



2018 Mukilteo Fire Department Annual Response Analysis

“Every city and town shall evaluate its level of service and deployment delivery and response time objectives on an annual basis. The evaluations shall be based on data related to level of service, deployment, and the achievement of each response time objective in each geographic area within the jurisdiction of the city or town. (2) Beginning in 2007, every city and town shall issue an annual written report which shall be based on the annual evaluations required by subsection (1) of this section. (2a) The annual report shall define the geographic areas and circumstances in which the requirements of this standard are not being met. (2b) The annual report shall explain the predictable consequences of any deficiencies and address the steps that are necessary to achieve compliance.” RCW 35.103.040

The Mukilteo Fire Department mission is to plan for, prevent, and respond to fire, medical and disaster events. To achieve that mission, objectives have been set for turnout times and response (travel) times to emergency incidents. These are measured at the 90th percentile, meaning that 90% of the responses took less time than the time specified. The City includes all emergency response objectives that are less than three (3SD) standard deviations from the mean. This captures 99.7% of the responses. To calculate the standard deviation, the department analyzed all emergency responses for 2016 and 2017 (n=3,996). The department also reviews all objectives longer than 3SDs from the mean, 0.15% of all calls, to identify potentially correctable systems issues.

The City has not defined objectives for certain types of responses, including special operations, aircraft rescue and firefighting, marine rescue and firefighting, and wildland firefighting. These responses require a response from a specialized regional resource or team not operated by the Mukilteo Fire Department. Their turnout and travel times are outside the control of the department.

Incident Volume

The basic measurement of how busy the department has been is the incident volume, or the number of times units responded to calls for help. Those incidents are classified as either “emergent” or “urgent”, commonly referred to as non-emergency. The classification is determined by the 911 dispatcher using pre-set response determinants based on information from the caller. Emergent incidents require an immediate response *and* the use of lights and sirens. Urgent incidents require an immediate response, but do not include the use of lights and sirens.

The department divides emergent responses into two categories, the incident volume in Mukilteo and automatic aid incidents to neighboring jurisdictions. Emergent incidents in Mukilteo require measurement against the City objectives.

The incidents in Mukilteo can be further divided by geographic area. Station 24's area includes the 1.95 square miles in the City limits north of 84th Street. Station 25's area includes the 4.67 square miles in the City limits south of 84th Street.

Measure	2018	Change from 2017 to 2018
Total Incidents	2,756/100%	(2.7%) -76 incidents
Mukilteo Total Incidents	2152/78%	(4.1%) -91 incidents
Auto Aid Total Incidents	604/22%	+2.7% +16 incidents
Emergent Incidents	2,205/80%	(8.0%) -191 incidents
Urgent Incidents	551/20%	+26.4% +115 incidents
Emergent Incidents in Mukilteo	1,675/76%	(11.3%) -213 incidents
Automatic Aid Emergent Incidents	530/24%	(8%) -22 incidents
Station 24 (north of 84 th Street)	505/23%	(14.1%) -83 incidents
Station 25 (south of 84 th Street)	1,647/77%	(0.5%) -9 incidents

It is expected that overall incident volumes will increase as the population ages, the prevalence of chronic medical conditions continues to rise, and traffic volume on the roadways increase. Tempering that increase are factors such as installation and maintenance of commercial and residential fire protection systems, improvements in fire and building codes, and improvements in vehicle safety.

Turnout Time

Turnout time is measured as the time from when personnel are alerted to an incident by the communications center until the apparatus starts responding ("wheels rolling"). The City objective for apparatus (fire engines and ambulances) turnout time is 2:00 minutes from the time of dispatch with 90% compliance. This measurement applies to Mukilteo Fire units responding to emergent calls in Mukilteo. The turnout time is decreasing and percentage of compliance is increasing, but neither meets their objective. Further root cause analysis is needed to identify potentially correctable causes.

Apparatus Turnout	2018	Change from 2017 to 2018
Count	2,147	(2.3%)
Mean (Average)	0:01:27	(5.4%)
Standard Deviation	0:00:45	No change
90 th Percentile	0:02:28	(3.3%)
2:00 Objective	76.5%	+3.5%

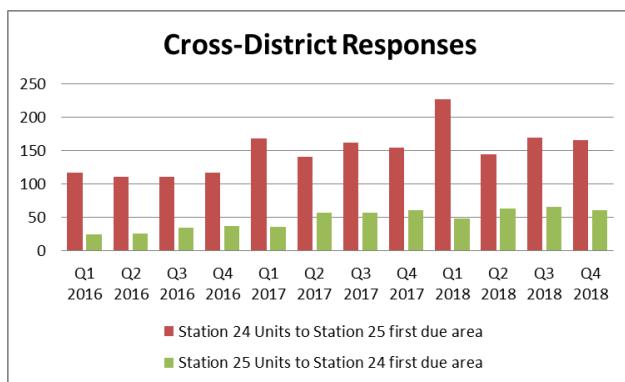
Travel Time

Travel time is the time from when the apparatus starts responding to the incident ("wheels rolling") until they arrive on the scene ("wheels stopped"). The City objective for travel time is 5:30 minutes with 90% compliance. The travel time and percentage of compliance are essentially unchanged and neither meets their objective. Further root cause analysis is needed to identify potentially correctable causes.

Apparatus Travel	2018	Change from 2017 to 2018
Count	1,888	(2.5%)
Mean (Average)	0:03:36	(0.9%)
Standard Deviation	0:01:55	(2.5%)
90 th Percentile	0:06:18	+0.8%
5:30 Objective	84.9%	+0.7%

Cross-District Responses

One contributing factor to longer travel times is the number of times an apparatus is responding to the other station's area. The cross-district responses of concern are ones that occur as a result of a second incident in that area while the primary apparatus is out. The chart below shows all cross district responses. The data set does not have enough detail to effectively identify situations where the primary apparatus was unavailable. Further analysis will be necessary prior to using this tool for deployment decisions.



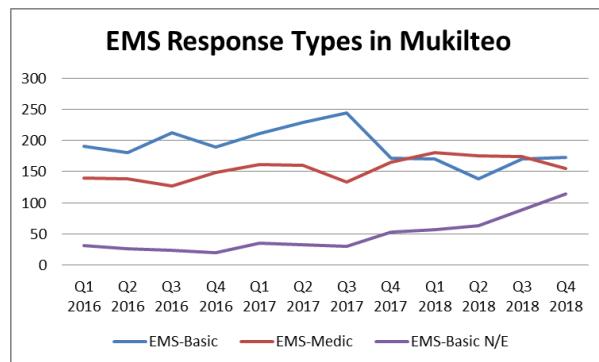
Mukilteo Commitment Time

Measurement of the number of times an apparatus responds is useful to gauge the department's workload. Measurement of the amount of time the apparatus is committed to an incident is also necessary as this indicates the department's readiness to respond to the next incident. Engines spend less time committed to calls unless there are a growing number of fire calls. Ambulances have significantly greater commitment time due to the time required to transport a patient to the hospital and return to the City. Mukilteo apparatus commitment time to Mukilteo calls is constant over the three years in this report. Increasing time in the future will be an indication to examine the number and type of units deployed.

Apparatus Commitment	2018	Change from 2017 to 2018
Engine Count	653	+6.2%
Engine Commit (Average)	0:20:13	(4.0%)
Engine Commit (90 th Percentile)	0:39:41	(3.2%)
Ambulance Count	2,236	+3.3%
Ambulance Commit (Average)	0:43:29	(1.4%)
Ambulance Commit (90 th Percentile)	1:21:49	(0.4%)

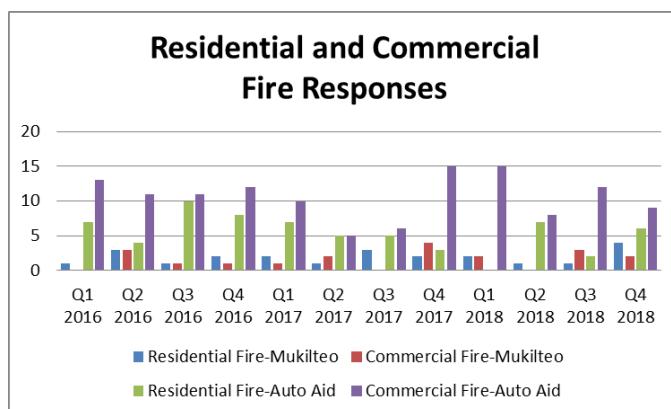
EMS Response Types

Emergency Medical Service (EMS) responses account for a significant portion of the fire department's incidents. These calls are divided into three primary categories, basic life support emergency incidents (EMS-Basic), advanced life support emergency incidents (EMS-Medic), and basic life support non-emergency incidents (EMS-Basic N/E). Every instance of emergent response comes with a greater chance of being involved in or causing a motor vehicle collision. The communications center utilizes protocols to identify the appropriate call type category. This determines the units and their response urgency. In November 2017, the communications center changed protocol systems. This resulted in a drop in the number of EMS-Basic incidents and an increase in the number of EMS-Medic and EMS-Basic N/E incidents. Over time, it is expected that the protocol system will result in more non-emergency responses.



Residential and Commercial Fire Responses

Fire responses are divided into two categories, residential and commercial. Responses are separated this way because the higher complexity of commercial fires requires more resources. While fire responses in Mukilteo are small, Mukilteo Fire apparatus respond to a significant number of fires with our automatic aid partners. This is beneficial in two ways. First, the responses allow Mukilteo crews to hone their firefighting skills through actual responses. Second, by working closely with our automatic aid partners, operational safety is improved as the crews have experience working together. Due to the number of resources required, any residential or commercial fire in Mukilteo will always require a response from our automatic aid partners. In 2018, Mukilteo fire crews responded to 8 residential fires in the City, 7 commercial fires; and 59 automatic aid fire responses.



Automatic Aid

Snohomish County Fire Chiefs have adopted a policy of closest unit dispatch, meaning the closest appropriate resource is sent to the incident, regardless of department. This policy of automatic aid provides the best service to the caller as help arrives as soon as possible. Mukilteo's primary automatic aid partners are South Snohomish County Fire and Rescue (SSCFR), Everett Fire Department (EFD), and Paine Field Fire Department (PFFD), although in large emergencies it is possible that other departments would also respond. South County and Everett both provide resources to and receive resources from Mukilteo Fire Department. Paine Field currently receives resources only, although their specialized apparatus are available in the event of a downed aircraft in Mukilteo. The fire department monitors both the number of automatic aid incidents and the number of units sent to each incident. Based on closest unit dispatch, South County and Everett often provide multiple apparatus for a single incident. Mukilteo Fire, in contrast, normally only has one apparatus available to respond to an automatic aid incident.

Automatic Aid-Everett	2018	Change from 2017 to 2018	
MFD units to Everett Incidents	143	+25.4%	+29 incidents
Everett Emergent Responses	138	+29.0%	+31 incidents
Everett Urgent Responses	5	(28.6%)	-2 incidents
MFD Engine Commit Time (90 th Percentile)	0:41:12	+23.4%	
MFD Ambulance Commit Time (90 th Percentile)	1:20:32	(8.1%)	
EFD units to Mukilteo Incidents	80	+2.6%	+2 incidents
Mukilteo Emergent Responses	79	+2.6%	+2 incidents
Mukilteo Urgent Responses	1	No change	
EFD Engine Commit Time (90 th Percentile)	0:38:38	(22.8%)	
EFD Ambulance Commit Time (90 th Percentile)	1:10:14	(2.2%)	

Automatic Aid-SSCFR	2018	Change from 2017 to 2018	
MFD units to SSCFR Incidents	351	(8.1%)	-31 incidents
SSCFR Emergent Responses	290	(7.1%)	-22 incidents
SSCFR Urgent Responses	61	(12.9%)	-9 incidents
MFD Engine Commit Time (90 th Percentile)	0:29:23	(6.8%)	
MFD Ambulance Commit Time (90 th Percentile)	1:18:22	(3.0%)	
SSCFR units to Mukilteo Incidents	399	(4.3%)	-18 incidents
Mukilteo Emergent Responses	351	(5.1%)	-19 incidents
Mukilteo Urgent Responses	48	+2.1%	+1 incident
SSCFR Engine Commit Time (90 th Percentile)	0:31:58	(8.7%)	
SSCFR Ambulance Commit Time (90 th Percentile)	1:31:20	+6.7%	

Automatic Aid-PFFD	2018	Change from 2017 to 2018
MFD units to PFFD Incidents	41	+51.9% +14 incidents
PFFD Emergent Responses	40	+48.1% +13 incidents
PFFD Urgent Responses	1	No change
MFD Engine Commit Time (90 th Percentile)	0:47:07	(11.5%)
MFD Ambulance Commit Time (90 th Percentile)	1:28:09	(11.7%)

Summary

Mukilteo Fire Department staff will continue to monitor all response performance measures on a quarterly basis. Staff will do further investigation on the turnout and travel times to identify potentially correctable causes. As needed, policy recommendations will be brought to the City Council for consideration.