average, with Rochester representing the least. In other words, Worcester brought the average down significantly across the group.

In summary, the survey results and comparisons across communities is useful for illustrative comparisons. However, as previously stated, the methodologies and idiosyncrasies in reporting processes may erode the ability to make meaningful inferences without detailed community specific understanding to accommodate the variances noted. Therefore, it is not recommended to make any decisions based on the comparison communities' survey results without other corroborating evidence that validates the self-reporting results.

ANALYSIS OF FIRE AND EMS STATIONS, APPARATUS, AND RESOURCE CONFIGURATIONS TO MEET BOTH CURRENT AND FUTURE NEEDS

ALTERNATIVES FOR CONSIDERATION

Several alternatives were developed for the City and Department's consideration in future planning. As described earlier in the assessment of the budget, personnel costs occupy the greatest majority of the budget with over 93% personnel costs plus social security, pension, and health insurance costs not accounted for under "personnel."

These alternatives are not created in priority order, but rather within the context of the recommendation, such as, deployment based on risk, staffing strategies, or scheduling strategies. The City should have wide latitude to explore different alternatives, understanding that most of the alternatives would require negotiations with labor.

It is also understood that there may be limitations in the physical facilities to accommodate some of the alternatives, specifically associated with adding or relocating apparatus and personnel. Therefore, longer-term capital planning may be required for some of the alternatives.

ESTABLISHING DESIRED PERFORMANCE – 4-MINUTE TRAVEL TIME

RFD was recently accredited by the CFAI during the spring commission meetings (March 2019). This is a significant achievement for the organization and is one validation of the transparency and professionalism that exists within the organization.

The benchmark (goal) of the Department that was stated and evaluated by the Commission was to meet the intent of NFPA 1710 and have a travel time of 4 minutes or less to 90% of the incidents. Assuming alignment with local policy and adoption, alternatives were generated to achieve the goal of 4 minutes travel time.

MARGINAL UTILITY OF OPTIMIZED RESOURCE ALLOCATION – 4-MINUTE TRAVEL TIME

When referring to the marginal utility analysis provided below, the ascending rank order is the station's capability to cover risk (incidents) in relation to the total historical call volume of the sample period (calendar year 2017). The station number is the current RFD fire station

identifier. The station capture is the number of calls the station would capture within a 4-minute travel time. The total capture is the cumulative number of calls captured with the addition of each fire station. The percent capture is the total cumulative percentage of risk covered by each station.

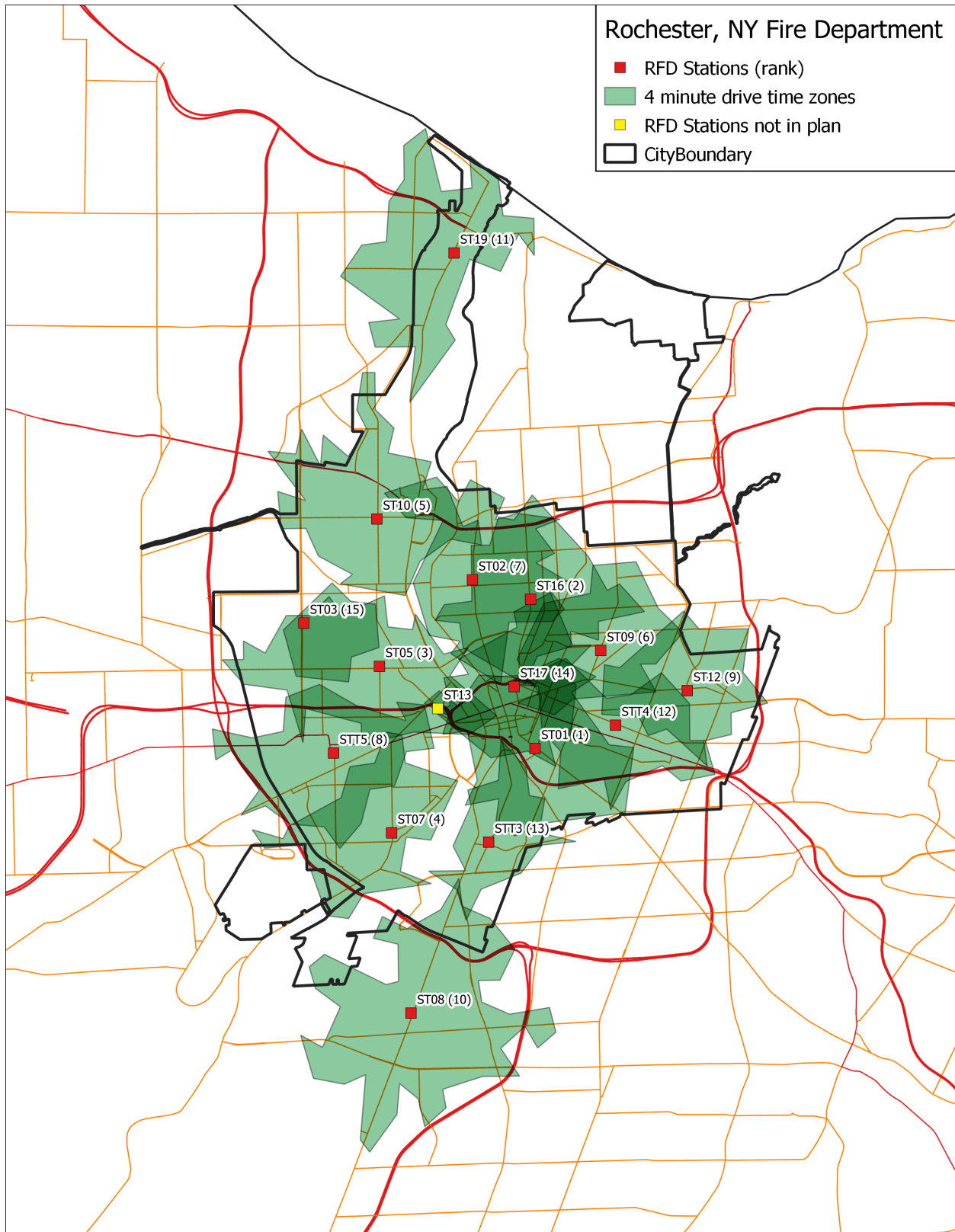
The station that contributed the most to the overall system's performance was Station 1 in the first row and would capture 17.44% of the risks within 4 minutes (table below). Station 16 would cover an additional 16.86% of the risk bringing the cumulative total to 34.30% between Stations 1 and 16. In total, with all 16 fixed fire stations, 90.03% of the incidents could be responded to within 4 minutes travel time.

In other words, within the current configuration of stations, the Department could achieve a 4-minute travel time, as recommended by NFPA 1710, without additional stations; however, it would require two additional units be deployed among the existing stations. Results are provided in the table and figure below.

TABLE 12: MARGINAL FIRE STATION CONTRIBUTION FOR 4-MINUTE TRAVEL TIME

| Rank | Station Number | Station Capture | Total Capture | Percent Capture |
|------|----------------|-----------------|---------------|-----------------|
| 1 | ST01 | 6,072 | 6,072 | 17.44% |
| 2 | ST16 | 5,873 | 11,945 | 34.30% |
| 3 | ST05 | 4,633 | 16,578 | 47.61% |
| 4 | ST07 | 3,144 | 19,722 | 56.64% |
| 5 | ST10 | 2,556 | 22,278 | 63.98% |
| 6 | ST09 | 1,987 | 24,265 | 69.68% |
| 7 | ST02 | 1,562 | 25,827 | 74.17% |
| 8 | STT5 | 1,382 | 27,209 | 78.14% |
| 9 | ST12 | 1,072 | 28,281 | 81.22% |
| 10 | ST08 | 1,019 | 29,300 | 84.14% |
| 11 | ST19 | 1,002 | 30,302 | 87.02% |
| 12 | STT4 | 509 | 30,811 | 88.48% |
| 13 | STT3 | 426 | 31,237 | 89.70% |
| 14 | ST17 | 60 | 31,297 | 89.88% |
| 15 | ST03 | 52 | 31,349 | 90.03% |

FIGURE 5: CURRENT FIRE STATION BLEED MAPS FOR 4-MINUTE TRAVEL TIME



ALTERNATIVE 1 – 16 STATIONS AND 22 UNITS

Alternative 1 assumes the continued use of all current stations, locations, and resources. The quantitative data analysis demonstrates that the overall travel time for the Department was 4.7 minutes at the 90th percentile. GIS modeling suggests that the Department could achieve the 90th percentile threshold within the current configuration of 16 stations utilizing average road speed and impedance. However, the quantitative performance of 4.7 minutes is indicative of a lack of depth of resources at the current station locations. In other words, the geographic locations are sufficient to achieve the desired outcome, but the number of resources at the 16 locations is under-allocated to maximize the efficiency of the distribution model. Therefore, it would require a total of 22 staffed units and the Department currently has 20. At the current staffing strategy, this would require an additional 40 FTEs.

The two additional units could be allocated at Station 1 and Station 5 to ensure that all “High-Risk” station areas are staffed with an Engine and Truck company.

The Office of Management and Budget estimates the long-term costs for recurring personnel costs for an additional 2 units, at 4-person staffing, is \$5,567,800²⁶ total salary and benefits at the top step. This does not contemplate any capital investments.

ALTERNATIVE 2 – 15 STATIONS AND 21 UNITS

Alternative 2 will also achieve the 4-minute travel time. The GIS modeling suggests that 90% of all incidents could be achieved with the utilization of 15 stations. Station 13 is not required to meet the 90th percentile. However, the quantitative performance of 4.7 minutes is indicative of a lack of depth of resources at the current station locations. In other words, the 15 geographic locations are sufficient to achieve the desired outcome, but the number of resources at the 15 locations is under-allocated to maximize the efficiency of the distribution model. Therefore, it would require a total of 21 staffed units and the Department currently has 20. At the current staffing strategy, this would require an additional 20 FTEs.

The Engine and Truck from Station 13 could be re-distributed to Stations 1 and 5 ensuring that all “High-Risk” station areas are staffed with multiple units. The apparatus type could be changed to a ladder truck in the future when the capital plan can accommodate it. One additional unit would be needed and could be assigned at Stations 1, 16, or 5 for both risk and demand or consider a purely geographic assignment such as Station 19.

²⁶ OMB Calculated utilizing top pay (long-term costs) with 2 Captains, 6 Lieutenants, and 32 Firefighters.

The Office of Management and Budget estimates the long-term costs for recurring personnel costs for an additional unit, with 4-person staffing, is \$2,783,900²⁷ total salary and benefits at the top step. This does not contemplate any capital investments.

PEAK HOUR UNITS

Additionally, for both Alternatives 1 and 2; the City and Department could elect to utilize peak-load staffing of 12-hour units as the additional units required. In this manner, all current resources would be maintained, but the additional units recommended could be maximized by only utilizing them for the busiest periods of the day. For example, the units could work from 9 am to 9 pm. Once the units were clocked off, the performance would mirror current performance.

If adopted, the costs are generally 50% of the 24-hour experience. In other words, two peak hour units could be implemented for the cost of 1 24-hour unit.

ESTABLISHING DESIRED PERFORMANCE – 5-MINUTE TRAVEL TIME

The current performance for fire related responses is 5 minutes at the 90th percentile and the overall travel time performance for all call categories is 4.7 minutes. Therefore, the City may consider an adjustment to the overall desired performance from 4 minutes to 5 minutes. This 1-minute difference in performance provides considerable flexibility in the resources required to deliver the desired performance.

MARGINAL UTILITY OF OPTIMIZED RESOURCE ALLOCATION

When referring to the marginal utility analysis provided below, the ascending rank order is the station's capability to cover risk (incidents) in relation to the total historical call volume of the sample period (calendar year 2017). The station number is the current RFD fire station identifier. The station capture is the number of calls the station would capture within a 5-minute travel time. The total capture is the cumulative number of calls captured with the addition of each fire station. The percent capture is the total cumulative percentage of risk covered by each station.

The analysis demonstrates that the current station configuration could capture approximately 93% of the incidents within 5 minutes with the utilization of eight fire stations. More conservatively, if the Department elected to cover at least 97% of the incidents within

²⁷ OMB Calculated utilizing top pay (long-term costs) with 1 Captains, 3 Lieutenants, and 16 Firefighters.

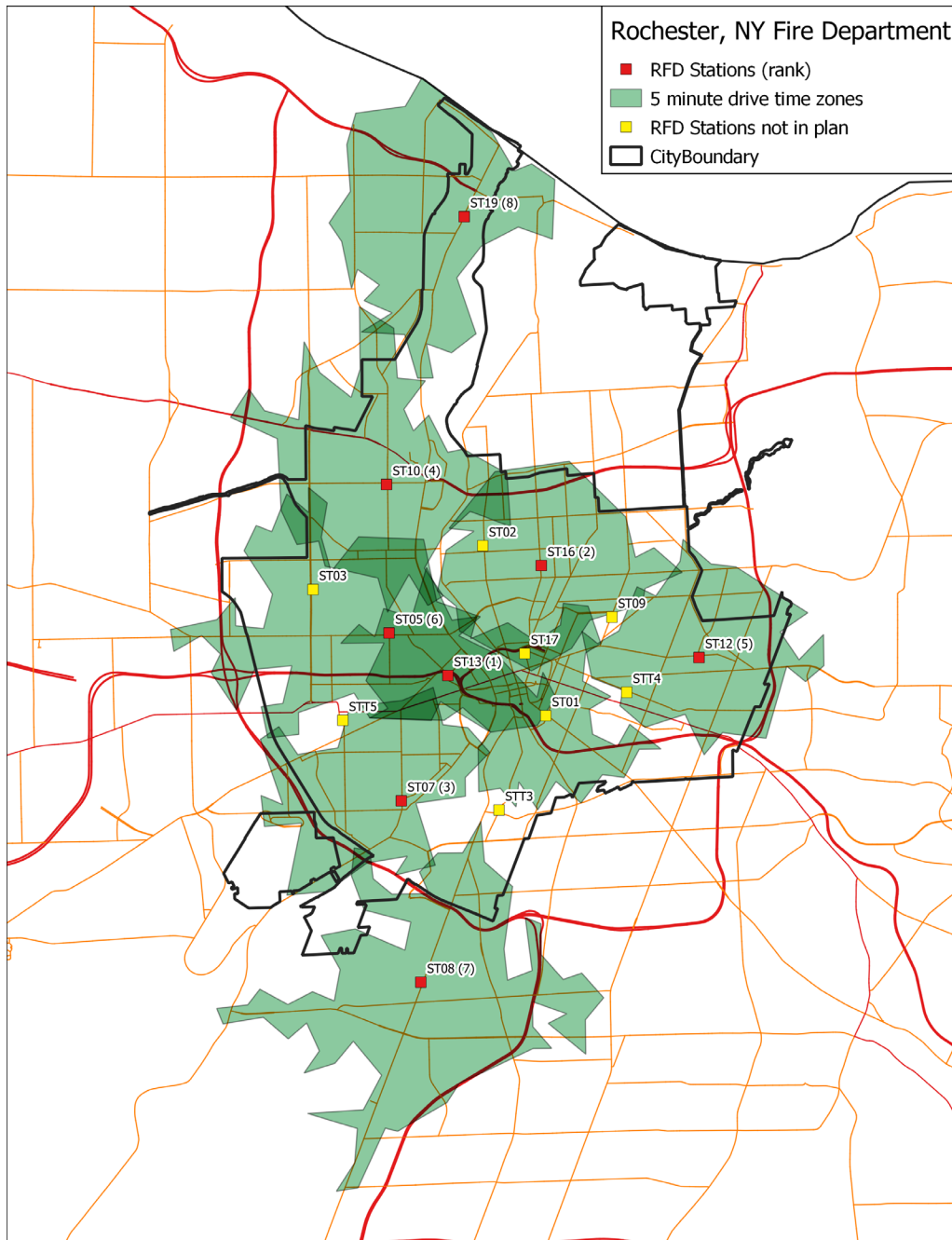
5 minutes, then a total of 12 stations would be required. Stations 2, 3, and T4 collectively improve performance by less than 1%. This is represented in the table and figure that follow.

TABLE 13: MARGINAL FIRE STATION CONTRIBUTION FOR 5-MINUTE TRAVEL TIME

| Rank | Station Number | Station Capture | Total Capture | Percent Capture |
|------|----------------|-----------------|---------------|-----------------|
| 1 | ST13 | 9,550 | 9,550 | 27.43% |
| 2 | ST16 | 7,487 | 17,037 | 48.93% |
| 3 | ST07 | 4,213 | 21,250 | 61.02% |
| 4 | ST10 | 3,873 | 25,123 | 72.15% |
| 5 | ST12 | 2,705 | 27,828 | 79.91% |
| 6 | ST05 | 2,095 | 29,923 | 85.93% |
| 7 | ST08 | 1,376 | 31,299 | 89.88% |
| 8 | ST19 | 1,072 | 32,371 | 92.96% |
| 9 | ST01 | 681 | 33,052 | 94.92% |
| 10 | STT5 | 332 | 33,384 | 95.87% |
| 11 | ST09 | 232 | 33,616 | 96.54% |
| 12 | STT3 | 205 | 33,821 | 97.13% |
| 13 | ST02 | 163 | 33,984 | 97.59% |
| 14 | STT4 | 109 | 34,093 | 97.91% |
| 15 | ST03 | 1 | 34,094 | 97.91% |

When referring to the mapping output below, the areas of the city that are not shaded with green represent a maximum of 7% of the incidents that would not be responded to within 5 minutes. All requests for service would be answered, but they may be answered between 5:01 and 8:00 minutes. Finally, any areas that are shaded with progressively darker shades of green represent areas where multiple stations can cover the same territory within the respective travel time being evaluated.

FIGURE 6: CURRENT FIRE STATION BLEED MAPS FOR 5-MINUTE TRAVEL TIME



ALTERNATIVE 3 – 12 STATIONS AND 18 UNITS

Alternative 3 contemplates the use of 12 primary physical station locations. These 12 stations will achieve 97% coverage of all calls within 5 minutes or less travel time. Stations 2, T4, 3, and 17 collectively improve performance by less than 1% due to the duplication of coverage areas with the adjusted travel time parameter.

Therefore, the total number of units required to continue to perform as designed would be 18 and the Department currently has 20. The two units and personnel could be reduced, reallocated, or repurposed as desired.

The Office of Management and Budget estimates the long term savings for recurring personnel costs for a 2 units reduction, at 4-person staffing, is \$5,567,800 total salary and benefits at the top step. This does not contemplate any capital investments.

The Office of Management and Budget calculated utilizing top pay (long-term costs) with 2 Captains, 6 Lieutenants, and 32 Firefighters.

ALTERNATIVE 4 – 14 STATIONS AND 20 UNITS

Alternative 4 is an incremental adjustment from Alternative 3. When considering the station risk profiles created during the risk assessment process, Station 2 and 17 are both moderate-risk stations. Additionally, considering the potential limitations on space and the need for all current apparatus and personnel, it may be reasonable to continue to maintain Stations 2 and 17.

Therefore, Stations 3 and T4 could be closed and the resources could be reassigned to Stations 1 and 5 to ensure that all “High-Risk” stations have multi-company assignments matching risk profiles to mitigation capacity. The Department may opt to adjust from an Engine company to a Truck company as the capital planning permits. Overall, this would continue to require utilization of all 20 units currently in the system, but would avoid operating and capital costs for the two fixed facilities.

Therefore, while there may be some capital savings and/or cost avoidance, the personnel costs and primary apparatus capital requirements would remain constant with the current deployment.

EFFECTIVE RESPONSE FORCE

In an effort to quantify the potential impacts from adjustments to the status quo, several alternative scenarios were tested. The reduction of Stations 13, 2, T4, and 3 were all evaluated as well as some hypothetical unit reductions to test the impact on the effective response force (ERF) capabilities. The results did not suggest large variation in capabilities with incremental adjustments to the current system.

There are two prevailing recommendations for the time to assemble an ERF for structure fires. First, NFPA 1710 suggests that the ERF should arrive in 8 minutes travel time or less. Second, the CFAI provides a baseline travel time performance objective of 10 minutes and 24 seconds or less 90% of the time for urban densities as well as a 13-minute travel time ERF for suburban areas and 18-minute travel time for rural areas. Since the current first due travel time performance is approximately 5 to 6 minutes, 8-, 10-, and 13-minute travel times were created to demonstrate the relative ERF coverage throughout the jurisdiction.

For these purposes, ERF was defined as the arrival of four units which includes 16 personnel and is restricted to the City jurisdiction. The ability of the Department to respond in such a short travel time overcomes changes in the system and continues to perform similarly. In other words, the next closest unit could respond in a reasonably similar fashion as the original 4-units. The greatest variability was approximately 6%, with most of the 8-minute variability at approximately 3%. The variation at 10 and 13 minutes is less than 2%.

The modeling for 8-minute ERF calculations is well aligned with the Department's IAFF GIS analysis that suggested approximately 72% coverage for 15 people within 8 minutes travel time²⁸. In other words, there is approximately a 2% difference between analyses even though different data sets and calendar years were utilized.

TABLE 14: COMPARISONS OF EFFECTIVE RESPONSE FORCE CONFIGURATIONS

| Travel Time Objective | Current | w/o St 13 | w/o St. 2, STT4, St. 3 | w/o T2 and R11 | w/o T2 and T10 | w/o R11 and T10 |
|-----------------------|---------|-----------|------------------------|----------------|----------------|-----------------|
| 8-Minute | 74.43% | 68.09% | 71.63% | 72.88% | 71.66% | 73.22% |
| 10-Minute | 88.73% | 88.44% | 86.17% | 86.39% | 86.39% | 88.73% |
| 13-Minute | 97.11% | 97.11% | 96.24% | 96.24% | 96.24% | 97.11% |

ADJUSTING MINIMUM STAFFING THRESHOLDS

If desired by the City and/or Department, an alternative to considering the full removal of any response units identified in Alternative 3 is to adjust the daily minimum staffing downward for the equivalency of the number of units being considered. For example, utilizing Alternative 3, rather than remove two units from service, if the daily minimum staffing was established at 79 (87-8=79), then the city could realize the financial savings of the overtime associated with the minimum staffing between 79 and 87. The department would maintain all current FTE counts, so the units would be staffed anytime the staffing achieved the 4-person thresholds of 83 and 87, respectively.

²⁸ IAFF. (2018). *Geographic Information System Emergency Service Response Capabilities Analysis*. Washington, District of Columbia: Author. (Page 10)

In other words, this adjustment only considers the threshold for hiring back overtime to maintain daily minimum staffing. It does not reduce any firefighter FTEs, shift or unit staffing. In this manner, the City and Department could monitor any impacts to the system performance over a longer period of time prior to considering reductions.

OPTIMAL FIRE STATION LOCATIONS AND UTILIZATION

Optimized locations were created for the Department's consideration. Optimized plans utilize a "white board" approach where all existing locations are disregarded, and we allow the data to indicate the best station locations. It is understood that stations are placed for a variety of reasons and that few agencies would have the flexibility in land availability, purchase price, capital investment, and political considerations to build a brand-new deployment model.

However, these analyses are beneficial for validating existing stations where applicable and identifying potential areas of future need for either new stations or station relocations.

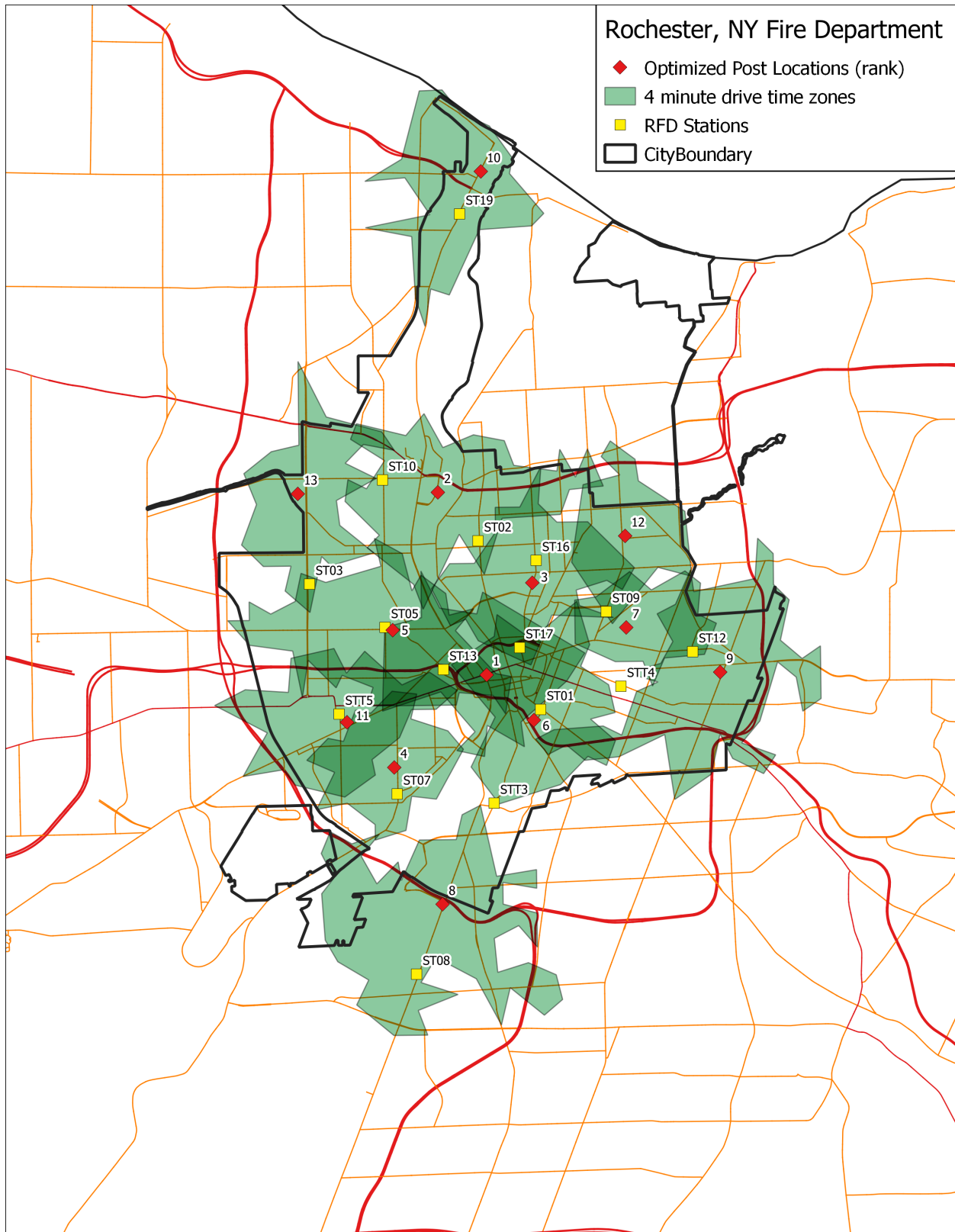
4-MINUTE TRAVEL TIME

Analyses were completed to develop an optimized station distribution model for a 4-minute travel time consistent with NFPA 1710. This evaluation suggests that an optimized 13-station model can provide for greater than 91% effectiveness covering all incidents within 4 minutes or less travel time. In comparison, the current 15-station configuration achieved 4 minutes or less approximately 90% of the time, or an improvement of approximately 1%, but with three fewer fixed facilities.

The analysis confirms optimal placement of the current stations of Station T5, Station 1, and Station 5 within the context of a 4-minute travel time.

A graphic illustration is presented below that includes the proposed station locations as well as the existing facilities.

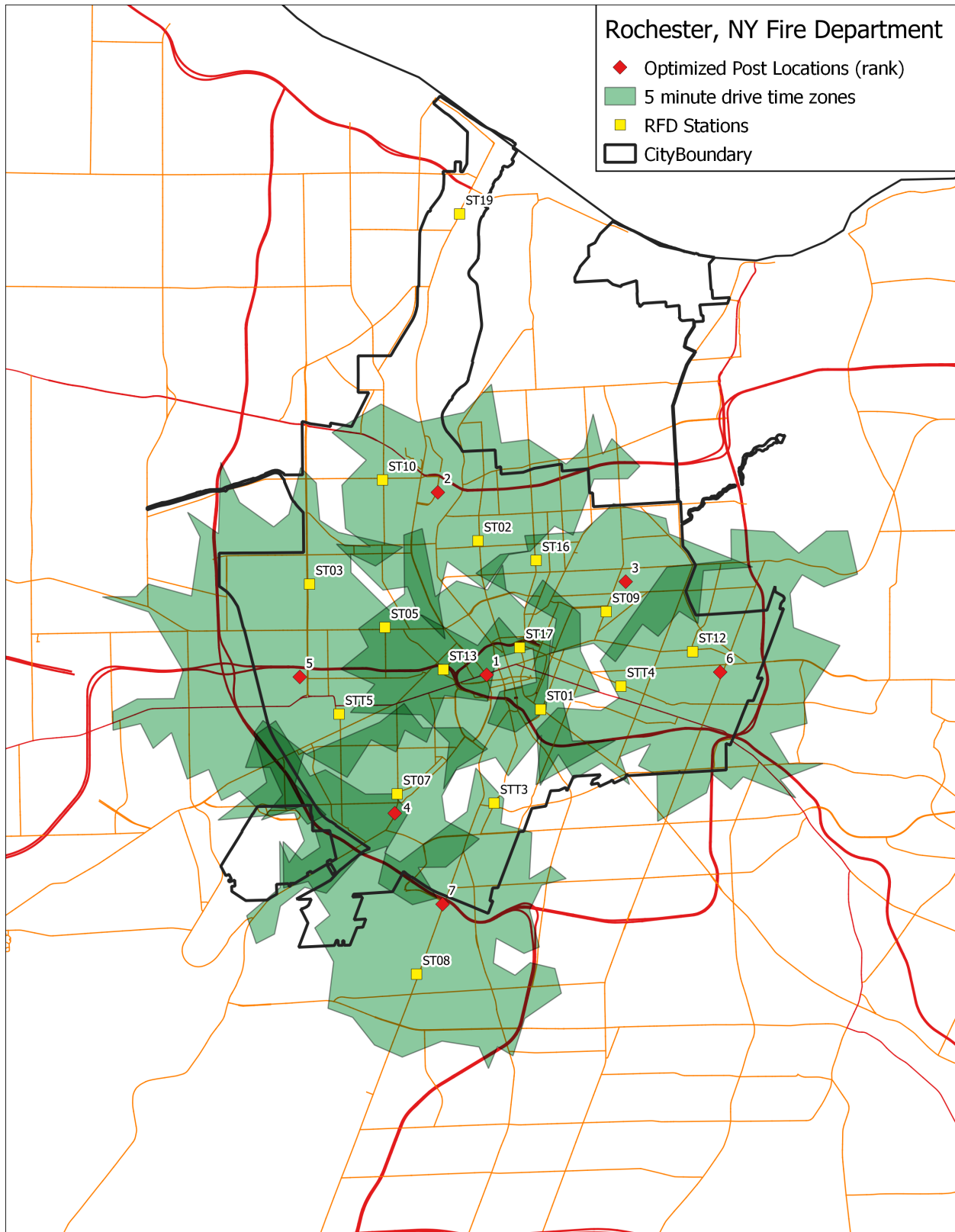
FIGURE 7: OPTIMIZED STATION DEPLOYMENT PLAN - 4-MINUTE TRAVEL TIME



OPTIMIZED 5-MINUTE TRAVEL TIME

Analyses were completed to develop an optimized station distribution model for a 5-minute travel time. This evaluation suggests that an optimized 7-station model can provide for approximately 91% effectiveness covering all incidents within 5 minutes. This optimized configuration maintains greater than 90% effectiveness compared to the current station configuration but only requires 7 stations. Considering the current 16-station deployment, this model would maintain the same performance with 7 stations at 91%. A graphic illustration is presented below.

FIGURE 8: OPTIMIZED STATION DEPLOYMENT PLAN – 5--MINUTE TRAVEL TIME



BALANCED APPROACH TO STAFFING STRATEGIES

Currently, the Department has followed NFPA 1710's recommendation for 4-person staffing on all apparatus. Additionally, the Department has stated to the CFAI that their goal is to adhere to the 4-minute travel time at the 90th percentile in conjunction with the recommendations from NFPA 1710.

The desire to meet the intent of this standard is recognized and a balanced approach is recognized and accounted for within the NFPA 1710 standard. In the appendix section A.3.3.13 of the 2016 edition of NFPA 1710, it is recognized that multiple units may be used to co-respond to incidents to assemble the minimum of four personnel. In most urban departments, this could be an engine or truck company paired with an ambulance.²⁹ However, this does illustrate the acknowledgement that different configurations, when and where reasonably applied, may continue to meet the intent of the recommendation. Understanding that the vast majority of fire related events are handled by a single resource (79.7%) and 89.4% of the fire related incidents are handled by two units or less, it is reasonable to explore alternative staffing strategies.

Additionally, analyses investigated whether travel time performance deteriorated when there were fewer primary front-line vehicles available. Primary front-line units for these analyses included RFD's 13 engines, one rescue unit, and six trucks (total $n=20$). Calls to which primary front-line units responded in 2017 were used to determine the number of available primary front-line units at the time each call was received. Performance times were then based on primary front-line units responding to lights and sirens (emergency) calls only.

²⁹ National Fire Protection Association. (2016). NFPA 1710, *Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments*. Boston, MA: National Fire Protection Association.

TABLE 15: AVERAGE AND 90TH PERCENTILE PERFORMANCE TIMES IN MINUTES BY NUMBER OF AVAILABLE VEHICLES

| Number of Available Vehicles | Average | | 90 th Percentile | | Sample Size Calls | % of Calls |
|------------------------------|--------------|-------------|-----------------------------|-------------|-------------------|------------|
| | Turnout Time | Travel Time | Turnout Time | Travel Time | | |
| 20 | 1.7 | 3.0 | 2.4 | 4.7 | 10,178 | 31.5 |
| 19 | 1.5 | 3.0 | 2.3 | 4.8 | 8,794 | 27.2 |
| 18 | 1.6 | 3.1 | 2.3 | 4.8 | 5,057 | 15.6 |
| 17 | 1.4 | 3.0 | 2.2 | 4.9 | 2,675 | 8.3 |
| 16 | 1.5 | 3.2 | 2.2 | 5.1 | 1,374 | 4.2 |
| 15 | 1.4 | 3.3 | 2.2 | 5.4 | 738 | 2.3 |
| 14 | 1.5 | 3.1 | 2.3 | 4.9 | 740 | 2.3 |
| 13 | 1.4 | 3.5 | 2.2 | 5.4 | 670 | 2.1 |
| 12 | 1.4 | 3.3 | 2.3 | 6.1 | 535 | 1.7 |
| 11 | 1.4 | 3.5 | 2.3 | 5.9 | 340 | 1.1 |
| 10 | 1.7 | 3.8 | 2.4 | 6.1 | 241 | 0.7 |
| 9 | 1.4 | 3.9 | 2.2 | 7.0 | 169 | 0.5 |
| 8 | 1.8 | 3.9 | 2.4 | 7.0 | 146 | 0.5 |
| 7 | 1.9 | 4.0 | 2.7 | 6.8 | 142 | 0.4 |
| 6 | 1.4 | 3.9 | 2.6 | 6.2 | 88 | 0.3 |
| 5 | 1.1 | 3.9 | 2.4 | 6.9 | 86 | 0.3 |
| 4 | 1.5 | 4.1 | 2.1 | 8.3 | 62 | 0.2 |
| 3 | 0.9 | 4.5 | 2.2 | 8.7 | 64 | 0.2 |
| 2 | 1.0 | 3.9 | 2.1 | 6.8 | 55 | 0.2 |
| 1 | 0.8 | 4.3 | 1.7 | 7.7 | 40 | 0.1 |
| 0 | 1.0 | 4.8 | 2.3 | 9.6 | 112 | 0.3 |

Results demonstrate that 31.5% of the time all 20 units were available when a call occurred; 27.2% of the time 19 units were available when a call occurred. Overall, 88.7% of the time there were 16 or greater units available when an incident occurred.

Therefore, with full understanding of the robustness of the response capacity in the system, an alternative could be to attempt to achieve Alternative 1 with the reallocation of existing personnel. In other words, achieve full NFPA 1710 adoption of travel time at 4 minutes or less, but elect a paired alternative staffing strategy of 3-person staffing within double company units only.

ALTERNATIVE 5 – 4-MINUTE 16 STATIONS AND 22 UNITS

Alternative 5 contemplates creating a 21st and 22nd unit to be deployed from the current 16 fire stations by staffing the Engines, Trucks, and Rescue that are dual-assigned to Stations 10, 13, 16, and 17 at 3-personnel. This would provide the opportunity to reassign 8-personnel to create two additional four-person units. All stand-alone apparatus would continue to be staffed at 4-personnel.

This alternative may require negotiation with the labor group, however, if agreement is conferred, this alternative would not require any additional investment, other than capital, and would support the improvement to 4-minutes to 90% of the incidents across the city.

STAFF SCHEDULES AND POTENTIAL ALTERNATIVES

CURRENT STAFFING LEVELS

The Department presently staffs 20 companies (Engines, Trucks, and a Rescue) with 4 personnel on each apparatus for a minimum staffing of 80 for each shift. Additionally, there are 2 Battalion Chiefs, 1 Deputy Chief, 1 Safety Officer (Captain), 2 Fire Investigators, and 1 Protectives Driver for a minimum of 87 on duty.

SHIFT SCHEDULES / WORK WEEKS

The Department presently works a 40-hour work week for members assigned to the operations division. This is scheduled through a 10-14 work week which consists of 2 parts-- a day tour and a night tour. The day tour is a 10-hour shift from 8am to 6pm and the night tour is a 14-hour shift from 6pm to 8am. This particular schedule would traditionally be a 42-hour work week but is adjusted by additional time off referred to as “cycle time.” There are presently four shifts or work groups.

Three alternate work weeks were explored consisting of the traditional 42-hour work week with a 10-14 schedule and the 48-hour work week which consists of a 24-hour shift on duty followed by 48 hours off duty with a Cycle or Kelly day every 7th shift, and the traditional 56-hour work week without any assigned Cycle or Kelly time. The highlights of the current schedule and the three firefighter schedules are presented in the two tables below. The first table is for the 80 personnel assigned directly to response apparatus and the second table is for 87 personnel that includes all positions. The relief multipliers remain consistent across the analyses.

TABLE 16: WORK WEEK INCLUDING OPERATIONAL PERSONNEL (80)

| Average Work Week | 40 ³⁰ | 42 | 48 ³¹ | 56 |
|--|------------------|---------------|------------------|---------------|
| Total Hours per FTE (Average Work Week x 52 Weeks) | 2,184.00 | 2,184.00 | 2,912.00 | 2,912.00 |
| Time-Off | 328.10 | 328.10 | 328.10 | 328.10 |
| Cycle / Kelly Time | 104.00 | 0.00 | 416.00 | 0.00 |
| Hours Worked Per FTE | 1,751.90 | 1,855.90 | 2,167.90 | 2,583.90 |
| Coverage Required (365*24) | 8,760.00 | 8,760.00 | 8,760.00 | 8,760.00 |
| Continuous Staffing Multiplier | 5.00 | 4.72 | 4.04 | 3.39 |
| Minimum Staffing for all Line Positions | 80 | 80 | 80 | 80 |
| Required Budgeted FTEs | 400.02 | 377.61 | 323.26 | 271.22 |

Note: Based on 2017 time-off for FF, Lt, & Captain positions

TABLE 17: WORK WEEK INCLUDING MINIMUM STAFFING 87 WITH BC'S AND DC

| Average Work Week | 40 | 42 | 48 | 56 |
|--|---------------|---------------|---------------|---------------|
| Total Hours per FTE (Average Work Week x 52 Weeks) | 2,184.00 | 2,184.00 | 2,912.00 | 2,912.00 |
| Time-Off | 329.40 | 329.40 | 329.40 | 329.40 |
| Cycle / Kelly Time | 104.00 | 0.00 | 416.00 | 0.00 |
| Hours Worked Per FTE | 1,750.60 | 1,856.00 | 2,168.00 | 2,582.60 |
| Coverage Required (365*24) | 8,760.00 | 8,760.00 | 8,760.00 | 8,760.00 |
| Continuous Staffing Multiplier | 5.00 | 4.72 | 4.04 | 3.39 |
| Minimum Staffing for all Line Positions | 87 | 87 | 87 | 87 |
| Required Budgeted FTEs | 435.35 | 410.63 | 351.53 | 295.10 |

Note: Based on 2017 time-off for FF, LT, Captain, BC, & DC positions

The impact of negotiating different work week and scheduling strategies has a profound impact on the ability to leverage capacity within the system.

The first observation is that according to the average leave personnel utilized in 2017, attempting to staff at a minimum of 87 per day (lower table) would require approximately 435 personnel to cover the schedule and the average leave. Currently, the Department has 442 positions allocated. Therefore, the gap between 435 and 442 may be realized to continue to function to cover attrition rates and other operational concerns or consider future adjustments.

It is understood that it is a local policy decision as to whether to carry more or less overtime burden. Each elected body has different sensitivities to the use of overtime. However, for

³⁰ The 40-hour schedule is actually 2,080 hours. This is the 2,184 scheduled hours less the Cycle Time.

³¹ The 48-hour schedule is actually 2,496 hours. This is the 2,912 schedule hours less the Kelly Days/Cycle Time.

the purposes of apples to apples comparisons, the concept of relief staffing is utilized across all alternative schedules.

Considering the size of the Department, the Department is efficiently staffed.

42-Hour Work Week

The use of a 42-hour work week could be accomplished in several manners. For these purposes, it is assumed that the employee group would want to maintain the 10-14 schedule they currently employ. The only variation from 40- to 42-hour work weeks is with the elimination of the “cycle time” that reduces it from 42 to 40. The overall benefit from this alternative is a reduction in the required relief multiplier from 5.0 FTEs per seat to 4.72 FTEs per seat.

This change would reduce the personnel requirements from 435 to 411, or approximately 24 personnel at a minimum staffing of 87 personnel per tour. This change in work week could afford the reallocation of personnel towards any of the alternatives and continue to at least maintain all current unit staffing and performance. In other words, this alternative would not impact service delivery in any manner, as all current unit and shift staffing would remain.

The Office of Management and Budget provided estimates for recurring personnel savings for adjustment of a 40-hour work week to a 42-hour week, at \$139,195³² at top step, for a total potential savings of \$3,340,680 per year. This does not contemplate any capital investments.

48-Hour Work Week

The 48-hour work week is most traditionally accomplished by working 24 hours on duty and then 48 hours off duty for an average of 56 hours per week. The 56-hour work week is then reduced by Cycle/Kelly time to reduce it to 48. This is accomplished by having a 24-hour unpaid day off every 7th shift. The overall benefit from this alternative is a reduction in the required relief multiplier from 5.0 FTEs per seat to 4.04 FTEs per seat and continues to maintain the schedule below the Fair Labor Standards Act (FLSA) threshold for the payment of premium overtime due to the work schedule.

This change would reduce the personnel requirements from 435 to 352, or approximately 84 personnel attrition, while maintaining minimum staffing of 87 personnel per tour. This change in work week could afford the reallocation of personnel towards any of the

³² This is a blended rate of top step for Captains, Lieutenants, and Firefighters. Calculated from \$2,783,900 / 20 personnel X 24 positions.

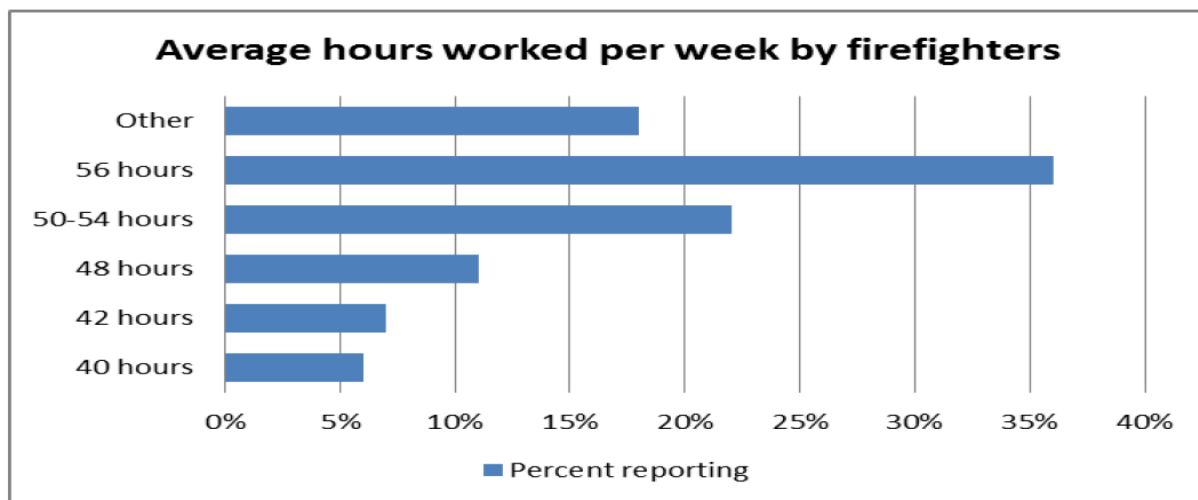
alternatives, and also realize fiscal efficiencies and continue to at least maintain all current unit staffing and performance. For example, this scenario could achieve Alternative 1 by adding two fully staffed (4-personnel) units and attrition approximately 44 personnel. This alternative would not impact service delivery in any manner as all current unit and shift staffing would remain.

The Office of Management and Budget provided estimates for recurring personnel savings for adjustment of a 40-hour work week to a 48-hour week, at \$139,195³³ at top step, for a total potential savings of \$11,692,380 per year. This does not contemplate any capital investments.

Within the context of adopted schedules and workweek, the strategies are typically a result of collective bargaining and vary greatly across the United States. The International City/County Management Association completed a survey of members with respect to the firefighting schedules utilized. The results suggest that the most frequently utilized schedule is a 56-hour work week.

This is a self-selected, non-random, national sample of agencies that had at least 10,000 population (n>4,000). Therefore, there are limitations to inferences to specific regional, state, or other metro-sized agencies.

FIGURE 9: ICMA SURVEY OF FIREFIGHTER SCHEDULES



³³ This is a blended rate of top step for Captains, Lieutenants, and Firefighters. Calculated from \$2,783,900 / 20 personnel X 84 positions.

CONCLUSION

RFD is an ISO Class 1 Department and is now internationally accredited by the CFAI. These accomplishments illustrate the City's commitment to appropriately and efficiently resource the fire department. Similarly, this also demonstrates the Department's commitment to provide exemplary services in a transparent and professional manner.

Less than 1% of the fire departments in the country have an ISO Class 1 rating. As of February 2019, 73 accredited agencies out of 258 also maintain an ISO Class 1 rating.³⁴ This would equate to approximately 29% of the accredited agencies.

By all respects, there is no evidence to suggest that the Department isn't performing at a high level. The alternatives generated are offered for policy consideration that vary from improving current performance to meet NFPA 1710 to maintaining current performance with identified efficiencies, as well as identifying options in staffing and scheduling where labor and management could partner to accomplish some of the goals that are efficient and fiscally responsible.

The Department's current deployment strategies should have significant long-term sustainability from an operational standpoint. From time to time, fiscal constraints must be considered, and adjustments realized within an acceptable political environment. These alternatives provide sufficient latitude and flexibility for successful policy considerations that either mute or limit potential impacts to the service delivery models.

Finally, as the Department has identified internally, opportunities for improvements in technology, dispatch performance, and capital planning remain.

³⁴ CFAI. Retrieved March 2019 from <https://cpse.org/accreditation/accredited-agencies/>.



Engine and Truck Response Analysis

Rochester Fire Department

Operating Budget: Revenues

| Category | Revenue |
|--|--------------|
| Departmental Income (includes service contracts) | \$ 2,785,000 |
| Intergovernmental - Federal | \$ 178,400 |
| Intergovernmental - State | \$ 43,000 |
| Fines & Forfeitures | \$ 300,000 |
| Miscellaneous | \$ 356,500 |
| Total | \$ 3,662,900 |

FY 2019 Fire Capital Improvement Budget

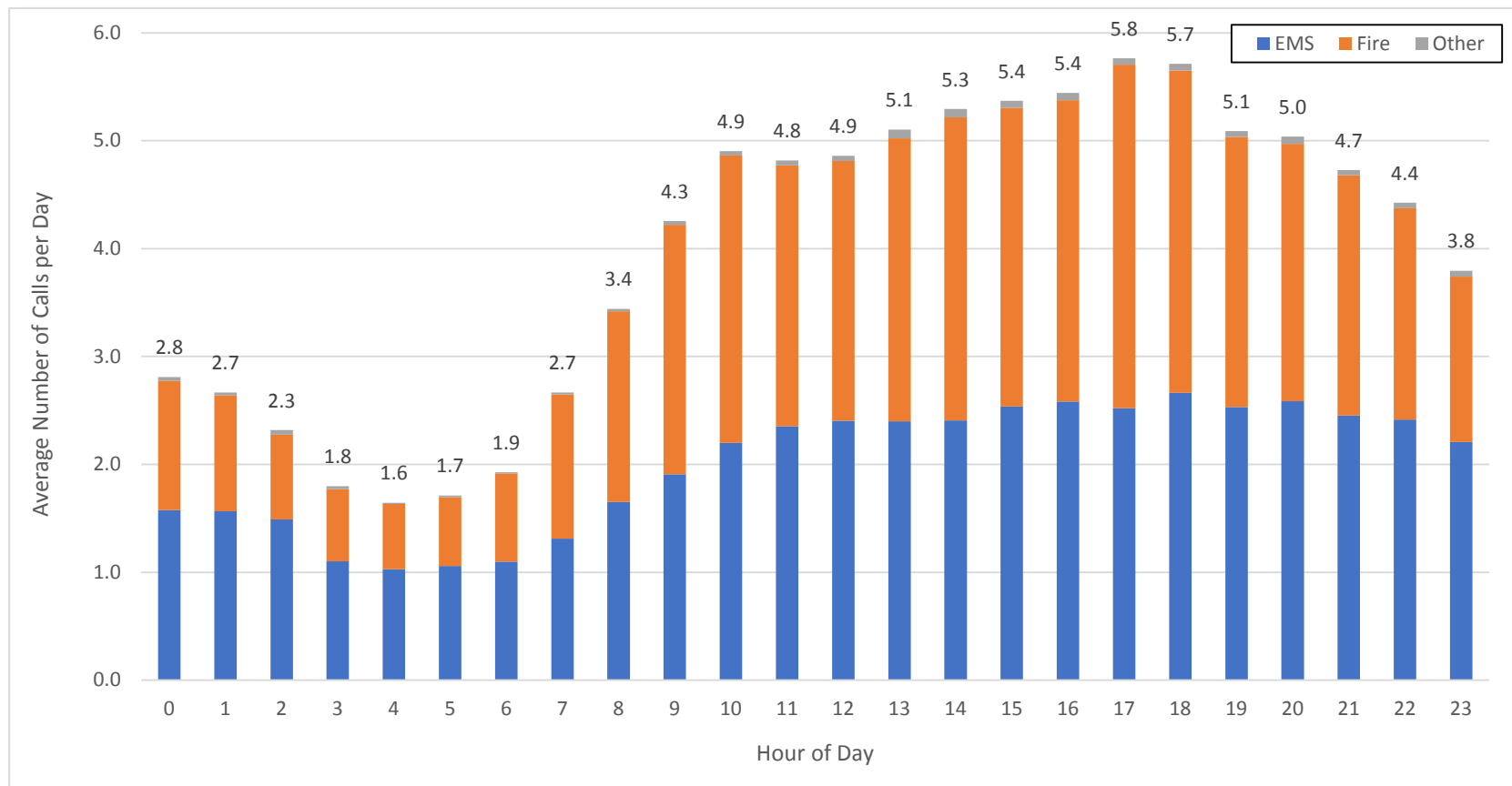
| | Fiscal Year |
|--|---------------------|
| CIP Projects | 2019 |
| P-1 Fire Fighting Apparatus | \$ 2,260,000 |
| P-3 Small Equipment: Firehouse | \$ 50,000 |
| P-3 Small Equipment: SCBA Replacement | \$ 65,000 |
| P-3 Small Equipment: Small Equipment RFD | \$ 460,000 |
| P-3 Small Equipment: Turnout Gear | \$ 650,000 |
| P-5 Technology: Communications Equipment | \$ 60,000 |
| P-6 Fire Motor Equipment | \$ 190,000 |
| Business Equipment: Firehouse Security | \$ 120,000 |
| Total | \$ 3,855,000 |
| CIP Revenues | |
| CDBG – Purchase of Smoke and Carbon Monoxide Detectors | \$ 55,000 |
| General Cash Capital | \$ 1,540,000 |
| General Debt | \$ 2,260,000 |
| Total | \$ 3,855,000 |

Incidents by Call Category

| Call Category | Number of Calls | Average Calls per Day | Call Percentage |
|-----------------------------|-----------------|-----------------------|-----------------|
| Cardiac and Stroke | 3,127 | 8.6 | 9.0 |
| Death | 1 | 0.0 | 0.0 |
| Difficulty Breathing | 4,552 | 12.5 | 13.0 |
| Fall and Injury | 1,775 | 4.9 | 5.1 |
| Illness and Other | 2,987 | 8.2 | 8.6 |
| MVA | 1,907 | 5.2 | 5.5 |
| Overdose and Psychiatric | 15 | 0.0 | 0.0 |
| Seizure and Unconsciousness | 3,175 | 8.7 | 9.1 |
| EMS Total | 17,539 | 48.1 | 50.3 |
| Fire Alarm | 3,909 | 10.7 | 11.2 |
| Fire Other | 11,854 | 32.5 | 34.0 |
| Outside Fire | 334 | 0.9 | 1.0 |
| Structure Fire | 581 | 1.6 | 1.7 |
| Vehicle Fire | 276 | 0.8 | 0.8 |
| Fire Total | 16,954 | 46.4 | 48.6 |
| Hazmat | 8 | 0.0 | 0.0 |
| Rescue | 385 | 1.1 | 1.1 |
| Total¹ | 34,886 | 95.6 | 100.0 |

| Program | Number of Calls ¹ | Number of Responses ² | Average Responses per Call | Responses with Time Data ³ | Total Busy Hours | Average Busy Minutes per Response | Percentage of Total Busy Hours |
|-----------------------------|------------------------------|----------------------------------|----------------------------|---------------------------------------|------------------|-----------------------------------|--------------------------------|
| EMS | 17,518 | 18,467 | 1.1 | 18,033 | 4,453.8 | 14.8 | 32.5 |
| Fire | 16,454 | 26,272 | 1.6 | 24,244 | 8,666.3 | 21.4 | 63.2 |
| Hazmat | 8 | 12 | 1.5 | 12 | 6.2 | 30.9 | 0.0 |
| Rescue | 383 | 2,321 | 6.1 | 2,241 | 538.4 | 14.4 | 3.9 |
| Not Identified ⁴ | 83 | 146 | 1.8 | 138 | 47.6 | 20.7 | 0.3 |
| Total | 34,446 | 47,218 | 1.4 | 44,668 | 13,712.1 | 18.4 | 100.0 |

Total Busy Hours by Program

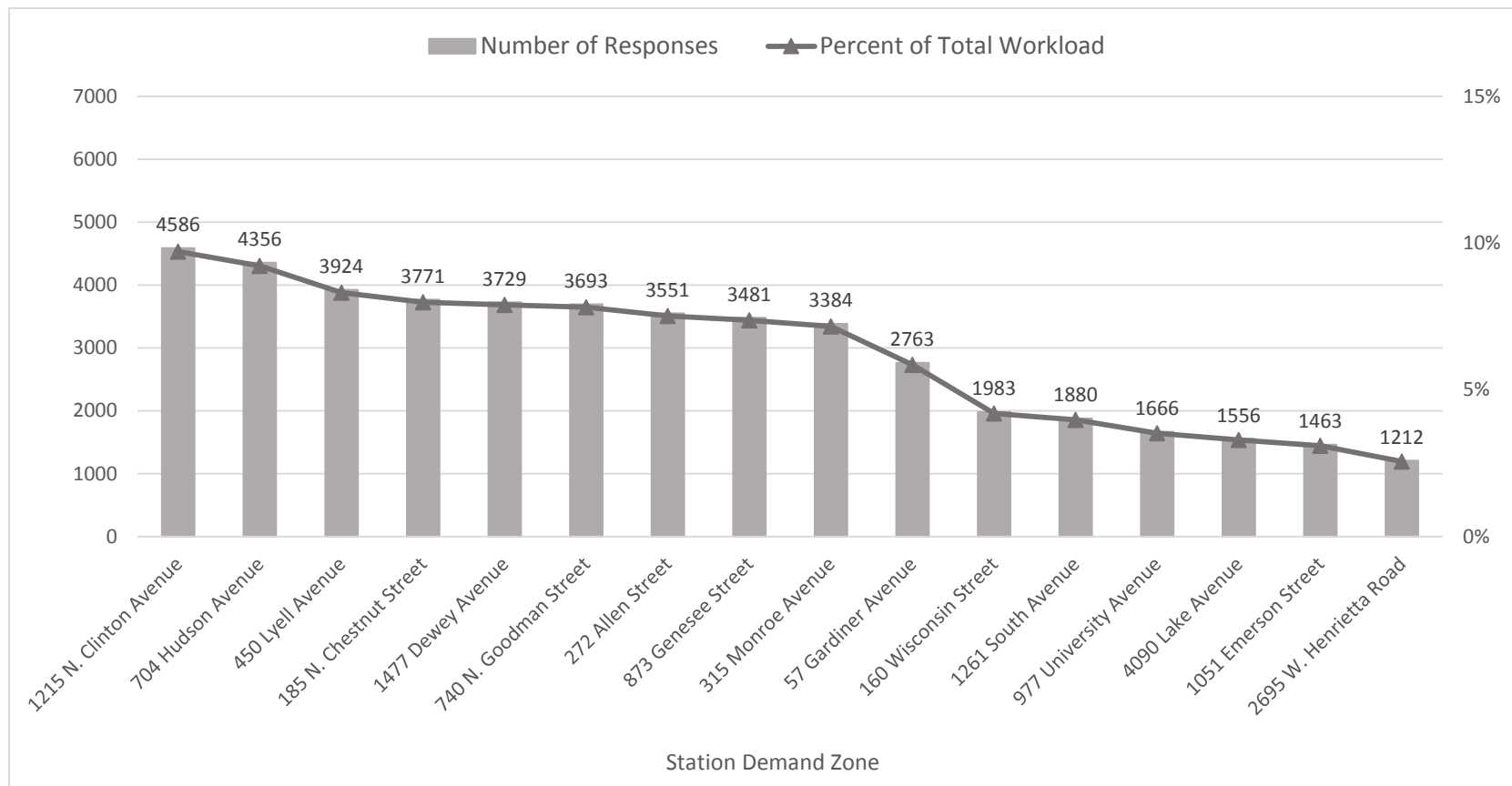


Average Calls by Hour of Day

Response Time

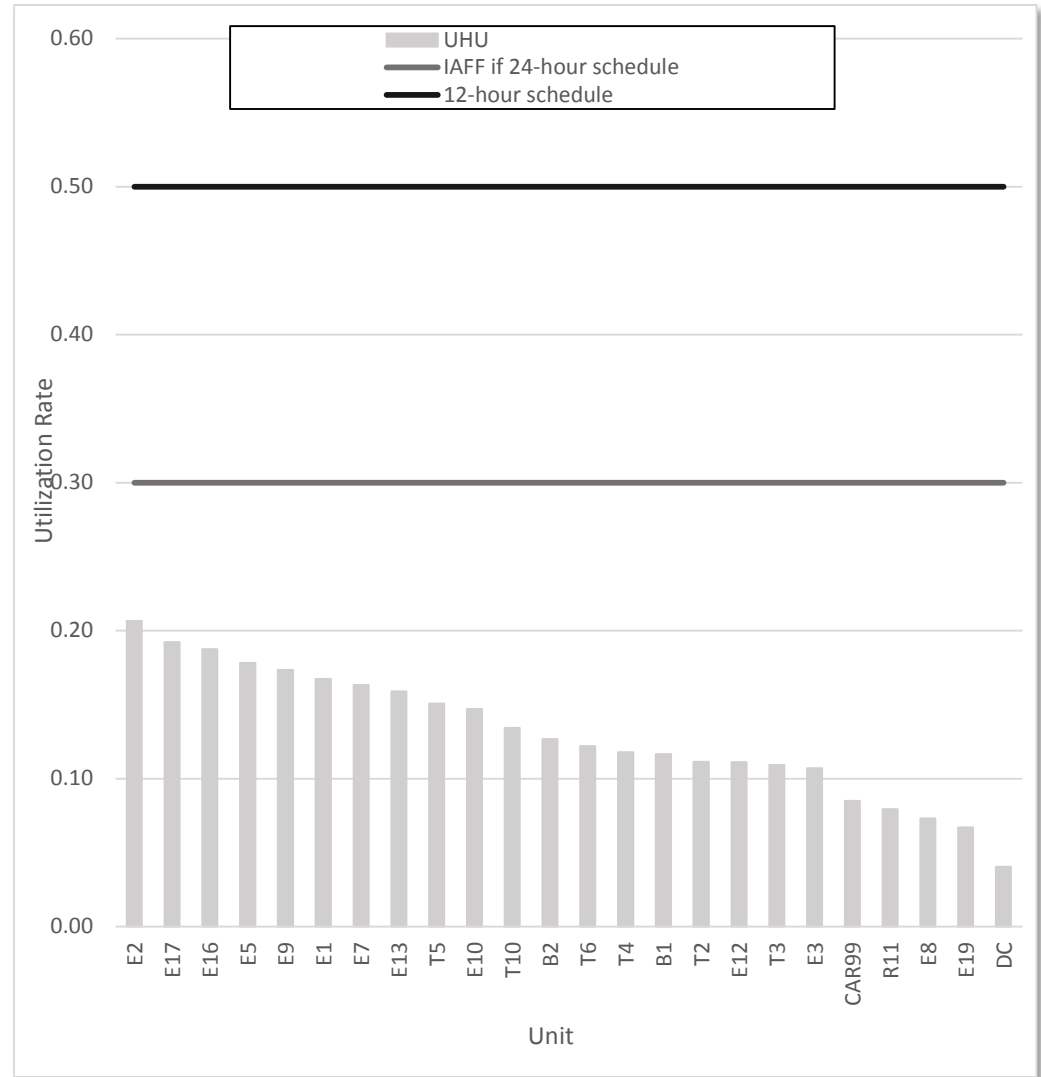
| Program | Dispatch Time (Minutes) | Turnout Time (Minutes) | Travel Time (Minutes) | Response Time (Minutes) | Sample Size ¹ |
|---------|----------------------------|---------------------------|--------------------------|----------------------------|--------------------------|
| EMS | 1.9 | 1.5 | 2.8 | 6.2 | 17,084 |
| Fire | 3.4 | 1.6 | 3.2 | 7.9 | 14,299 |
| Hazmat | 2.4 | 1.9 | 2.1 | 6.2 | 8 |
| Rescue | 2.8 | 1.4 | 2.5 | 6.5 | 370 |
| Total | 2.5 | 1.5 | 3.0 | 6.9 | 31,761 |

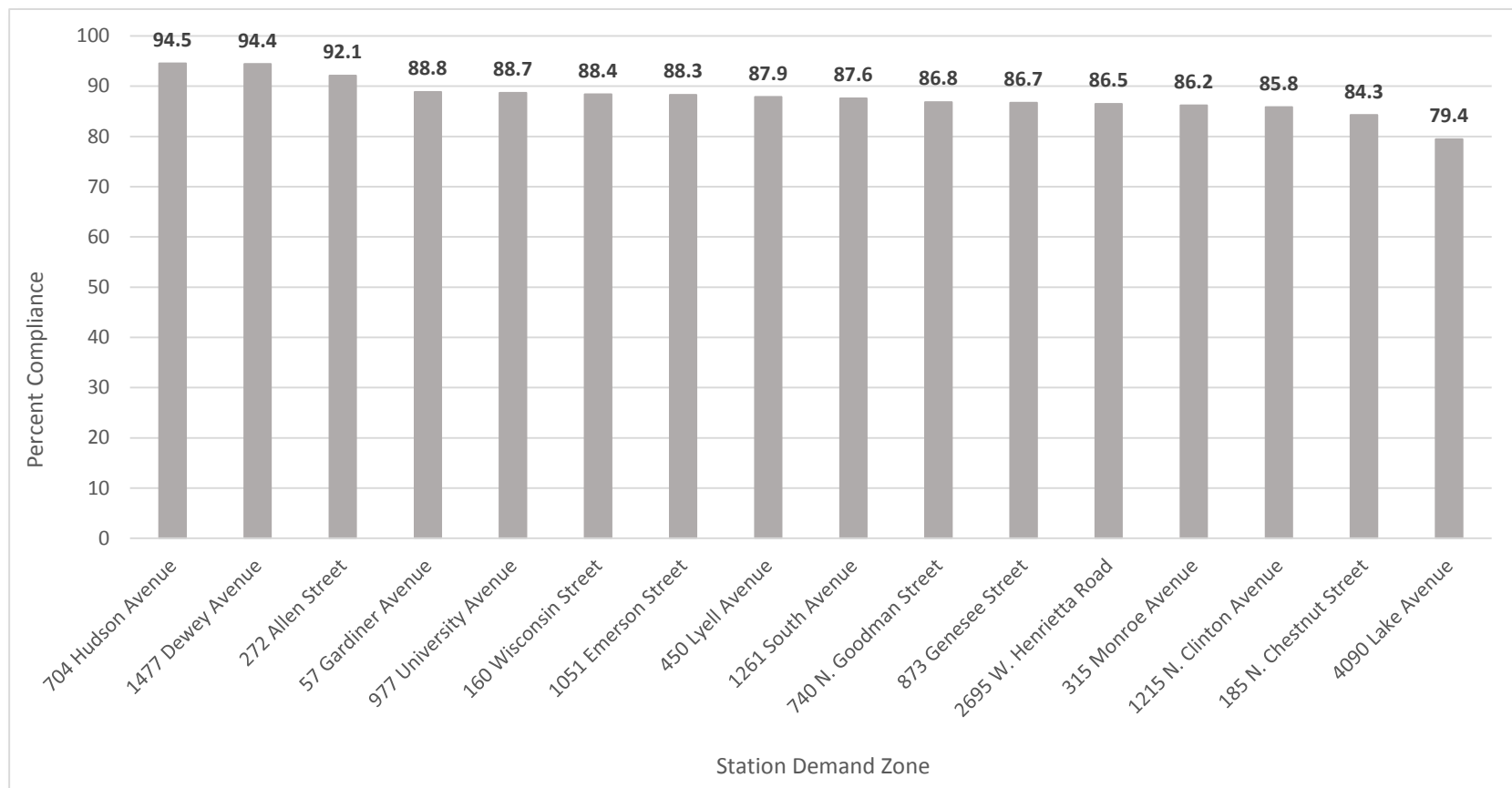
| Program | Dispatch Time (Minutes) | Turnout Time (Minutes) | Travel Time (Minutes) | Response Time (Minutes) | Sample Size ¹ |
|---------|----------------------------|---------------------------|--------------------------|----------------------------|--------------------------|
| EMS | 2.9 | 2.3 | 4.4 | 8.3 | 17,084 |
| Fire | 3.2 | 2.4 | 5.1 | 8.9 | 14,299 |
| Hazmat | -- | -- | -- | -- | 8 |
| Rescue | 4.8 | 2.2 | 4.0 | 9.6 | 370 |
| Total | 3.0 | 2.3 | 4.7 | 8.5 | 31,761 |



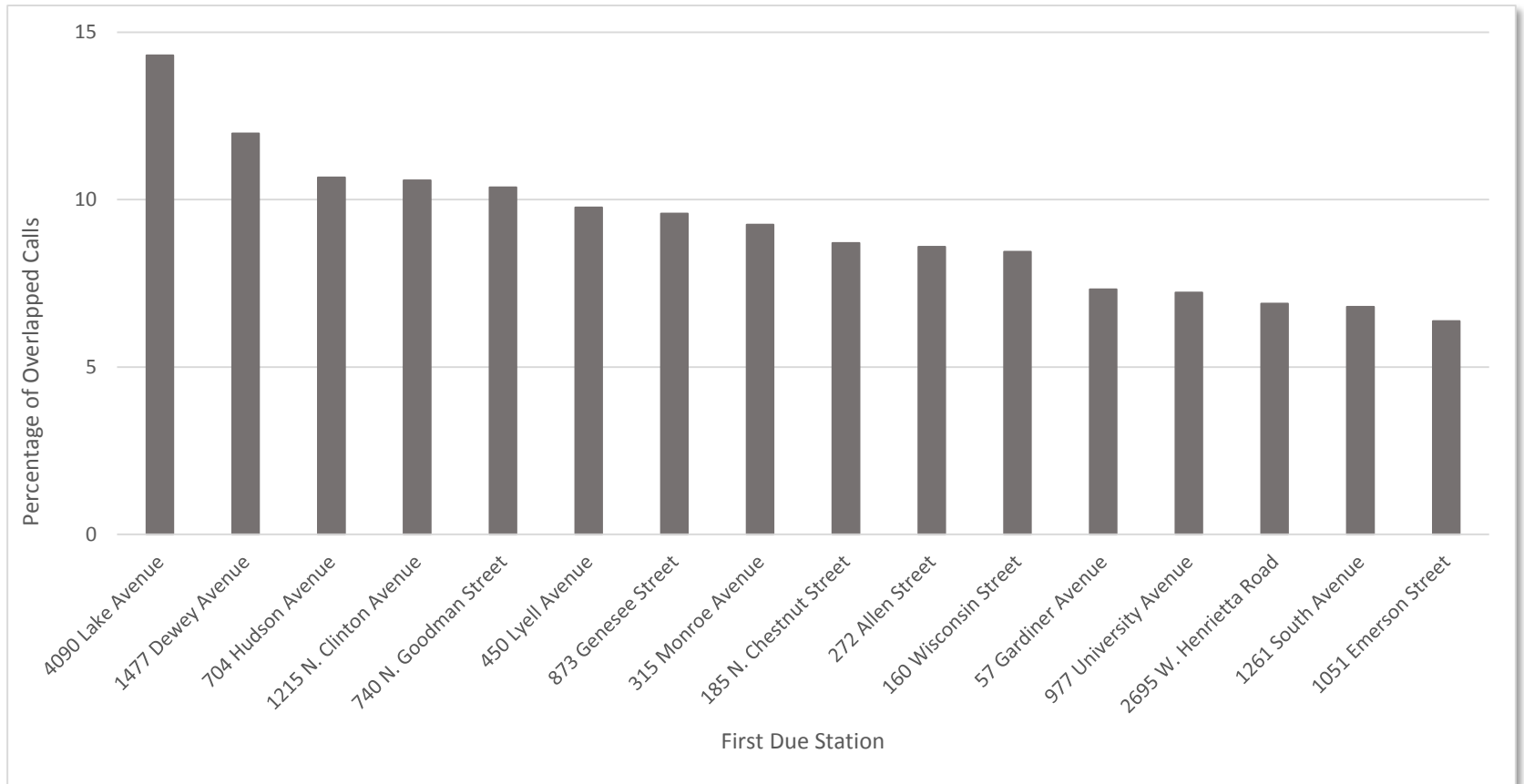
Workload by Response Zone

Unit Hour Utilization





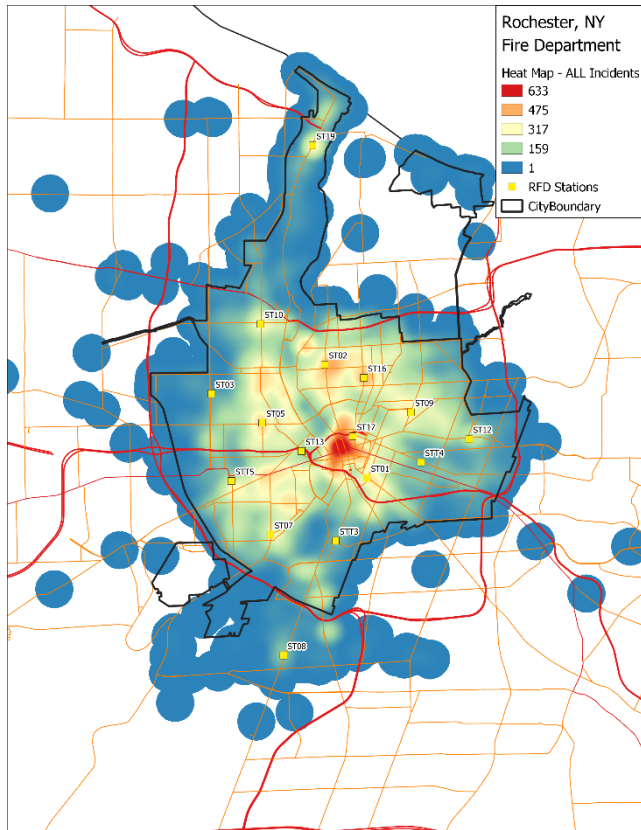
Reliability by Response Zone



Simultaneous Events

Response Time Performance by Station Area

| Station Demand Zone | Dispatch Time | Turnout Time | Travel Time | Response Time |
|--------------------------|---------------|--------------|-------------|---------------|
| 1051 Emerson Street | 3.0 | 2.4 | 4.6 | 8.5 |
| 1215 N. Clinton Avenue | 3.1 | 2.4 | 4.4 | 8.5 |
| 1261 South Avenue | 2.9 | 2.2 | 5.3 | 9.1 |
| 1477 Dewey Avenue | 3.1 | 2.3 | 4.5 | 8.5 |
| 160 Wisconsin Street | 3.0 | 2.2 | 5.1 | 9.0 |
| 185 N. Chestnut Street | 2.9 | 2.2 | 3.9 | 7.6 |
| 2695 W. Henrietta Road | 3.1 | 2.5 | 6.7 | 10.3 |
| 272 Allen Street | 2.9 | 2.2 | 3.9 | 7.7 |
| 315 Monroe Avenue | 3.0 | 2.2 | 4.5 | 8.2 |
| 4090 Lake Avenue | 3.0 | 2.5 | 7.2 | 9.6 |
| 450 Lyell Avenue | 2.9 | 2.0 | 4.0 | 7.8 |
| 57 Gardiner Avenue | 3.0 | 2.1 | 4.3 | 8.1 |
| 704 Hudson Avenue | 3.0 | 2.7 | 4.7 | 8.9 |
| 740 N. Goodman Street | 3.0 | 2.3 | 4.9 | 8.7 |
| 873 Genesee Street | 3.0 | 2.6 | 4.4 | 8.4 |
| 977 University Avenue | 2.9 | 2.0 | 5.4 | 9.0 |
| Total¹ | 3.0 | 2.3 | 4.7 | 8.5 |



All Incidents

Rochester Fire Department

Station Demand Zone Risk Matrices

| STATION FDZ | COMMUNITY DEMAND | CALL CONCURRENCY | HIGH/MODERATE RISK OCCUPANCIES | TOTAL RISK SCORE | RISK RATING |
|-------------|------------------|------------------|--------------------------------|------------------|-------------|
| 1 | 7 | 3 | 10 | 55.86 | HIGH |
| 2 | 6 | 4 | 4 | 26.53 | MODERATE |
| 3 | 3 | 2 | 4 | 11.05 | LOW |
| 5 | 6 | 3 | 8 | 40.02 | HIGH |
| 7 | 5 | 3 | 3 | 16.29 | LOW |
| 8 | 5 | 4 | 1 | 14.85 | LOW |
| 9 | 5 | 3 | 4 | 19.61 | MODERATE |
| 10 | 7 | 4 | 6 | 39.52 | HIGH |
| 12 | 3 | 3 | 5 | 16.29 | LOW |
| 13 | 10 | 3 | 2 | 25.85 | MODERATE |
| 16 | 10 | 4 | 4 | 41.57 | HIGH |
| 17 | 8 | 3 | 3 | 24.83 | MODERATE |
| 19 | 2 | 5 | 3 | 13.44 | LOW |
| T3 | 5 | 4 | 3 | 19.61 | MODERATE |
| T4 | 3 | 3 | 3 | 11.02 | LOW |
| T5 | 5 | 3 | 5 | 23.18 | MODERATE |

Rochester Survey Results

| | Syracuse | Buffalo | Worcester | Rochester |
|-----------------|--------------|--------------|--------------|--------------|
| Square Miles | 25 | 44 | 40 | 37 |
| Population | 144,000 | 261,310 | 182,000 | 211,977 |
| Annual Budget | \$34,916,022 | \$59,710,171 | \$40,000,000 | \$51,569,200 |
| ISO Rating | 1 | NR - 3 | 2 | 1 |
| Cost per Capita | \$242.47 | \$228.50 | \$219.78 | \$243.28 |

^[1] Data represent fiscal year 2019, and exclude benefits. Considerable variance in reporting processes may be included in the data.

^[2] The ISO Rating was not reported by the agency, therefore, NA was utilized. However, for context, in 2010 the City of Buffalo was reported to have an ISO Rating of 3. It would be assumed that the rating would be 3 or better.

Local Government and Spending

| Year | Albany | Buffalo | Rochester | Syracuse | Yonkers |
|------|--------|---------|-----------|----------|---------|
| 2016 | \$218 | \$232 | \$233 | \$224 | \$329 |
| 2017 | \$208 | \$253 | \$235 | \$248 | \$348 |

Rochester Survey of Operational Comparisons

| | Syracuse | Buffalo | Worcester | Rochester |
|-----------------------------|---------------|--------------|-----------|-----------|
| ISO Rating | 1 | NR - 3 | 2 | 1 |
| Staffed Stations | 11 | 19 | 10 | 16 |
| Staffed Apparatus | 15 | 29 | 21 | 20 |
| # Engines | 9 | 19 | 13 | 13 |
| # Ladder/Trucks | 5 | 9 | 7 | 6 |
| Quints | 0 | 0 | 0 | 0 |
| Squad/Rescue | 1 | 1 | 1 | 1 |
| EMS/Medic Units | 0 | 0 | 0 | 0 |
| BC | 3 | 4 | 2 | 2 |
| Minimum Daily Staffing | 69 | 117 | 38 | 87 |
| Minimum Unit Staffing | 4 | 4 | 3 | 4 |
| Continuous Staffing | Yes | Yes | Yes | Yes |
| Average Work Week | 40 | 42.5 | 44 | 40 |
| Accredited | No | No | No | Yes |
| Emergency Medical Transport | Backup to AMR | No | No | No |
| First Response for Medical | BLS | BLS | BLS | BLS |
| Number of Incidents in 2017 | | | | |
| Emergency Medical | 9,963 | 22,734 | 24,117 | 17,539 |
| Total All Emergency Calls | 20,797 | 34,745 | 33,162 | 34,886 |
| Fire Loss - 2017 | | | | |
| Total | \$3,306,168 | \$13,916,065 | 9,399,726 | N/A |

[1] The ISO Rating was not reported by the agency; therefore, NA was utilized. However, for context, in 2010 the City of Buffalo was reported to have an ISO Rating of 3. It would be assumed that the rating would be 3 or better.

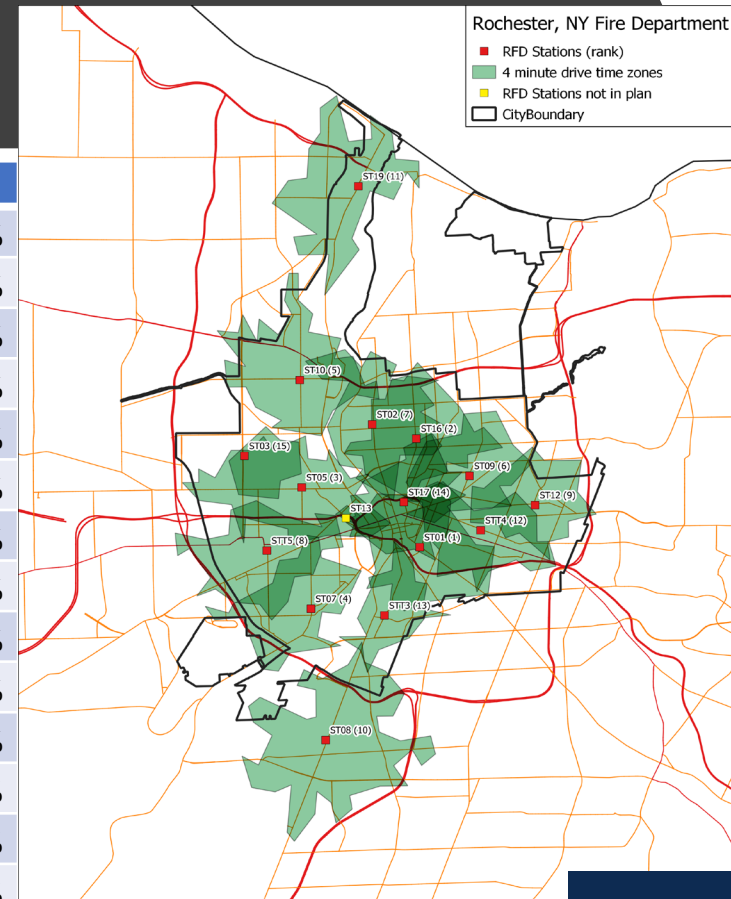
[2] Calculated value. The survey stated 24/48, 24/96. Assuming a bi-weekly payroll begins on Sunday, three distinct schedules emerged that averaged 48, 44, and 40 hour schedules respectively for an average experience of 44 hours per week.

[3] Historically, the Rochester Fire Department does not report fire loss.

[4] While all values were provided by the external municipalities, the summation of turnout and travel times were used to maintain consistency across the reporting methods from the agencies. Rochester's average turnout and time was summed via the Fitch reported values.

Current Station Configuration

| Rank | Station Number | Station Capture | Total Capture | Percent Capture |
|------|----------------|-----------------|---------------|-----------------|
| 1 | ST01 | 6,072 | 6,072 | 17.44% |
| 2 | ST16 | 5,873 | 11,945 | 34.30% |
| 3 | ST05 | 4,633 | 16,578 | 47.61% |
| 4 | ST07 | 3,144 | 19,722 | 56.64% |
| 5 | ST10 | 2,556 | 22,278 | 63.98% |
| 6 | ST09 | 1,987 | 24,265 | 69.68% |
| 7 | ST02 | 1,562 | 25,827 | 74.17% |
| 8 | STT5 | 1,382 | 27,209 | 78.14% |
| 9 | ST12 | 1,072 | 28,281 | 81.22% |
| 10 | ST08 | 1,019 | 29,300 | 84.14% |
| 11 | ST19 | 1,002 | 30,302 | 87.02% |
| 12 | STT4 | 509 | 30,811 | 88.48% |
| 13 | STT3 | 426 | 31,237 | 89.70% |
| 14 | ST17 | 60 | 31,297 | 89.88% |
| 15 | ST03 | 52 | 31,349 | 90.03% |



Alternative 1

Rochester Fire Department has one of the best travel times (4.7 minutes) at the 90th percentile in the country

Many metro-sized agencies vary between 5 and 8 minutes at the 90th percentile travel time

Rochester is the first agency evaluated, that can reasonably achieve the NFPA 1710 recommended 4-minute travel time for 90% of the incidents

Recognizing this, Alternative 1 contemplates the addition of 2 fully staffed units to meet a 4-minute travel time

At four-person staffing, the cost of the two additional units is estimated at \$5,567,800.

- Top step was utilized to anticipate the long-term/sustainability costs
- Includes 2 Captains, 6 Lieutenants, and 32 Firefighters

Alternative 2

Understanding the marginal utility analysis, the department could achieve 90% coverage within 4 minutes travel time with 15 fire station locations

Recognizing this, Alternative 2 contemplates the addition of 2 fully staffed units to meet a 4-minute travel time

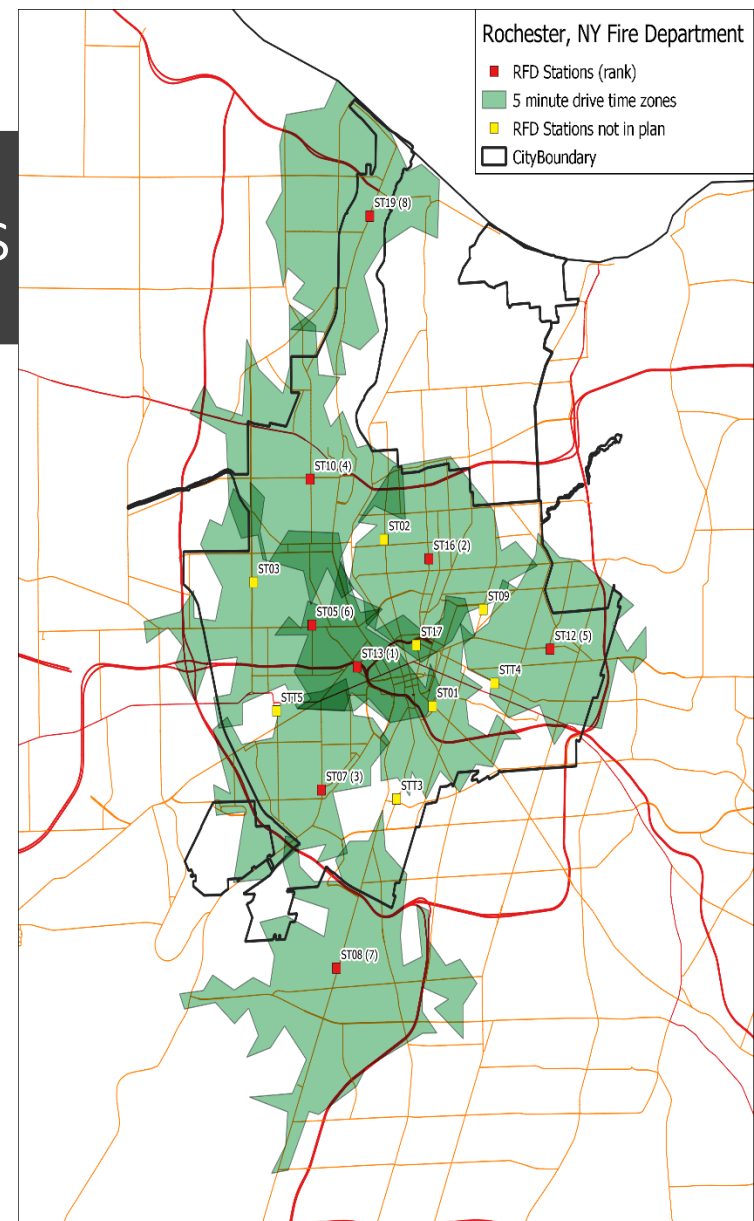
- However, 1 unit could be re-allocated from Station 13
- Therefore, the net new addition of units is equal to 1

At four-person staffing, the cost of one additional unit is estimated at \$2,783,900.

- Top step was utilized to anticipate the long-term/sustainability costs
- Includes 1 Captains, 3 Lieutenants, and 16 Firefighters

5-Minute Travel Time Analysis

| Rank | Station Number | Station Capture | Total Capture | Percent Capture |
|------|----------------|-----------------|---------------|-----------------|
| 1 | ST13 | 9,550 | 9,550 | 27.43% |
| 2 | ST16 | 7,487 | 17,037 | 48.93% |
| 3 | ST07 | 4,213 | 21,250 | 61.02% |
| 4 | ST10 | 3,873 | 25,123 | 72.15% |
| 5 | ST12 | 2,705 | 27,828 | 79.91% |
| 6 | ST05 | 2,095 | 29,923 | 85.93% |
| 7 | ST08 | 1,376 | 31,299 | 89.88% |
| 8 | ST19 | 1,072 | 32,371 | 92.96% |
| 9 | ST01 | 681 | 33,052 | 94.92% |
| 10 | STT5 | 332 | 33,384 | 95.87% |
| 11 | ST09 | 232 | 33,616 | 96.54% |
| 12 | STT3 | 205 | 33,821 | 97.13% |
| 13 | ST02 | 163 | 33,984 | 97.59% |
| 14 | STT4 | 109 | 34,093 | 97.91% |
| 15 | ST03 | 1 | 34,094 | 97.91% |



- Understands that 12 physical locations would achieve 97% coverage of incidents
- Understands that the remaining 4 stations would only improve coverage by less than 1%
- The total number or required units would be 18 units
- The Office of Management and Budget estimates the long-term savings for recurring personnel costs for a 2 units reduction, at 4-person staffing, is \$5,567,800 total salary and benefits at the top step. This does not contemplate any capital investments.
- OMB Calculated utilizing top pay (long-term costs) with 2 Captains, 6 Lieutenants, and 32 Firefighters.

Alternative 3 – 12 Stations and 18 Units

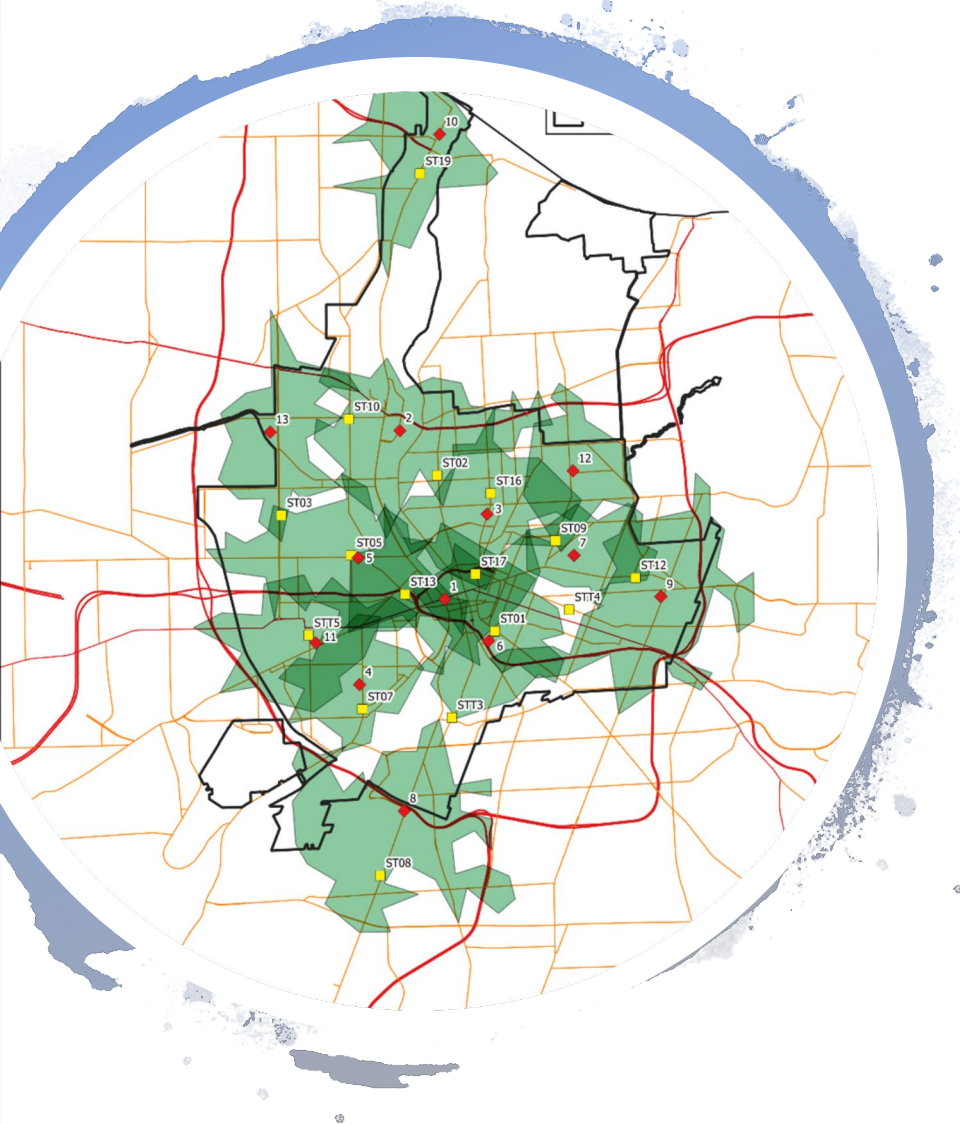
Alternative 4 – 14 Stations and 20 Units

- Incremental adjustment from Alternative 3
- Stations 2 and 17 are moderate risk stations and are reintroduced to the deployment strategy
- Stations 3 and T4 could be repurposed and the station assets could be reassigned to Stations 1 and 5
- Ensures all High-Risk stations have multi-company assignments
- While there may be some capital savings/cost avoidance, the personnel costs and primary apparatus capital requirements would remain constant with the current deployment.

Effective Response Force Performance

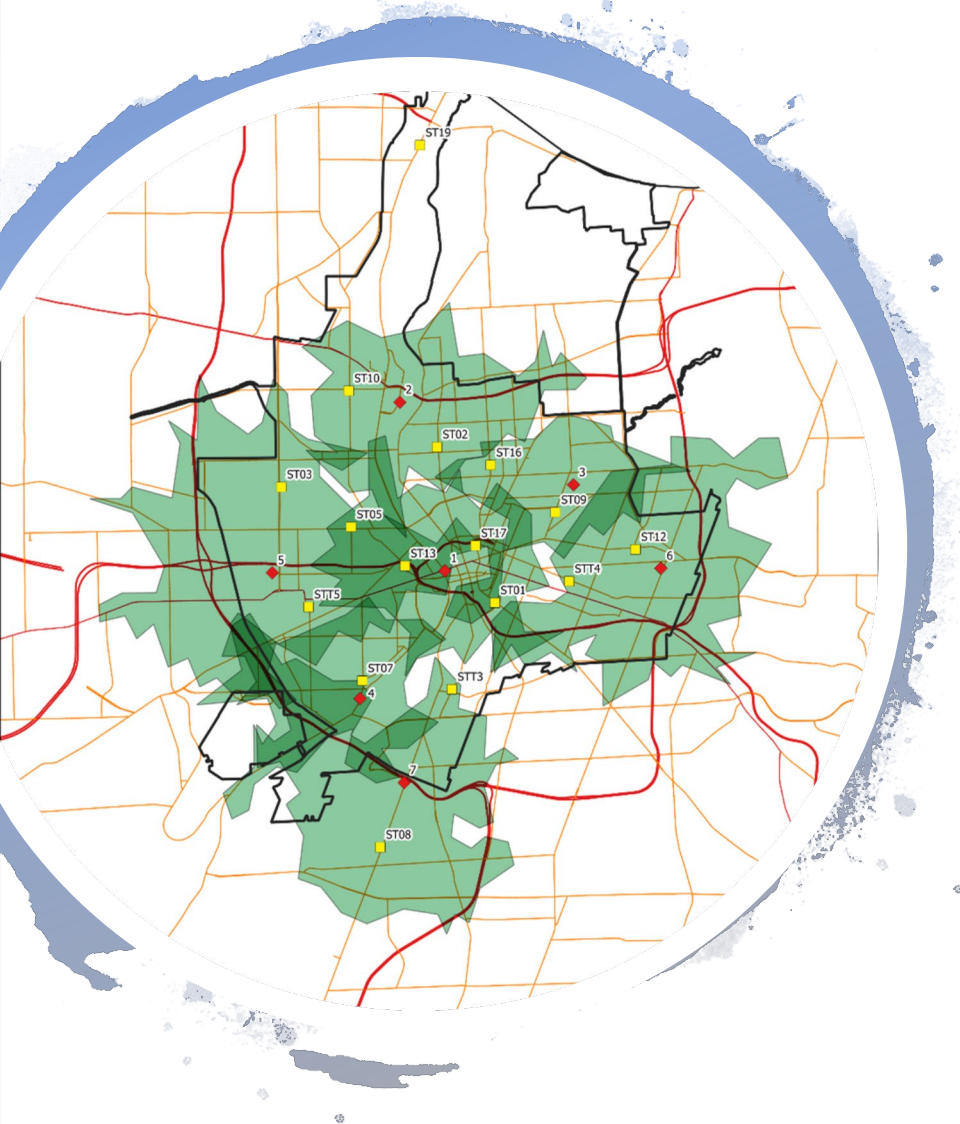
| Travel Time Objective | Current | w/o St 13 | w/o St. 2, STT4, St. 3 | w/o T2 and R11 | w/o T2 and T10 | w/o R11 and T10 |
|-----------------------|---------|-----------|------------------------|----------------|----------------|-----------------|
| 8-Minute | 74.43% | 68.09% | 71.63% | 72.88% | 71.66% | 73.22% |
| 10-Minute | 88.73% | 88.44% | 86.17% | 86.39% | 86.39% | 88.73% |
| 13-Minute | 97.11% | 97.11% | 96.24% | 96.24% | 96.24% | 97.11% |

Overall, limited impact with reasonable deployment adjustments



Optimized Station Locations – 4-Minute Travel

- Would require 13 stations



Optimized Station Locations – 4-Minute Travel

- Would require 7 stations

Percentage of Available Vehicles

88% of the time there are at least 16 units available when an emergency incident occurs

| Number of Available Vehicles | Average | | 90 th Percentile | | Sample Size Calls | % of Calls |
|------------------------------|--------------|-------------|-----------------------------|-------------|-------------------|------------|
| | Turnout Time | Travel Time | Turnout Time | Travel Time | | |
| 20 | 1.7 | 3.0 | 2.4 | 4.7 | 10,178 | 31.5 |
| 19 | 1.5 | 3.0 | 2.3 | 4.8 | 8,794 | 27.2 |
| 18 | 1.6 | 3.1 | 2.3 | 4.8 | 5,057 | 15.6 |
| 17 | 1.4 | 3.0 | 2.2 | 4.9 | 2,675 | 8.3 |
| 16 | 1.5 | 3.2 | 2.2 | 5.1 | 1,374 | 4.2 |
| 15 | 1.4 | 3.3 | 2.2 | 5.4 | 738 | 2.3 |
| 14 | 1.5 | 3.1 | 2.3 | 4.9 | 740 | 2.3 |
| 13 | 1.4 | 3.5 | 2.2 | 5.4 | 670 | 2.1 |
| 12 | 1.4 | 3.3 | 2.3 | 6.1 | 535 | 1.7 |
| 11 | 1.4 | 3.5 | 2.3 | 5.9 | 340 | 1.1 |
| 10 | 1.7 | 3.8 | 2.4 | 6.1 | 241 | 0.7 |
| 9 | 1.4 | 3.9 | 2.2 | 7.0 | 169 | 0.5 |
| 8 | 1.8 | 3.9 | 2.4 | 7.0 | 146 | 0.5 |
| 7 | 1.9 | 4.0 | 2.7 | 6.8 | 142 | 0.4 |
| 6 | 1.4 | 3.9 | 2.6 | 6.2 | 88 | 0.3 |
| 5 | 1.1 | 3.9 | 2.4 | 6.9 | 86 | 0.3 |
| 4 | 1.5 | 4.1 | 2.1 | 8.3 | 62 | 0.2 |
| 3 | 0.9 | 4.5 | 2.2 | 8.7 | 64 | 0.2 |
| 2 | 1.0 | 3.9 | 2.1 | 6.8 | 55 | 0.2 |
| 1 | 0.8 | 4.3 | 1.7 | 7.7 | 40 | 0.1 |
| 0 | 1.0 | 4.8 | 2.3 | 9.6 | 112 | 0.3 |

Alternative 5 – 4-Minutes-16 Stations and 22 Units

- Contemplates the 21st and 22nd units being created within existing staffing strategies
- The multi-company stations of 10, 13, 16, and 17 could be staffed at 3 personnel each
 - This provides the capability to reallocate up to 8 personnel
- Two additional 4-person units could be created to absorb workload and address performance related issues to achieve NFPA 1710
- All stand-alone units would continue to be staffed at 4 personnel 24/7
- This would have an approximate value of \$5,567,800 in efficiencies.

| Average Work Week | 40 | 42 | 48 | 56 |
|--|----------|----------|----------|----------|
| Total Hours per FTE (Average Work Week x 52 Weeks) | 2,184.00 | 2,184.00 | 2,912.00 | 2,912.00 |
| Time-Off | 329.40 | 329.40 | 329.40 | 329.40 |
| Cycle / Kelly Time | 104.00 | 0.00 | 416.00 | 0.00 |
| Hours Worked Per FTE | 1,750.60 | 1,856.00 | 2,168.00 | 2,582.60 |
| Coverage Required (365*24) | 8,760.00 | 8,760.00 | 8,760.00 | 8,760.00 |
| Continuous Staffing Multiplier | 5.00 | 4.72 | 4.04 | 3.39 |
| Minimum Staffing for all Line Positions | 87 | 87 | 87 | 87 |
| Required Budgeted FTEs | 435.35 | 410.63 | 351.53 | 295.10 |

Alternative Average Workweek Schedules

42-Hour Work Week

- The use of a 42-hour work week could be accomplished in several manners. For these purposes, it is assumed that the employee group would want to maintain the 10-14 schedule they currently employ. The only variation from 40- to 42-hour work weeks is with the elimination of the “cycle time” that reduces it from 42 to 40. The overall benefit from this alternative is a reduction in the required relief multiplier from 5.0 FTEs per seat to 4.72 FTEs per seat.
- This change would reduce the personnel requirements from 435 to 411, or approximately 24 personnel at a minimum staffing of 87 personnel per tour. This change in work week could afford the reallocation of personnel towards any of the alternatives and continue to at least maintain all current unit staffing and performance. In other words, this alternative would not impact service delivery in any manner, as all current unit and shift staffing would remain.
- The Office of Management and Budget provided estimates for recurring personnel savings for adjustment of a 40-hour work week to a 42-hour week, at \$139,195 at top step, for a total potential savings of \$3,340,680 per year. This does not contemplate any capital investments.
- This is a blended rate of top step for Captains, Lieutenants, and Firefighters. Calculated from \$2,783,900 / 20 personnel X 24 positions.

Conclusions

- RFD is an ISO Class 1 Department and is now internationally accredited by the CFAI. These accomplishments illustrate the City's commitment to appropriately and efficiently resource the fire department. Similarly, this also demonstrates the Department's commitment to provide exemplary services in a transparent and professional manner.
- Less than 1% of the fire departments in the country have an ISO Class 1 rating. As of February 2019, 73 accredited agencies out of 258 also maintain an ISO Class 1 rating. This would equate to approximately 29% of the accredited agencies.

Conclusions

- By all respects, there is no evidence to suggest that the Department isn't performing at a high level. The alternatives generated are offered for policy consideration that vary from improving current performance to meet NFPA 1710 to maintaining current performance with identified efficiencies, as well as identifying options in staffing and scheduling where labor and management could partner to accomplish some of the goals that are efficient and fiscally responsible.
- The Department's current deployment strategies should have significant long-term sustainability from an operational standpoint. From time to time, fiscal constraints must be considered, and adjustments realized within an acceptable political environment. These alternatives provide enough latitude and flexibility for successful policy considerations that either mute or limit potential impacts to the service delivery models.



Questions



ATTACHMENT A

Survey Results Syracuse

Survey Questions

1. What is your name and title?
District Chief Sora Errington
2. How many square miles is your jurisdiction?
25
3. What is the current resident population?
144,000
4. What is the daily change to the population? For example, influx for work or commuters leaving for other communities?
+40,961
- ★ 5. What is your annual Budget for the fire department? Please include total revenues, expenditures including operating, capital and benefits, and total net budget.
revenue \$39,000 operating: \$32,472,272 Capital: \$2,475,000 Benefits: \$6,750,000
6. What is your ISO rating and when was the last time you were rated?
Class 1 2017
7. How many staffed Fire Stations do you have?
10 (plus an ARFF - Staffed Station at airport)
8. How many staffed fire/ emergency apparatus (front line)?

| Unit Type | Number of Apparatus by Type |
|-----------------------------|-----------------------------|
| Fire Engine | 9 |
| Ladder/Truck Company | 5 |
| Quints | |
| Squad | 1 |
| Haz mat Units | |
| Technical Rescue | 1 |
| EMS/Medic Units | |
| Battalion Chief(supervisor) | 3 |
| Quick Response vehicles | |
| Other-please explain below | "Mini" |

our engines are 2 piece companies the "mini" a pickup truck w/ EMS + Fire equipment responds to EMS runs BLS

9. What are your daily minimum staffing levels for deployed apparatus?
69 total Engine (4) Truck (4) Rescue (6) Squad (3) BC (1)
10. What is your shift schedule for front line personnel? (i.e. 24/48; 24/72, etc.)
10/14 4 days on, 4 days off
11. What is the average workweek for personnel assigned to shift work? If multiple schedules, please define each.
40 hrs - The extra is treated as comp time + picked with vacations
12. Are your staffing levels the same 24 hours a day/7 Days a week?
YES
13. Is your fire department accredited with Commission on Fire Accreditation International (CFAI)?
NO

★ we have a 2-year SAFER grant¹ of \$1.99 million

Rochester, New York
Fire Suppression Deployment Model Evaluation
Survey

14. What are your minimum staffing levels on emergency response units, please fill out chart below

| Unit Type | Number of Firefighters | Officers |
|-----------------------------|------------------------|----------|
| Fire Engine | 3 | 1 |
| Ladder Company | | |
| Truck Company | 3 | 1 |
| Quints | | |
| Squad | 2 | 1 |
| Haz mat Units | 6 | 2 |
| Technical Rescue | 5 | 1 |
| EMS/Medic Units | | |
| Battalion Chief(supervisor) | 0 | 1 |
| Quick Response vehicles | | |
| Other-please explain below | | 1 |
| minimum responders | w/ ff + officer | |

15. What units & personnel do you send for an Unconfirmed Structure fire with low/moderate risk?

| Responding Units | Number of Units |
|----------------------|-----------------|
| Engine Company | 3 |
| Ladder/Truck Company | 1 |
| Squad | 1 |
| EMS/Medic Units | |
| Battalion Chief(s) | 1 |
| Other Rescue | 1 |

16. What units and personnel do you send for a Confirmed Structure fire with moderate risk?

| Responding Units | Number of Units |
|-----------------------|-----------------|
| Engine Company/Pumper | 3 |
| Ladder/Truck Company | 1 |
| Squad | 1 |
| EMS/Medic Units | |
| Battalion Chief(s) | 2 |
| Other | |

↳ Rescue

RIT

Deputy Chief

Safety officer

fire investigator

Rochester, New York
Fire Suppression Deployment Model Evaluation
Survey

17. What units and personnel do you send for a Confirmed Structure fire with high risk?

| Responding Units | Number of Units |
|----------------------|-----------------|
| Engine Company | |
| Ladder/Truck Company | |
| Squad | |
| EMS/Medic Units | |
| Battalion Chief(s) | |
| Other | |

SAME AS 16

18. What other emergency services do you provide? Haz mat, EMS, Tech Rescue, Aviation rescue and firefighting, Water rescue?

All of the above

19. Does your agency provide Emergency medical transport?

we have one ambulance (usually ALS) that goes into the rotation when AMR is out of rigs

20. Does your agency provide first medical response to EMS incidents? If yes, do you provide these services at the Advanced Life Support (ALS-paramedic level) or Basic Life Support (BLS-emergency medical technician level)?

yes BLS

21. If you provide ALS-paramedic level services, what percentage of the shift-assigned workforce are paramedics?

22. How many emergency calls did you respond to in 2017?

| Incident/Call Type | Number of Incidents |
|---------------------------|---------------------|
| Structural Fire Calls | 192 |
| Other Fires | 508 |
| Emergency Medical | 9963 |
| Trash or Rubbish Fire | 206 |
| Accidental or False | 5365 |
| Grass/Wildland Fire | 27 |
| Haz Mat | 376 |
| Tech Rescue | 240 |
| Vehicle Accidents | 1697 |
| Others | 2223 |
| Total all emergency calls | 20797 |

23. What percentage of your structure fires are contained to the room of origin?

65%

24. What percentage of your structures are contained to the floor of origin?

10%

Rochester, New York
Fire Suppression Deployment Model Evaluation
Survey

25. What percentage of your structure fires are contained to the building of origin?

25%

26. What was your reported fire loss (property & contents) for the last 3 years? Please provide for each individually.

| Year | Property Loss (\$) | Contents Loss (\$) | Total Loss (\$) |
|------|--------------------|--------------------|-----------------|
| 2015 | | | \$2,967,238 |
| 2016 | | | \$2,292,167 |
| 2017 | | | \$3,306,168 |

27. What are your emergency response times? Please define how you measure response time. In addition, do you utilize average, 90th percentile or both?

28. Please fill out the tables below with the data you capture for response times for your agency. If you measure the 90th percentile, please provide both the average and the 90th percentiles.

- Dispatch/call handling- This is defined as the time from when the call is picked up at the 911 call center/PSAP (Public Safety Answering point) to the actual dispatching of emergency units.
- Turn-out (chute times)- This is defined as the time from when the units are notified of the incident until they are actually in their vehicles and responding.
- Travel time- defined as the period of time from when the units are actually responding to the call until they arrive at the emergency incident.
- Total Response time- Defines as the time from when the emergency call is picked up at the 911 call center until the first appropriate emergency unit arrives on the incident.
- Please ensure that you complete the data in the appropriate table (average and/or 90th Percentile) on the follow page.

Refer to excel spreadsheet previously sent.

Rochester, New York
Fire Suppression Deployment Model Evaluation
Survey

AVERAGE Dispatch, Turnout, Travel, and Response Times of First Arriving Unit for various program areas

| Program | Dispatch Time | | Turnout Time | | Travel Time | | Response Time | | Number of Calls |
|-------------|---------------|---------|--------------|---------|-------------|---------|---------------|---------|-----------------|
| | Minutes | Seconds | Minutes | Seconds | Minutes | Seconds | Minutes | Seconds | |
| Fire | | | | | | | | | |
| EMS | | | | | | | | | |
| Hazmat | | | | | | | | | |
| Tech rescue | | | | | | | | | |
| other | | | | | | | | | |
| Total | | | | | | | | | |

90th PERCENTILE Dispatch, Turnout, Travel, and Response Times of First Arriving Unit for various program areas

| Program | Dispatch Time | | Turnout Time | | Travel Time | | Response Time | | Number of Calls |
|-------------|---------------|---------|--------------|---------|-------------|---------|---------------|---------|-----------------|
| | Minutes | Seconds | Minutes | Seconds | Minutes | Seconds | Minutes | Seconds | |
| Fire | | | | | | | | | |
| EMS | | | | | | | | | |
| Hazmat | | | | | | | | | |
| Tech rescue | | | | | | | | | |
| other | | | | | | | | | |
| Total | | | | | | | | | |

ATTACHMENT B

Survey Results Buffalo

OCT 14 2018

Survey Questions

OFFICE OF MANAGEMENT & BUDGET
OFFICE OF MANAGEMENT & BUDGET
CITY OF ROCHESTER, NY

1. What is your name and title?
BATT. CHIEF MATT HOARE
2. How many square miles is your jurisdiction?
44
3. What is the current resident population?
261,310
4. What is the daily change to the population? For example, influx for work or commuters leaving for other communities?
+ 80,000
5. What is your annual Budget for the fire department? Please include total revenues, REVENUE: *\$1,200,000*
expenditures including operating, capital and benefits, and total net budget.
Salary + Fringes: \$56,310,328 / OPERATING: \$2,869,642 / CAPITAL \$535,000
6. What is your ISO rating and when was the last time you were rated? *N/A*
TOTAL NET BUDGET: \$59,719,171
7. How many staffed Fire Stations do you have?
19
8. How many staffed fire/ emergency apparatus (front line)?

| Unit Type | Number of Apparatus by Type |
|-----------------------------|----------------------------------|
| Fire Engine | <i>19</i> |
| Ladder/Truck Company | <i>9</i> |
| Quints | |
| Squad / <i>RESCUE</i> | <i>1</i> |
| Haz mat Units | <i>1</i> |
| Technical Rescue | <i>1</i> |
| EMS/Medic Units | |
| Battalion Chief(supervisor) | <i>4, 1 DIVISION CHIEF</i> |
| Quick Response vehicles | |
| Other-please explain below | <i>REHAB, MED. RESPONSE UNIT</i> |
| | |

9. What are your daily minimum staffing levels for deployed apparatus?
117
10. What is your shift schedule for front line personnel? (i.e. 24/48; 24/72, etc.)
9/9/15/15 OFF 4
11. What is the average workweek for personnel assigned to shift work? If multiple schedules, please define each. *42.5 HRS*
12. Are your staffing levels the same 24 hours a day/7 Days a week?
Yes
13. Is your fire department accredited with Commission on Fire Accreditation International (CFAI)?
NO

Rochester, New York
Fire Suppression Deployment Model Evaluation
Survey

14. What are your minimum staffing levels on emergency response units, please fill out chart below

| Unit Type | Number of Firefighters | Officers |
|-----------------------------|------------------------|------------|
| Fire Engine | 3 | 1 |
| Ladder Company | 3 | 1 |
| Truck Company | | |
| Quints | | |
| Squad/Rescue | 5 | 1 |
| Haz mat Units | | |
| Technical Rescue | | |
| EMS/Medic Units | | |
| Battalion Chief(supervisor) | 4 BATTALION | 1 DIVISION |
| Quick Response vehicles | | |
| Other-please explain below | 2 | 1 |
| ↳ MOBILE AA UNIT | | |

15. What units & personnel do you send for an Unconfirmed Structure fire with low/moderate risk?

| Responding Units | Number of Units |
|----------------------|-----------------|
| Engine Company | 2 |
| Ladder/Truck Company | 1 |
| Squad | |
| EMS/Medic Units | |
| Battalion Chief(s) | 1 |
| Other | |

16. What units and personnel do you send for a Confirmed Structure fire with moderate risk?

| Responding Units | Number of Units |
|-----------------------|-----------------|
| Engine Company/Pumper | 3 |
| Ladder/Truck Company | 2 |
| Squad/Rescue | 1 |
| EMS/Medic Units | |
| Battalion Chief(s) | 1 |
| Other RIT/FAST | 1 |

DIVISION CHIEF 1
ACCOUNTABILITY OFFICER 1
SAFETY OFFICER 1
MOBILE AIR UNIT 1

Rochester, New York
Fire Suppression Deployment Model Evaluation
Survey

17. What units and personnel do you send for a **Confirmed** Structure fire with **high risk**?

| Responding Units | Number of Units |
|----------------------|-----------------|
| Engine Company | |
| Ladder/Truck Company | |
| Squad | |
| EMS/Medic Units | |
| Battalion Chief(s) | |
| Other | |

SAME AS 16 ADDITIONAL
COMPANIES AS REQUESTED
BY I/C

18. What other emergency services do you provide? Haz mat, EMS, Tech Rescue, Aviation rescue and firefighting, Water rescue? HAZ MAT, TECH RESCUE, WATER RESCUE

19. Does your agency provide Emergency medical transport?

NO

20. Does your agency provide first medical response to EMS incidents? If yes, do you provide these services at the Advanced Life Support (ALS-paramedic level) or Basic Life Support (BLS-emergency medical technician level)? BLS - ALL EMTS

21. If you provide ALS-paramedic level services, what percentage of the shift-assigned workforce are paramedics?

22. How many emergency calls did you respond to in 2017?

| Incident/Call Type | Number of Incidents |
|---------------------------|---------------------|
| Structural Fire Calls | 415 |
| Other Fires | 668 |
| Emergency Medical | 22,734 |
| Trash or Rubbish Fire | 458 |
| Accidental or False | — |
| Grass/Wildland Fire | 37 |
| Haz Mat | 61 |
| Tech Rescue | 252 |
| Vehicle Accidents | 2115 |
| Others | 8,005 |
| Total all emergency calls | 34,745 |

23. What percentage of your structure fires are contained to the room of origin?

24. What percentage of your structures are contained to the floor of origin?

Rochester, New York
Fire Suppression Deployment Model Evaluation
Survey

25. What percentage of your structure fires are contained to the building of origin?

26. What was your reported fire loss (property & contents) for the last 3 years? Please provide for each individually.

| Year | Property Loss (\$) | Contents Loss (\$) | Total Loss (\$) |
|------|--------------------|--------------------|-----------------|
| 2015 | \$8,034,396 | \$2,635,200 | \$10,669,596 |
| 2016 | \$8,411,692 | \$3,271,000 | \$11,682,692 |
| 2017 | \$10,023,275 | \$3,892,790 | \$13,916,065 |

27. What are your emergency response times? Please define how you measure response time. In addition, do you utilize average, 90th percentile or both?

28. Please fill out the tables below with the data you capture for response times for your agency. **If you measure the 90th percentile, please provide both the average and the 90th percentiles.**

- Dispatch/call handling- This is defined as the time from when the call is picked up at the 911 call center/PSAP (Public Safety Answering point) to the actual dispatching of emergency units.
- Turn-out (chute times)- This is defined as the time from when the units are notified of the incident until they are actually in their vehicles and responding.
- Travel time- defined as the period of time from when the units are actually responding to the call until they arrive at the emergency incident.
- Total Response time- Defines as the time from when the emergency call is picked up at the 911 call center until the first appropriate emergency unit arrives on the incident.
- Please ensure that you complete the data in the appropriate table (average and/or 90th Percentile) on the follow page.**

OR ROOMS

| situation_found | description | Total Of | <> | 1 | 2 | 3 | 4 | 5 |
|-----------------|---------------|----------|-----|----|----|----|----|----|
| 100 | FIRE, OTHER | 97 | 79 | 18 | | | | |
| 111 | BUILDING FIRE | 186 | | 37 | 31 | 26 | 67 | 25 |
| 112 | STRUCTURE FIR | 5 | 3 | | | | 1 | 1 |
| 113 | COOKING FIRE | 105 | 85 | 20 | | | | |
| 114 | CHIMNEY OR F | 1 | 1 | | | | | |
| 116 | FUEL BURNER/ | 2 | | 2 | | | | |
| 117 | COMMERCIAL | 1 | 1 | | | | | |
| 118 | TRASH/RUBBIS | 153 | 130 | 23 | | | | |

| PROGRAM | DISPATCH | TURNOUT | TRAVEL | RESPONSE | NUM_CALLS |
|---------|-----------|----------|--------|-----------|-----------|
| FIRES | 8.4799331 | 112.069 | 116.99 | 219.32796 | 4187 |
| EMS | 9.8894108 | 109.5378 | 129.27 | 238.55834 | 9369 |
| HAZMAT | 11.22488 | 138.9043 | 131.39 | 235.18182 | 210 |
| RESCUE | 11 | 155.6963 | 186.15 | 293.80628 | 192 |

AVE. IN SECONDS

| YEAR | PROPERTY | CONTENTS | TOTAL |
|-------|---------------|--------------|---------------|
| Y2015 | 8,034,396.00 | 2,635,200.00 | 10,669,596.00 |
| Y2016 | 8,411,692.00 | 3,271,000.00 | 11,682,692.00 |
| Y2017 | 10,023,275.00 | 3,892,790.00 | 13,916,065.00 |

Rochester, New York
Fire Suppression Deployment Model Evaluation
Survey

AVERAGE Dispatch, Turnout, Travel, and Response Times of First Arriving Unit for various program areas

| Program | Dispatch Time | | Turnout Time | | Travel Time | | Response Time | | Number of Calls |
|--------------|---------------|---------|--------------|---------|-------------|---------|---------------|---------|-----------------|
| | Minutes | Seconds | Minutes | Seconds | Minutes | Seconds | Minutes | Seconds | |
| Fire | | | | | | | | | |
| EMS | | | | | | | | | |
| Hazmat | | | | | | | | | |
| Tech rescue | | | | | | | | | |
| other | | | | | | | | | |
| Total | | | | | | | | | |

90th PERCENTILE Dispatch, Turnout, Travel, and Response Times of First Arriving Unit for various program areas

| Program | Dispatch Time | | Turnout Time | | Travel Time | | Response Time | | Number of Calls |
|--------------|---------------|---------|--------------|---------|-------------|---------|---------------|---------|-----------------|
| | Minutes | Seconds | Minutes | Seconds | Minutes | Seconds | Minutes | Seconds | |
| Fire | | | | | | | | | |
| EMS | | | | | | | | | |
| Hazmat | | | | | | | | | |
| Tech rescue | | | | | | | | | |
| other | | | | | | | | | |
| Total | | | | | | | | | |

ATTACHMENT C

Survey Results Worcester

Survey Questions

1. What is your name and title?
RYAN W. SANDSTROM - COMPUTER & DATA ANALYST
2. How many square miles is your jurisdiction?
40
3. What is the current resident population?
182,000
4. What is the daily change to the population? For example, influx for work or commuters leaving for other communities?
N/A
5. What is your annual Budget for the fire department? Please include total revenues, expenditures including operating, capital and benefits, and total net budget.
\$40,000,000
6. What is your ISO rating and when was the last time you were rated?
7. How many **staffed** Fire Stations do you have?
2
10
8. How many **staffed** fire/ emergency apparatus (front line)?
21

| Unit Type | Number of Apparatus by Type |
|-----------------------------|-----------------------------|
| Fire Engine | 13 |
| Ladder/Truck Company | 7 |
| Quints | |
| Squad | 1 |
| Haz mat Units | |
| Technical Rescue | |
| EMS/Medic Units | |
| Battalion Chief(supervisor) | 2 |
| Quick Response vehicles | |
| Other-please explain below | |
| | |

9. What are your daily **minimum** staffing levels for deployed apparatus?
3
10. What is your shift schedule for front line personnel? (i.e. 24/48; 24/72, etc.)
24/48, 24/96
11. What is the **average** workweek for personnel assigned to shift work? If multiple schedules, please define each.
24/48, 24/96
12. Are your staffing levels the same 24 hours a day/7 Days a week?
YES
13. Is your fire department accredited with Commission on Fire Accreditation International (CFAI)?
NO

Rochester, New York
Fire Suppression Deployment Model Evaluation
Survey

14. What are your **minimum** staffing levels on emergency response units, please fill out chart below

| Unit Type | Number of Firefighters | Officers |
|-----------------------------|------------------------|----------|
| Fire Engine | 3 | |
| Ladder Company | 3 | |
| Truck Company | | |
| Quints | | |
| Squad | 7 | |
| Haz mat Units | | |
| Technical Rescue | | |
| EMS/Medic Units | | |
| Battalion Chief(supervisor) | 1 | |
| Quick Response vehicles | | |
| Other-please explain below | | |
| | | |

15. What units & personnel do you send for an **Unconfirmed** Structure fire with low/moderate risk?

| Responding Units | Number of Units |
|----------------------|-----------------|
| Engine Company | 4 |
| Ladder/Truck Company | 2 |
| Squad | 1 |
| EMS/Medic Units | — |
| Battalion Chief(s) | 1 |
| Other RIT | 1 |

16. What units and personnel do you send for a **Confirmed** Structure fire with moderate risk?

| Responding Units | Number of Units |
|-----------------------|-----------------|
| Engine Company/Pumper | 4 |
| Ladder/Truck Company | 2 |
| Squad | 1 |
| EMS/Medic Units | — |
| Battalion Chief(s) | 1 |
| Other RIT | 1 |

Rochester, New York
Fire Suppression Deployment Model Evaluation
Survey

17. What units and personnel do you send for a **Confirmed** Structure fire with **high risk**?

| Responding Units | Number of Units |
|----------------------|-----------------|
| Engine Company | 4 |
| Ladder/Truck Company | 2 |
| Squad | 1 |
| EMS/Medic Units | — |
| Battalion Chief(s) | 1 |
| Other <i>RIT</i> | 1 |

18. What other emergency services do you provide? Haz mat, EMS, Tech Rescue, Aviation rescue and firefighting, Water rescue?

HAZ-MAT; TECH RESCUE; WATER/ICE RESCUE

19. Does your agency provide Emergency medical transport?

NO

20. Does your agency provide first medical response to EMS incidents? If yes, do you provide these services at the Advanced Life Support (ALS-paramedic level) or Basic Life Support (BLS-emergency medical technician level)?

BLS

21. If you provide ALS-paramedic level services, what percentage of the shift-assigned workforce are paramedics?

22. How many emergency calls did you respond to in 2017?

| Incident/Call Type | Number of Incidents |
|----------------------------------|---------------------|
| Structural Fire Calls | 855 |
| Other Fires | 419 |
| Emergency Medical | 24117 |
| Trash or Rubbish Fire | 229 |
| Accidental or False | 2230 |
| Grass/Wildland Fire | 119 |
| Haz Mat | 953 |
| Tech Rescue | 416 |
| Vehicle Accidents | 1932 |
| Others | |
| Total all emergency calls | 33162 |

23. What percentage of your structure fires are contained to the room of origin?

N/A

24. What percentage of your structures are contained to the floor of origin?

N/A

25. What percentage of your structure fires are contained to the building of origin?

26. What was your reported fire loss (property & contents) for the last 3 years? Please provide for each individually. *N/A*

| Year | Property Loss (\$) | Contents Loss (\$) | Total Loss (\$) |
|------|--------------------|--------------------|-----------------|
| 2015 | 9,109,718 | 7,924,712 | 17,034,430 |
| 2016 | 7,064,117 | 4,177,426 | 11,241,543 |
| 2017 | 7,300,100 | 2,099,626 | 9,399,726 |

27. What are your emergency response times? Please define how you measure response time. In addition, do you utilize average, 90th percentile or both?

AVERAGE RESPONSE TIME: 4:45 | *Calculated from dispatch start. Includes turnout time.*

28. Please fill out the tables below with the data you capture for response times for your agency. If you measure the 90th percentile, please provide both the average and the 90th percentiles.

- Dispatch/call handling- This is defined as the time from when the call is picked up at the 911 call center/PSAP (Public Safety Answering point) to the actual dispatching of emergency units.
- Turn-out (chute times)- This is defined as the time from when the units are notified of the incident until they are actually in their vehicles and responding.
- Travel time- defined as the period of time from when the units are actually responding to the call until they arrive at the emergency incident.
- Total Response time- Defines as the time from when the emergency call is picked up at the 911 call center until the first appropriate emergency unit arrives on the incident.
- Please ensure that you complete the data in the appropriate table (average and/or 90th Percentile) on the follow page.**

Rochester, New York
Fire Suppression Deployment Model Evaluation
Survey

AVERAGE Dispatch, Turnout, Travel, and Response Times of First Arriving Unit for various program areas

| Program | Dispatch Time | | Turnout Time | | Travel Time | | Response Time | | Number of Calls |
|--------------|---------------|---------|--------------|---------|-------------|---------|---------------|---------|-----------------|
| | Minutes | Seconds | Minutes | Seconds | Minutes | Seconds | Minutes | Seconds | |
| Fire | | | | | | | 4 | 15 | 33,162 |
| EMS | | | | | | | | | |
| Hazmat | | | | | | | | | |
| Tech rescue | | | | | | | | | |
| other | | | | | | | | | |
| Total | | | | | | | | | |

90th PERCENTILE Dispatch, Turnout, Travel, and Response Times of First Arriving Unit for various program areas

| Program | Dispatch Time | | Turnout Time | | Travel Time | | Response Time | | Number of Calls |
|--------------|---------------|---------|--------------|---------|-------------|---------|---------------|---------|-----------------|
| | Minutes | Seconds | Minutes | Seconds | Minutes | Seconds | Minutes | Seconds | |
| Fire | | | | | | | | | |
| EMS | | | | | | | | | |
| Hazmat | | | | | | | | | |
| Tech rescue | | | | | | | | | |
| other | | | | | | | | | |
| Total | | | | | | | | | |



www.fitchassoc.com