



Billings Fire Department

Montana

Long-Range Master Plan



Findings, Observations and Recommendations February 2018

ESCI Emergency Services
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Providing Expertise and Guidance that Enhances Community Safety

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Findings, Observations, and Recommendations

The preceding sections of this report are intended to form the basis by which future decisions can be made concerning the deployment of resources. The overall intent is to provide Billings Fire Department policymakers and fire department leaders with the necessary information that will allow them to make an informed decision about the future of deployment of fire department facilities in their community.

The decision of when or where to deploy additional resources is a distinctively local determination that should be tailored to match community expectations, community conditions, and the ability of the community to fund the additional resources. BFD and Billings policy makers may or may not choose to adopt some or all of the following recommendations. It is the responsibility of policy makers to be aware of current performance (predicted performance and actual performance); and make decisions concerning future station deployment based on what the community expects and what the community can afford. Demand for BFD services has increased steadily since 2010, and has accelerated since 2012. This trend is expected to continue in the future. Based on the analysis detailed in the Current Conditions section of this report, approximately 86 percent of current service demand is within four minutes travel of a BFD fire station. Currently, the first BFD apparatus arrives at approximately 51 percent of emergency incidents in four minutes or less travel time. Overall, the first apparatus on scene arrives at 90 percent of emergency incidents in 10 minutes, 57 seconds, from the time the emergency call is received at the 911 center to the arrival of the first apparatus on scene.

In the case of BFD, the argument can be made that there is an immediate need to add additional stations; based on the analysis of current conditions and some of the criteria presented in the preceding sections. ESCI recommends that BFD move forward with a phased Fire Department Facility Master Plan with goals of improving response performance by decreasing travel time and improving the concentration of resources available in the BFD service area. The facilities can be constructed in an incremental, systematic manner; using the future station deployment strategies previously discussed. Priority should be given to providing coverage in the portions of the service area currently beyond four minutes travel time (or whatever goal is adopted) from a BFD fire station; especially where future development is expected to increase service demand.

When a New Station or Response Resource is Needed

In many communities, the question that must be addressed is: when is a new fire station, additional response resource, or alternative response program required to meet response goals? In many cases the overall answer is part financial and part professional judgement on the part of policy makers and fire department leaders. The problem comes in identifying a quantifiable trigger point for adding resources; since it can vary from community to community or even within a specific jurisdiction. While there is an abundance of opinion, there is very little definitive guidance in fire service literature on how this should be accomplished. One way to identify variables and decision points in deciding whether an additional station area is needed would be to place them into a matrix. The following figure is an example and is not meant to recommend response time parameters or given decision points.

Figure 101: New Station Deployment Decision Matrix

Action Choices	Travel Distance	Response Time Parameter	Criterion	
			Out of Area Calls	Building/Risk Inventory
Maintain status quo	All risks within 1.5 miles.	First due company is within 4 minutes travel, 90% of the time.	100% of calls in station area.	Existing inventory and infill.
Temporary facilities and minimal staffing	Risks 1.5 to 3 miles from existing station.	First due company exceeds 4 minutes travel, 10% of the time, but never exceeds 8 minutes.	More than 10% of calls are in adjacent area.	New area has 25% of same risk distribution as in initial area.
Permanent station needed	Risk locations exceeding 4 miles from the station.	First due company exceeds 4 minutes travel, 20-25% of the time.	More than 20–25% of calls are in outlying area.	New area has 35% of same risk distribution as in initial area of coverage.
Permanent station essential	Outlying risk locations exceeding 5 miles from any station.	First due company exceeds 4 minutes travel, 30% of the time.	More than 30% of calls are in outlying area.	New area has 50% of same risk distribution as in initial area.

In general, more than one of the criterion measures displayed in this matrix must be slipping to initiate the decision to position another station. For example, it is not uncommon to have new commercial and industrial occupancies protected by automatic fire protection systems outside of a station's coverage area. Simply because an area is out of the range of the response standard does not trigger a new fire facility. It is ESCI's experience that multiple elements of response performance and risk need to be out of balance—along with having additional economic resources—to justify additional stations or staffing.

Station Configuration and Costing

Construction of any fixed facility, like a fire station, represents a considerable cost to a fire department. Not only is the cost of building a station significant, but the ongoing cost of a new facility's continued, ongoing operation needs to be considered. The actual cost of construction varies widely based on several factors and variations in design, function, capacity, and site conditions. As part of a Fire Department Facility Master Plan, ESCI recommends that BFD consider the following:

- Conduct a facilities study of the current fire stations and conditions that provides recommendations and costs to address current essential facility, ADA, dual gender, and industry safety and functionality best practice standards.
- Conduct a fire station prototype study. A qualified architect firm utilizing a cross section of department members, fire administration, City representatives, and other desired stakeholders should conduct this study. The study should address basic spatial and square footage requirements for single, dual, and headquarters apparatus configurations. The study should also address station functions; workflow modeling and room adjacencies resulting in an BFD station configuration standard. Station lay out consistency can lead to economies of scale, enhanced productivity, and increased employee satisfaction.
- Establish a capital fire facility funding and finance strategy. Work with City staff to evaluate and develop a funding strategy. Based on the findings and development of fire station prototype requirements, a City (general or City capital fund) or community (essential facilities bond program) fund should be established. As fire stations are normally amortized as long-term assets and capital or debt financing is frequently limited, a phased or incremental approach to upgrade existing facilities or construct new fire stations is a common and often preferred approach.

Careful consideration should be given to the current and future needs of the jurisdiction prior to breaking ground for a new station. A relocated or new station represents a large investment in both time and money for a fire department; constructing a facility that will not meet the needs of the organization well into the future is a costly oversight that is not easily remedied. EMS incidents comprise most of BFD service demand, however constructing single bay EMS stations will not meet the future needs of Billings. While it is not necessary to construct large headquarters style facilities throughout the service area, BFD should consider stations with two or three double depth bays; and living quarters for at least five to seven 24-hour personnel as the minimum facility for new or relocated. Note that while small single bay stations may not be a good long-term facility solution; many jurisdictions deploy resources in temporary facilities with good success in reducing travel time performance.

In general terms, a fire station can be expected to represent a range from \$150 to \$250 per square foot and can be higher in some instances. Square footage of a typical facility as described above, can be expected to range from 6,000 to 8,000 square feet. A larger headquarters station can be expected to range from 10,000 to 12,000 square feet or larger.

Due to the broad variations possible, ESCI is not able to provide specific cost projections. However, to offer some general guidance, a 7,000-square foot station similar to that described in the previous paragraph would cost approximately \$1,050,000 at \$150 per square foot and \$1,750,000 at \$250 per square foot. Note that this does not include the cost of land.

Conclusion

The ESCI project team began collecting information concerning the Billings Fire Department in August of 2017. The team members recognize this report contains a large amount of information and ESCI would like to thank Billings Fire Department command staff, members and many City Council members, and employees for their assistance in bringing this project to fruition. ESCI would also like to thank the individuals that participated in stakeholder interviews for their input, opinions, and candid conversations throughout this process. It is ESCI's sincere hope the information contained in this report is used to its fullest extent and the emergency services provided to the citizens of Billings will be improved by its implementation.