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Performance Audit

Excellent fire department with considerable external validation

Commission on Fire Accreditation International (CFAI)

- 281 internationally accreditation agencies in the world

Insurance Services Organization

- Public Protection Classification of a 1
- Commonly referred to as an "ISO Class 1"
- 393 fire departments rated as a Class 1 agency in the United States
- Top 1% of all rated fire departments estimated at nearly 34,000 departments

There are only 102 fire departments that are both internationally accredited by CFAI and an ISO Class 1

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High Level Summary of Alternatives

- Recommended move-up policy that will maximize operational deployment
- Creation of an EMS overlay to handle at least 70% of the EMS activity on smaller, less expensive vehicles and with less recurring personnel costs
- Reallocate personnel to the EMS mission to better align resource and cost allocation
- Provide for a more enhanced organizational agility to meet growth in EMS with the best return on investment
- Opportunity to expand the department's quint concept
- Reduce the reliance on large fire apparatus to respond to lower-acuity EMS incidents
- Reduce large fire apparatus incident responses and employee workload by 48% or 19,682 calls
- Introduce fire suppression capacity and readiness back into the system providing cost avoidance for future growth
- Provide for consideration for adopting a continuous staffing strategy that is fiscally beneficial and reduces workload on employees

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Summary Statement

- As presented, all of the observations, recommendations, and alternatives are offered for policy consideration and are not intended to be overly prescriptive.
- The fire department is well resourced and high performing, and the audit concurs with the excellence that outside agencies such as ISO and CFAI have posited.
- The alternatives are offered to provide incremental improvement, efficiencies, and long-term sustainability, as desired.

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Call Category	Reporting Period		
	2017	2018	2019
Cardiac and Stroke	2,425	2,651	2,636
Difficulty Breathing	2,587	2,842	2,916
Fall and Injury	9,155	9,149	8,532
Illness and Other	12,145	11,399	12,272
MVA	998	956	930
Overdose and Psychiatric	885	989	935
Possible Death or Death	120	100	135
Seizure and Unconsciousness	4,151	4,571	4,310
Transfer	103	130	86
EMS Total	32,569	32,787	32,752
Aircraft Crash	10	7	9
Fire Alarm	1,784	1,811	2,030
Fire Other	835	895	997
Outside Fire	519	499	613
Public Service	806	790	1,054
Strike Team Request	59	41	33
Structure Fire	490	417	430
Vehicle Fire	356	305	282
Fire Total	4,859	4,765	5,448
Hazmat	255	290	280
Hazmat Total	255	290	280
Rescue	233	236	265
Rescue Total	233	236	265
Total	37,916	38,078	38,745
Average Calls per Day	103.9	104.3	106.2
YoY Growth	N/A	0.4%	1.8%

Community Demand

- EMS accounts for largest share of community requests for service
- Total of 38,745 unique incidents in 2019
- 106.2 calls per day
- Year over year growth in calls varied between 0.4% and 1.8%
- Average year over year growth is approximately 1.1% per year
- National experience is between 3% and 7% in EMS growth

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Community Demand

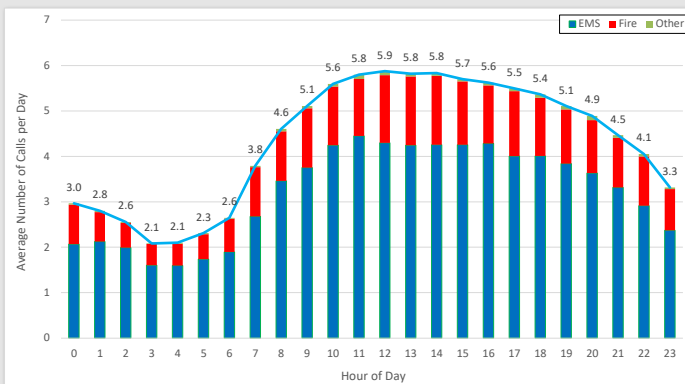
- EMS accounts for 74.1% of the requests for service
- Fire related incidents accounts for 24.7% of the incidents
- Special risks such as hazmat and technical rescue are combined 0.8% of demand
- Outside, Vehicle, and Structure fires combined account for 2.8% of the demand.
- Validates an EMS centric resource allocation

Call Category	Number of Calls	Average Calls per Day	Call Percentage
EMS	26,310	72.1	69.4
MVA	1,807	5.0	4.8
EMS Total	28,117	77.0	74.1
Cancelled/Wrong Location/No Incident	4,171	11.4	11.0
False Call/Alarm	94	0.3	0.2
Fire Alarm	1,010	2.8	2.7
Fire Other	1,175	3.2	3.1
Outside Fire	680	1.9	1.8
Public Service	1,860	5.1	4.9
Severe Weather or Natural Disaster	7	0.0	0.0
Structure Fire	212	0.6	0.6
Vehicle Fire	161	0.4	0.4
Fire Total	9,370	25.7	24.7
Hazmat	202	0.6	0.5
Hazmat Total	202	0.6	0.5
Rescue	130	0.4	0.3
Rescue Total	130	0.4	0.3
Unknown	107	0.3	0.3
Unknown Total	107	0.3	0.3
Total	37,926	103.9	100.0

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Temporal Distribution

- The community demand is at its peak between 9 am and 9 pm
- Generally, there is an average of 6 calls per hour throughout the peak periods
- EMS accounts for greater than 4 of the 6 calls per hour

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System Performance

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2019 Historical Performance

- Measured at the 90th percentile
- Considering "Travel Time"
- EMS is at 6.1 minutes
- Fire is at 7.4 minutes
- System performance is at 6.5 minutes overall

Program	Turnout Time	Travel Time	Response Time	Sample Size ¹
	(Minutes)	(Minutes)	(Minutes)	
EMS	2.0	6.1	7.6	27,757
Fire	2.1	7.4	8.8	8,095
Hazmat	2.3	7.7	9.3	202
Rescue	1.8	7.3	8.3	130
Unknown	2.1	6.6	7.8	98
Total	2.0	6.5	7.9	36,282

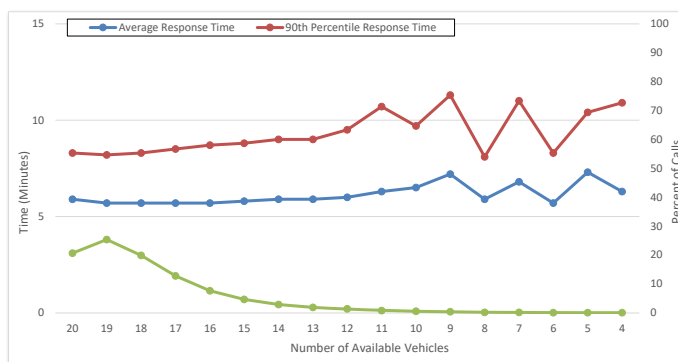
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System Resiliency

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- Overall, 91.2% of the time when a call occurs, 15 units or more were available.
- The total response time varies less than 3 minutes at the 90th percentile between 20 units available and 4 units.
- Any calls occurring at less than 5 remaining units accounted for less than 0.1%

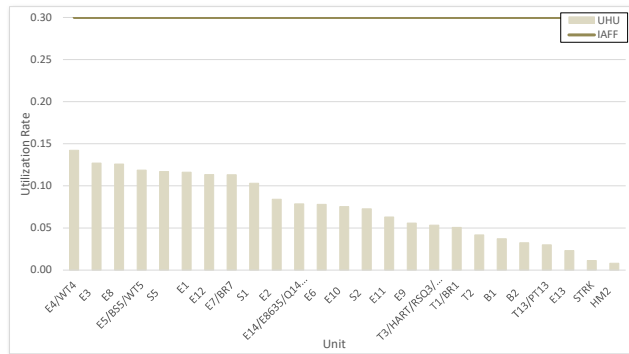
Measures of Resiliency

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Unit Hour Utilization

- Considering how much work is too much work
- Best practice is not to exceed 0.25 to 0.30-unit hour utilization within a 24-hour shift
- All units are less than 15% UHU
- Overall, the current workload indicates that there is excess capacity in the system and therefore can absorb more work
- The utilization of Squad units to absorb work from the fire suppression resources is under utilized and under performing providing limited system benefits



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Reducing the Reliance on Large Apparatus for EMS Responses

Consider Reducing Engine and Truck Responses to EMS Incidents



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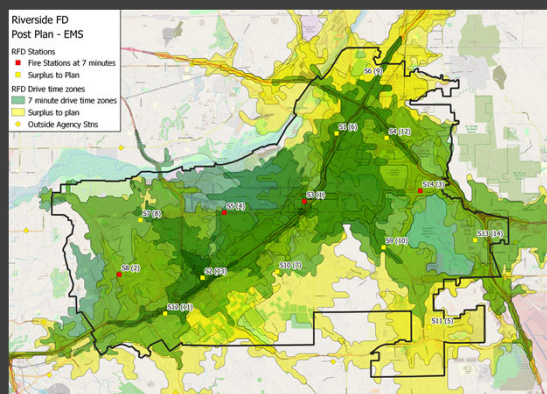


Opportunities to Reduce Large Apparatus EMS Responses

- Department currently sends the closest engine and/or truck to EMS incidents
- Most communities are sensitive to incidents where large and/or multiple apparatus are arriving for an EMS call
- A 7-Squad program will replicate the large fire suppression apparatus efforts, so the need to send an Engine/Truck before the ambulance will be significantly reduced by 70%
- Will reduce overall Engine/Truck incidents by 48% or 19,682
- While contemplating a consolidation of fire apparatus, a reduction in workload on EMS incidents will reintroduce readiness capacity back into the fire suppression system

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Rank	Station	Station Capture	Total Capture	Percent Capture
1	S3	14,240	14,240	50.73%
2	S8	6,651	20,891	74.42%
3	S14	4,120	25,011	89.10%
4	S5	1,036	26,047	92.79%
5	S11	913	26,960	96.05%
6	S1	739	27,699	98.68%
7	S10	219	27,918	99.46%
8	S7	42	27,960	99.61%
9	S6	23	27,983	99.69%
10	S9	19	28,002	99.76%
11	S12	14	28,016	99.81%
12	S4	10	28,026	99.84%
13	S2	3	28,029	99.85%
14	S13	0	28,029	99.85%

7-Minute Travel Time

- Current configuration can meet approximately 100% of the EMS incidents within 7-minutes travel time or less
- A four-station configuration can meet approximately 91% of the EMS incidents within 7-minutes travel time
- Contractual obligation of combined turnout and travel of 9:59
- Current performance is at 7:42 at the 90th percentile
- This configuration will require 7 EMS units (Squads) to create an EMS overlay and deliver a service of approximately 8:59-minutes

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FITCH
A ASSOCIATES

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Staffing Considerations

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Station	Engine	Truck	Squad	Battalion Chief	Minimum Staffing
Station 1	3	4	2	1	10
Station 2	3	4	2	1	10
Station 3	3	4			7
Station 4	4				4
Station 5	3		2		5
Station 6	4				4
Station 7	4				4
Station 8	4				4
Station 9	4				4
Station 10	4				4
Station 11	4				4
Station 12	4				4
Station 13		4			4
Station 14	4				4
Total	48	16	6	2	72

Current Deployment Minimum Staffing

- Currently the department staffs a total of 216 personnel on shift or 72 per shift
- The department has a minimum staffing threshold of 72 prior to hiring back on overtime

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Staffing Considerations

Constant Staffing

- 72 Minimum Daily Staffing
- Total of 216 shift assigned personnel
- Department currently uses a "constant staffing model"
- Allocates 72 personnel per day
- All vacancies to maintain 72 are filled with overtime

Continuous Staffing

- 72 Minimum Daily Staffing
- Total of 216 shift assigned personnel
 - Relief staffing multiplier of 3.49
 - 36 additional personnel
- Would afford a total of 12 personnel per day in relief
- Overtime would be significantly reduced, but will never eliminate overtime liability

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Fiscal Proposition of Continuous Staffing

- The average hourly overtime rate of \$56.05 and the average annual compensation for a new hire of \$99,936 were provided by the department.
- Personnel calculations were established utilizing the minimum daily staffing of 72 and a total shift assigned personnel of 216.

Category	Hours	Rate	Cost
Scheduled Hours per Employee	2,912		
Average Leave per Employee	405		
Actual Average Hours Worked per Employee	2,507		
Hours of Coverage Needed for Relief (216)	87,480	\$56.05	\$4,903,254.00
Scheduled Overtime (216)(Avg 3 per week)	33,696	\$56.05	\$1,888,660.80
Sub-total of Overtime Costs for Min Staff 216	121,176		\$6,791,914.80
Cost of 36 Relief Personnel (252-216=36)	90,252	\$99,936/year	\$3,597,696.00
Cost of Schedule Overtime for Relief (36)	5,616	\$56.05	\$314,776.80
Subtotal of Costs of Relief Personnel	95,868		\$3,912,472.80
Value Proposition of Continuous Staffing			\$990,781.20

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Hours Worked Impact on Leave and WC Expenses

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Assumptions

- Utilized total overtime expenditures by year 2010 -2020 YTD
 - All overtime expenditures for the year including Fire Operations (actuals) excluding Mutual Aid Personnel Costs due to inconsistent reporting
 - Overtime was used as a surrogate measure for the collective hours worked, primarily in addition to the schedule
- Utilized various leaves associated with sick and injury
 - Workers comp expenditures
 - Workers comp insurance costs
 - Sick leave
 - Family Medical Leave
 - Industrial Accident

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Results

Correlation between OT and Leave Expenditures

- The correlation is strong at 0.75
- Statistically significant with 95% confidence
- Intuitively, the correlation passes the commonsense test that the more employees work the greater the opportunity for injury and/or utilization of sick leave and subsequent impact on total leave expenditures, including Worker's Compensation
- Especially understanding that vacancies are largely covered by overtime

Correlation between OT and Combined Worker's Comp Expenditures

- The correlation is moderate at .55
- Statistically significant with 95% confidence
- Intuitively, the correlation passes the commonsense test that the more employees work the greater the opportunity for injury and a relationship with total WC expenses
- Additionally, a regression model that utilized OT and IA as predictors of the WC expenditures was created that explained greater than 50% of the WC expenditures that was statistically significant with 95% confidence.
- The fact that the model can explain 50% of the expected WC value is significant as market factors may influence the premium experience beyond what the loss history may influence.

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Steven Knight, PhD

Questions?



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