Fire Department Master Plan

BIG BEAR FIRE AUTHORITY, CALIFORNIA

FINAL REPORT

matrix consulting group

July 26, 2017

TABLE OF CONTENTS

1. INTRODUCTION AND EXECUTIVE SUMMARY

This chapter of the report is intended to describe the background of this study, its scope of work, and the methodologies utilized for the study. It also provides a summary of the key findings, conclusions, and alternatives examined in this report.

1. PROJECT OVERVIEW

The Big Bear Fire Department has experienced considerable increases in call demand over the past several years. There is also a recently formed Tourism and Business District that is promoting off season tourism activities in the area and moving to make all four seasons a time when visitors come to the Big Bear Valley. A Master Plan Study was commissioned to assist in the short and long-term planning efforts as the Big Bear City Community Services District and the Big Bear Lake Fire Protection District continue to work toward full consolidation.

2. PROJECT SCOPE OF WORK

The Fire Authority requested a comprehensive scope of work for this project. In general, this entailed evaluation of aspects of Fire Department service, including:

- **Analyzing levels of service** including station locations, apparatus placement, response area coverage, response time performance and workload call distribution.
- **Analyzing and provide recommendations** including improvements, additions, and changes to facilities, staffing, apparatus, training, and information management.
- **Analyzing and provide recommendations** regarding staffing levels and practices necessary to support recommended operational changes, including location and configuration of stations, scheduling of personnel, and composition of staff.

- **Analyzing and provide recommendations** to improve the efficiency and effectiveness of department operations as it relates to current deployment, response times, safety, and productivity.

- **Analyzing and provide visual models** of current response data. Provide recommendations on industry "Best Practices" and demonstrate the impact of hypothetical deployment and facility changes.

- **Analyzing past, current, and projected growth** and the impact on fire/EMS services to develop long-term strategies to improve efficiency and effectiveness.

- **Providing a detailed work plan** including timeline and cost for each project benchmark.

This Fire Service Master Plan should be viewed as a "living document" that can be easily updated as conditions change – such as growth parameters, and financial capabilities of the Fire Authority.

3. PROJECT METHODOLOGIES

The processes utilized in developing this study were extensive, as described in the points below:

- Interviews were conducted with the Fire Chief and other staff in the Big Bear Fire Department. The purpose of these meetings was to develop an understanding of the Department's organization, costs, staffing, and programs, as well as issues potentially impacting this study.

- Fire Department interviews were complemented by interviews with the Big Bear Lake City Manager, Fire Authority Board Members, the Visitors Bureau and others to obtain information about organizational, financial and developmental issues facing the area now and in the years to come. All Fire Department employees were also provided the opportunity to give the project team feedback through a confidential employee survey. The results of the survey were provided to the Department during the project.

- Interviews were followed-up by data collection. Data collection focused on documenting key aspects of fire service organization, staffing, staffing policies, budgets, salaries and fringe benefits, emergency medical service delivery, fire prevention programs, training, apparatus and facilities, and call for service workloads.

Throughout this process, the project team met with the Department, which reviewed findings for accuracy, and discussed issues, study direction, and alternatives.

4. SUMMARY OF KEY FINDINGS AND RECOMMENDATIONS

The following table provides a summary of key findings, conclusions, and alternatives examined in this report:

Finding	Recommendation
There are opportunities to improve the Insurance Services Office (ISO) Fire Suppression Rating for the Big Bear Fire Department By implementing the recommendations this report Big Bear Fire Department could see an ISO reduction to Class 2 from the current Class 3 rating.	Establish an automatic first alarm response plan with neighboring mutual aid partners for any reported working fire to obtain ISO credit for Automatic Aid. Develop an annual training plan that includes multi-company and nighttime evolutions with mutual-aid partners. Increase the scheduling of paid call firefighters in the stations and document their time in station to receive ISO staffing credits.
There is a high incidence of concurrent calls for service, which is impacting response time reliability.	The Big Bear Fire Authority should begin planning for the need to add additional response resources to improve system reliability. Increase staffing of all engine companies to a minimum of three personnel. This will require adding six firefighter/paramedics at an annual cost of $770,454.
All aspects of the response time continuum need improvement.	Work with the Dispatch Center to improve call processing times to achieve a performance standard of 60 seconds 90% of the time. Adopt baseline service level standards for urban, suburban and rural areas and begin tracking and reporting Fire Department performance on a quarterly basis. Continue to use the priority system to track calls and use priority one and priority two calls to report system performance.
The Moonridge area is outside of travel time standards and needs a staffed station.	Add living quarters to the Moonridge fire station at a cost of approximately $1.8 million for 2,000 square feet and staff the station with a cross staffed engine company and ambulance. Annual staffing costs will be $911,896 in FY 2019/20.
The Sugarloaf station is not meeting the needs of the Fire Department and does not provide a safe workplace for employees.	Begin planning for the design and construction of a new fire station to replace the existing station in Sugarloaf in the next five years at a cost of approximately $4.2 million in FY 2022/23.

Finding	Recommendation
The paid call firefighter program should be enhanced to improve reliability.	Require a minimum number of service hours for paid call firefighters and "schedule" these hours to better understand when PCFs are likely to respond to emergency incidents and participate in training activities. Requiring 24 hours of service per month would cost $288 per paid call firefighter.
A third Battalion Chief position is needed to ensure consistent command and control of shift operations.	The Big Bear Fire Department should add a third Battalion Chief to oversee operations by FY 2018 at an annual cost of $193,262.
There are improvement opportunities in Fire Prevention.	The Big Bear Fire Department should conduct a fee study to determine the true costs of providing fire prevention services and update the current fee schedule at a cost of approximately $16,500. The Big Bear Fire Department should train 6 shift personnel in cause and origin investigation at a cost of $1,450 per investigator. The Fire Marshal should conduct training for shift personnel on conducting commercial occupancy inspections and the types of violations to look for the fire department. This would cost approximately $25,000.
There are several vehicles and apparatus either outside their replacement schedule or nearing replacement timelines.	Develop a plan to begin replacing vehicles and apparatus according to the established replacement schedule. The cost to replace the vehicles outside the current replacement schedule is approximately $940,000. Conducting a fleet study for the Fire Department would cost approximately $17,500.
There are opportunities to improve the consistency of hands-on training drills.	Continue with the training plan and budget to allow scheduled single and multi-company drills to be conducted by back filling apparatus. The overtime budget should be increased $45,000 annually to compensate personnel for attending training drills.
Continual monitoring of service level performance and unit workloads will allow proper planning to time future facility and apparatus needs.	Plan for the relocation of the Baldwin Lake Station as growth occurs in the area and trigger points are realized for the need to improve response times in the area. Continually monitor apparatus utilization rates to determine points when additional resources are needed to effectively service the area.

The following table summarizes the short-term staffing and capital needs of the Big Bear Fire Department as discussed above.

Fiscal Year	Staff / Shift	Total Staff	Purpose	Cost Per Year*
Staffing				
FY 2018/19	2	6	Increase engine company staffing to a minimum of three personnel.	$770,454
FY 2018/19	1	1	Add a third Battalion Chief positon to oversee shift operations.	$193,262
FY 2020/21	3	9	Staff an additional engine company and cross staff an ambulance to serve the Moonridge area.	$1,215,861
Total Staff	**6**	**16**		**$1,875,616**
Capital				
FY2017/18	4		Vehicle/Apparatus Replacement	$940,000
FY2018/19	1		Type 3 Engine (Brush Truck)	$375,000
FY 2019/20	1		Moonridge Station	$1,800,000
FY 2022/23	1		Sugarloaf Station	$4,200,000
Total Capital	**7**			**$7,115,000**

* Cost is projected at current pay and highest benefit rates

2. ORGANIZATIONAL OVERVIEW

The information in this chapter was presented as part of the agency profile, which was delivered as an interim deliverable and verified as factual by departmental personnel. The information was derived from various data sources, interviews, and tours of the service area. The profile contains information related to:

- Organization and Staffing
- Department Budget
- Emergency Operations Daily Staffing
- Personnel Costs and Overtime Utilization
- Fire Department Roles and Responsibilities
- Fire Department Workloads and Response Times.

The first section below provides a general overview of the Big Bear Fire Department, including its organization and authorized staffing.

The basis of the evaluation, analysis of data, and reference information comes from California State laws and regulations, the National Fire Protection Association (NFPA), the Center for Public Safety Excellence (CPSE), firefighter health and safety requirements, federal and state mandates, and what are currently considered generally accepted best practices in providing emergency service delivery.

Each section in the report provides general information about the objectives, observations, analysis, and a discussion of any significant issues or conditions that are pertinent. Matrix Consulting Group's observations are supported by data collected as part of reviewing documents and interviews with key department staff. Finally, specific

recommendations are included to address identified issues or to take advantage of opportunities that may exist.

1. BACKGROUND AND OVERVIEW

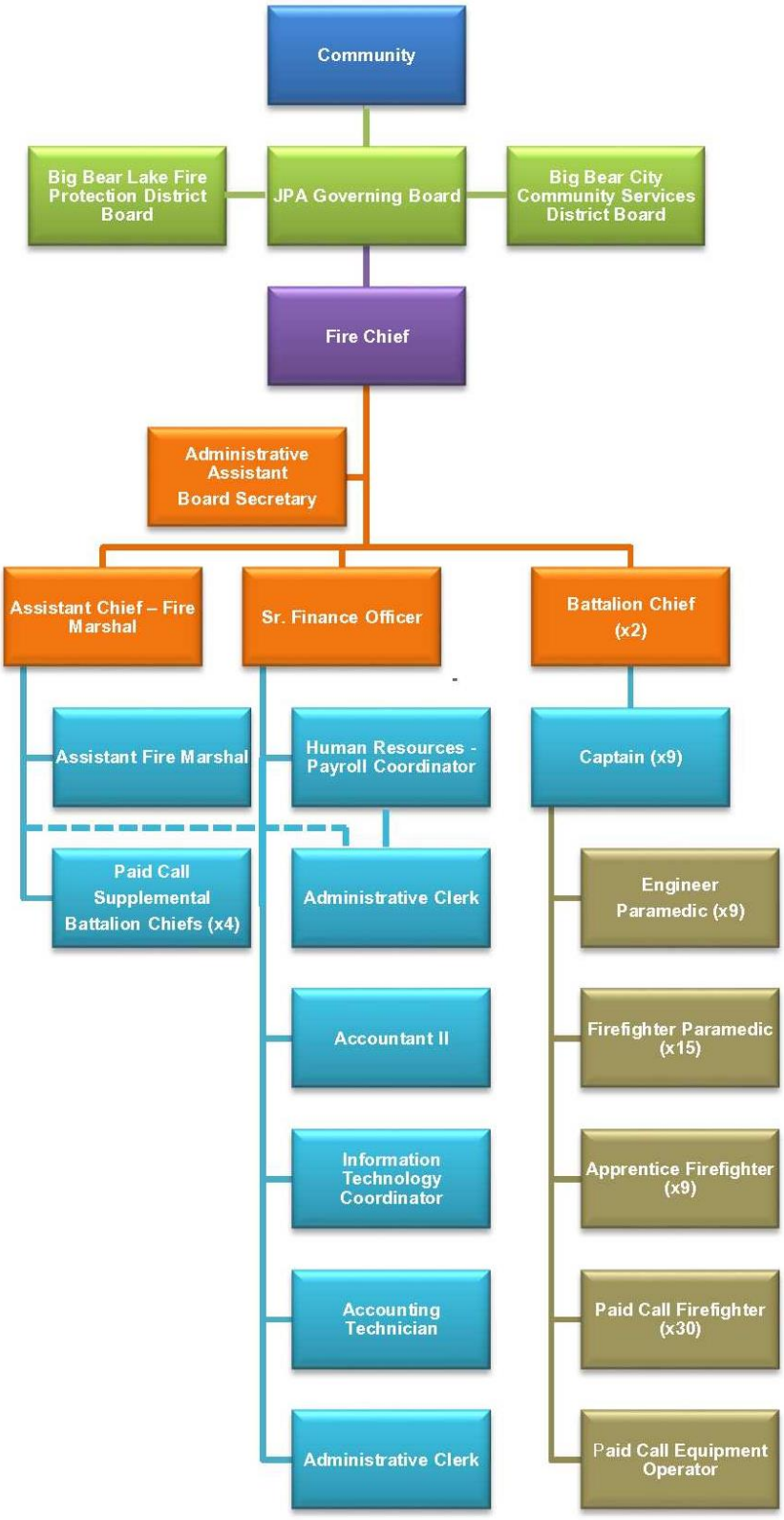
The Big Bear Fire Department is located in San Bernardino County along the shores of Big Bear Lake and surrounded by the San Bernardino National Forest and serves a population of approximately 25,000 permanent residents. The area is a large three season resort destination with populations upwards of 100,000 on the weekends during ski season and holidays. The City of Big Bear Lake is a Charter City and operates under a Council/Manager form of government with a five-member council elected at large. The City Council is also the governing board of the Big Bear Lake Fire Protection District that is a subsidiary district of the City. Big Bear City Community Services District is a California Special District that provides fire protection, water, sanitation, and solid waste services.

The fire protection and emergency medical service system is provided by the Big Bear Fire Department for the City of Big Bear Lake and the Big Bear City Community Services District. Big Bear Fire Department also provides ambulance transport services to the surrounding areas of Big Bear Valley. The department is a combination of a Community Services District and a Fire Protection District with a Joint Powers Agreement to operate both as a single unit. There is a Board of Directors for each district with both boards combining to make up the Board for the JPA operating as the Big Bear Fire Authority.

2. ORGANIZATION AND STAFFING

The Fire Department provides response to fires, medical emergencies, hazardous materials incidents, natural and man-made disasters, mutual aid assistance to neighboring communities and related emergencies in an effort to reduce life and property loss. The Fire Department provides fire prevention activities including inspections and public education activities.

The organization chart on the following page outlines the current organizational structure of the department:


Community
Big Bear Lake Fire Protection District Board
JPA Governing Board
Big Bear City Community Services District Board
Fire Chief
Administrative Assistant
Board Secretary
Assistant Chief – Fire Marshal
Sr. Finance Officer
Battalion Chief (x2)
Assistant Fire Marshal
Human Resources - Payroll Coordinator
Captain (x9)
Paid Call Supplemental Battalion Chiefs (x4)
Administrative Clerk
Engineer Paramedic (x9)
Accountant II
Firefighter Paramedic (x15)
Information Technology Coordinator
Apprentice Firefighter (x9)
Accounting Technician
Paid Call Firefighter (x30)
Administrative Clerk
Paid Call Equipment Operator

3. DEPARTMENT FINANCIAL RESOURCES

The Community Service District has a fund for fire suppression operations and one for ambulance operations. The Fire Protection District has a fund and the Big Bear Fire Authority has a separate fund. The tables below outline each of these funds with the last table combining all four into a single financial table. There are a number of inter-fund transfers over the four-year period included in the tables. As these funds were identified, the amount was taken from the line item and included as a separate line item in order to clearly identify the costs associated with each of the line items in the budget. If there was not a clear description of the funds, it was not re-assigned.

Community Services District - Ambulance Fund

Revenue	2013/14	2014/15	2015/16	2016/17
Property Taxes	$0	$0	$0	$0
Contribution Revenue	$0	$0	$0	$0
Current Service Charges	$1,511,635	$1,958,995	$2,035,096	$2,349,280
Use of Money and Property	$0	$0	$0	$0
Transfer from Fire Authority	$0	$0	$0	$0
Transfer from FPD	$0	$0	$0	$315,403
Transfer from CSD Fire	$0	$0	$0	$315,403
Total Revenue	**$1,511,635**	**$1,958,995**	**$2,035,096**	**$2,980,086**
Expenditures	**2013/14**	**2014/15**	**2015/16**	**2016/17**
Salaries	$733,883	$1,995,938	$657,709	$193,400
Overtime and Other Pay	$0	$0	$154,406	$0
Benefits	$571,372	$1,165,736	$489,881	$139,470
Total Salaries and Benefits	**$1,305,255**	**$3,161,674**	**$1,301,996**	**$332,870**
Supplies	$40,996	$31,735	$46,000	$97,600
Professional Services	$8,498	$0	$0	$137,990
Maintenance	$22,547	$83,560	$0	$75,040
Other Expenditures	$194,747	$91,329	$21,081	$276,766
Share of Fire Authority Cost	$0	$0	$0	$692,700
Share of CSD Fire Cost	$0	$0	$0	$605,100
Share of FPD Cost	$0	$0	$666,019	$762,020
Total Expenditures	**$1,572,043**	**$3,368,298**	**$2,035,096**	**$2,980,086**

During the fiscal years 2013/14 and 2014/15 the ambulance fund appears to not have been adequately funded while the past two years the fund has been balanced.

Community Services District - Fire Fund

Revenue	2013/14	2014/15	2015/16	2016/17
Property Taxes	$3,501,264	$3,768,532	$3,918,490	$4,014,424
Contribution Revenue	$0	$0	$0	$0
Current Service Charges	$350,261	$895,258	$407,997	$100,000
Use of Money and Property	$0	$0	$0	$15,600
Transfer from Fire Authority	$0	$0	$0	$0
Transfer from FPD	$0	$0	$0	$0
Transfer from CSD Amb.	$168,344	$159,789	$0	$209,280
Total Revenue	**$4,019,869**	**$4,823,579**	**$4,326,487**	**$4,339,304**

Expenditures	2013/14	2014/15	2015/16	2016/17
Salaries	$1,605,830	$950,488	$1,250,152	$1,352,460
Overtime and Other Pay	$0	$0	$227,955	$382,360
Benefits	$853,747	$591,067	$1,046,207	$1,264,551
Total Salaries and Benefits	**$2,459,577**	**$1,541,555**	**$2,524,314**	**$2,999,371**
Supplies	$0	$0	$0	$0
Professional Services	$1,835	$4,938	$0	$25,000
Maintenance	$0	$0	$0	$0
Other Expenditures	$1,429,154	$2,501,044	$488,120	$224,251
Share of Fire Authority Cost	$0	$0	$1,185,034	$830,389
Share of CSD Amb. Cost	$0	$0	$0	$315,403
Share of FPD Cost	$0	$0	$129,019	$0
Total Expenditures	**$3,890,566**	**$4,047,537**	**$4,326,487**	**$4,394,414**

Except for the FY 2016/17, the CSD fire fund has been operating at a surplus. Combining the ambulance fund and fire fund for the four-year period, the combined fund is at a deficit of $620,000.

Fire Protection District

Revenue	2013/14	2014/15	2015/16	2016/17
Property Taxes	$4,375,662	$4,223,646	$4,519,808	$4,689,018
Subventions and Grants	$16,642	$13,400	$49,000	$0
Licenses and permits	$19,719	$5,827	$0	$0
Use of Money and Property	$45,220	$51,541	$0	$2,000
Contribution Revenue	$0	$0	$0	$0
Current Services	$202,723	$203,659	$319,000	$105,000
Revenue before transfers	**$4,659,966**	**$4,498,073**	**$4,887,808**	**$4,796,018**
Transfer from Fire Authority	$0	$0	$0	$101,010
Transfer from CSD	$347,248	$209,456	$0	$135,600
Transfer from CSD Fire	$0	$0	$0	$0
Transfer from CSD Amb.	$0	$0	$537,000	$151,520
Inter-fund Transfers	$295,512	$656,243	$551,312	
Total Revenue	**$5,302,726**	**$5,363,772**	**$5,976,120**	**$5,184,148**

Expenditures	2013/14	2014/15	2015/16	2016/17
Salaries	$1,556,604	$1,350,108	$1,244,837	$1,401,609
Overtime and Other Pay	$398,298	$408,568	$1,087,800	$566,078
Benefits	$1,536,595	$1,796,947	$1,411,979	$1,868,618
Total Salaries and Benefits	**$3,491,497**	**$3,555,623**	**$3,744,616**	**$3,836,305**
Supplies	$8,194	$4,361	$0	$0
Professional Services	$15,310	$5,660	$29,675	$71,100
Other Expenditures	$567,120	$541,802	$1,364,360	$120,492
Exps before Transfers	$4,082,121	$4,107,446	$5,138,651	$4,027,897
Share of Fire Authority Cost	$390,190	$679,436	$837,469	$830,388
Share of CSD Fire Cost	$168,344	$159,790	$0	$0
Share of CSD Amb. Cost	$0	$0	$0	$315,403
Inter-fund Transfers	$295,512	$656,243	$0	$0
Total Expenditures	**$4,936,167**	**$5,602,915**	**$5,976,120**	**$5,173,688**

During the past four years the Fire Protection District has a combined surplus of approximately $137,000.

Big Bear Fire Authority

Revenue	2013/14	2014/15	2015/16	2016/17
Contribution Revenue	$0	$0	$0	$3,239,078
Current Service Charges	$11,901	$30,920	$68,200	$27,000
Money and Property	$75,228	$150,906	$2,554,562	$42,540
Transfer from CSD	$419,405	$680,060	$1,086,507	$0
Transfer from CSD Amb.	$0	$0	$136,000	$0
Transfer from FPD	$390,191	$679,960	$1,095,847	$0
Transfer from CSD Fire	$0	$0	$0	$0
Total Revenue	**$896,725**	**$1,541,846**	**$4,941,116**	**$3,308,618**

Expenditures	2013/14	2014/15	2015/16	2016/17
Salaries	$0	$0	$493,045	$954,176
Overtime and Other Pay	$0	$0	$102,200	$125,000
Benefits	$0	$0	$340,782	$462,669
Total Salaries and Benefits	**$0**	**$0**	**$936,027**	**$1,541,845**
Supplies	$126,459	$158,794	$331,040	$196,520
Professional Services	$238,207	$381,003	$1,186,021	$469,090
Maintenance	$215,792	$456,676	$510,775	$469,610
Utilities	$128,172	$141,519	$150,100	$160,110
Other Expenditures	$66,221	$79,885	$409,658	$240,263
Reserves	$0	$0	$1,426,495	$0
Share of Fire Authority Cost	$0	$0	$0	$0
Share of CSD Fire Cost	$0	$0	$0	$130,170
Share of FPD Cost	$0	$0	$0	$101,010
Total Expenditures	**$774,851**	**$1,217,877**	**$4,950,116**	**$3,308,618**

The JPA is fully funded by contributions from the Community Services District and the Fire Protection District. A review of this fund shows a four-year combined surplus of $436,000.

Big Bear Fire Department - All Funds

Revenue	2013/14	2014/15	2015/16	2016/17
Property Taxes	$7,876,926	$7,992,178	$8,438,298	$8,703,442
Contribution Revenue	$0	$0	$0	$3,239,078
Current Service Charges	$2,076,520	$3,088,832	$2,830,293	$2,581,280
Use of Money and Property	$120,448	$202,447	$2,554,562	$60,140
Revenue before Transfers	$10,073,894	$11,283,457	$13,823,153	$14,583,940
Transfer from CSD	$766,653	$889,516	$1,086,507	$135,600
Transfer fr. CSD Ambulance	$168,344	$159,789	$673,000	$360,800
Transfer fr. Fire Prot. District	$390,191	$679,960	$1,095,847	$315,403
Transfer from CSD Fire	$0	$0	$0	$315,403
Transfer from BBFA	$0	$0	$0	$101,010
Total Revenue	**$11,399,082**	**$13,012,722**	**$16,678,507**	**$15,812,156**

Expenditures	2013/14	2014/15	2015/16	2016/17
Salaries	$3,896,317	$4,296,534	$3,645,743	$3,901,645
Overtime and Other Pay	$398,298	$408,568	$1,572,361	$1,073,438
Benefits	$2,961,714	$3,553,750	$3,288,849	$3,735,308
Total Salaries and Benefits	**$7,256,329**	**$8,258,852**	**$8,506,953**	**$8,710,391**
Supplies	$175,649	$194,890	$377,040	$294,120
Professional Services	$263,850	$391,601	$1,215,696	$703,180
Maintenance	$238,339	$540,236	$510,775	$544,650
Utilities	$128,172	$141,519	$150,100	$160,110
Other Expenditures	$2,257,242	$3,214,060	$2,283,219	$861,772
Reserves	$0	$0	$1,426,495	$0
Exps before Transfers	**$10,319,581**	**$12,741,158**	**$14,470,278**	**$11,274,223**
Share of Fire Authority Cost	$390,190	$679,436	$2,022,503	$2,353,477
Share of CSD Fire Cost	$168,344	$159,790	$0	$735,270
Share of FPD Cost	$0	$0	$795,038	$863,030
Share of CSD Amb Cost	$0	$0	$0	$630,806
Total Expenditures	**$10,878,115**	**$13,580,384**	**$17,287,819**	**$15,856,806**

The table above illustrates all four funds combined for a single financial overview. The identifiable transfers between funds are shown separately in the bottom sections of the revenues and expenditures. This combined table illustrates a four-year combined deficit of approximately $700,000.

4. EMERGENCY OPERATIONS AND DAILY STAFFING

The chart below outlines the fire station locations, apparatus and minimum staffing for each station.

Staffing and Facilities

Station No.	Address	Staffing	Apparatus
281	41090 Big Bear Blvd Big Bear Lake	 3 2	ME 281 T 281 MA 281 WT 281 BE 281 BP 281 MA 281A
282	301 W. Big Bear Blvd. Big Bear City	2 2 2	ME 282 MA 282 MA-282A WT 282 BE 282 S 282 R 282 MA 282B
283	550 North Maple Lane Sugarloaf	2 Cross Staff	ME 283 MA 283
284	45360 Lucky Baldwin Ranch Road Big Bear City		WT 284 BP 284 MA 284
Boulder Bay	39690 Big Bear Blvd. Big Bear Lake		IS 281
Moonridge	42610 Rathbun Drive Moonridge		E-281A

As shown above, the minimum staffing is 13 per shift with a Battalion Chief providing command and control. The Boulder Bay and Moonridge stations are shown but only

house reserve and support apparatus.

5. FIRE DEPARTMENT ROLES AND RESPONSIBILITIES

The following table illustrates the basic roles and responsibilities of the personnel of the Big Bear Fire Department:

Roles and Responsibilities

Position / Classification	Positions	Key Roles and Responsibilities
Administration		
Fire Chief	1	Provides the executive management of the Fire Department, including the development of policies and procedures, providing leadership for future services, budget development, identifying service gaps, working with the elected officials to ensure that the BBFD interests are considered. Supervises the Assistant Chief, Battalion Chiefs and Senior Finance Officer.
Senior Finance Officer	1	Manages the finance, human resource and payroll functions for the department. Prepares the budget and related budget documents. Reports to the Fire Chief.
Administrative Assistant	1	Supports Board and prepares documents for Board packets Manages the front office support staff Manages the Department web page and social media Provides administrative support to the Fire Chief. Acts as the Public Information Officer Reports to the Fire Chief
Human Resources - Payroll Coordinator	1	Manages the benefit programs for the department. Manages the payroll system and processing for the department. Reports to the Senior Finance Officer.
Information Technology Coordinator	1	Manages the computer and networks systems for the department. Provides computer and network system support to various individuals within the department. Reports to Senior Finance Officer

Accountant II	1	Oversees all general accounting and payroll functions for the Department. Reports to the Senior Finance Officer
Accounting Technician	1	Manages the accounts receivable program, invoice processing and department uniforms. Reports to the Senior Finance Officer.
Administrative Clerk	1	Provides general office support to the finance division. Provides administrative support to the Assistant Chief and/or Battalion Chiefs Answers Inquiries related to Department services, programs and operations. Reports to the Senior Finance Officer.
2nd Administrative Clerk	1	Works on grant funded programs Provides administrative support to the Assistant Chief and/or Battalion Chiefs. Assists with Human Resource functions. Answers inquiries related to Department services, programs and operations Reports to the Human Resources/Payroll Coordinator.
Fire Prevention		
Assistant Chief / Fire Marshal	1	Manages the administrative sections of the departments including but not limited to ambulance billing, apparatus maintenance, facility maintenance, safety compliance and personal protective equipment. Manages the fire prevention and risk reduction programs. These include fire safety inspections, plan reviews and hazard abatement programs. Manages the fire investigation program. Reports to the Fire Chief Supervises the Assistant Fire Marshal and Coordinates with shift Battalion Chiefs.
Assistant Fire Marshal	1	Inspects residential and commercial buildings for compliance with the appropriate codes and standards in force. Inspects new construction and related fire protection systems. Assists with the hazard abatement program, safety compliance and hydrant maintenance programs as directed. Reports to the Assistant Chief/Fire Marshal

Operations		
Battalion Chief	2	Manages the daily operations of the Fire Department. Oversees various programs such as training, SCBA maintenance, hose and pump testing, EMS programming, and communications. Reports to the Fire Chief Supervises the Captains.
Paid On-Call Battalion Chief	4	Supports the management/operations of major incidents locally and at the State and National level. Support non-emergency work such as fuel management, training, fire prevention and fire investigations. Reports to the Assistant Chief.
Fire Captain	9	Responds to calls as a part of the response force. Assists with various programs as directed by the Battalion Chiefs. Reports to the Battalion Chief. Supervises the Engineers, Firefighters, and EMS Personnel.
Engineer/Paramedic	9	Operates apparatus and emergency vehicles responding to structure fires, wildland fires, emergency medical incidents and other types of calls for the department Maintains the fire stations, emergency vehicles and related equipment. May perform small or routine repairs of fire stations, apparatus and related systems and equipment. Assists with various programs as directed by the Captains and Battalion Chiefs. Reports to the Captain.
Firefighter/Paramedic	15	Respond to emergency calls as part of a response force. May drive or operate fire apparatus as a part of a response force Perform firefighting function such as rescue, ventilation, entry, salvage works, overhaul and clean-up work. May perform life-saving activities. Reports to the Captain
Apprentice Firefighter	9	Respond to emergency calls as part of a response force. Perform firefighting function such as rescue, ventilation, entry salvage works, overhaul and clean-up work. May perform life-saving activities Reports to the Captain.

Paid On-Call Firefighter	30 Authorized 11 Current	Respond to emergency calls as part of a response force. Perform firefighting functions such as rescue, ventilation, entry Salvage work, overhaul and clean-up work. May perform life-saving activities Reports to the Captain
Paid On-Call Equipment Operator	1	Operates apparatus and emergency vehicles responding to structure fires, wildland fires, emergency medical incidents and other types of calls for the department Maintains the fire stations, emergency vehicles and related equipment. May perform small or routine repairs of fire stations, apparatus and related systems and equipment.

6. FIRE DEPARTMENT WORKLOADS AND RESPONSE TIMES

The project team collected extensive data from the department and the records management system. The charts and tables on the pages that follow summarize the workloads for the department as well as for the two communities. Data from 2014 through 2016 was analyzed to provide the snapshot of the workloads. It should be noted that any data that appeared corrupt or was incomplete was removed from consideration so as to not skew the analysis. The chart below outlines the types of calls for service for the Fire Department with a further breakdown for the City of Big Bear Lake and the Big Bear City Community Services District.

Incidents by Type – All Incidents

Incident Type	2014	2015	2016	% Change
Auto Accidents	178	207	237	**33.2%**
Fire Alarm Activations	327	327	394	**20.5%**
Emergency Medical	2,401	2,553	2,543	**5.9%**
Mutual Aid Calls	10	7	14	**40.0%**
Investigations	246	259	326	**32.5%**
Other Fire Calls	115	156	265	**130.4%**
Vehicle Fires	14	10	7	**-50.0%**
Public Assist	109	92	126	**15.6%**
Structural Fires	44	54	62	**40.9%**
Wildland/Vegetation	31	32	35	**12.9%**
Total	**3,475**	**3,697**	**4,009**	**15.4%**

* These figures include out of area responses not included in the City of Big Bear Lake or Big Bear City

The change in call volume from 2014 to 2016 reflects a 15.4% increase. EMS incidents make up the largest call type, accounting for 63.4% of calls.

The chart below reflects the calls for service for the City of Big Bear Lake. The calls for this chart are only those calls that occurred within the City jurisdiction.

Incidents by Type – City of Big Bear Lake

Incident Type	2014	2015	2016	% Change
Auto Accidents	66	81	88	**33.3%**
Fire Alarm Activations	215	224	259	**20.5%**
Emergency Medical	1,268	1,331	1,348	**6.3%**
Mutual Aid Calls	0	0	2	**0.0%**
Investigations	143	136	142	**-0.7%**
Other Fire Calls	52	64	148	**184.6%**
Vehicle Fires	7	3	2	**-71.4%**
Public Assist	28	44	26	**-7.1%**
Structural Fires	20	20	27	**35.0%**
Wildland/Vegetation	7	8	13	**85.7%**
Total	**1,806**	**1,911**	**2,055**	**13.8%**

As shown above, the call volume in the City of Big Bear Lake has increased approximately 14% over the three-year period, which is approximately 2% less increase than the Fire Authority service area overall.

The chart below reflects the calls for service for the Big Bear City Community Service District. Only the calls that occurred within the jurisdiction of the district are shown.

Incidents by Type – Big Bear Community Services District

Incident Type	2014	2015	2016	% Change
Auto Accidents	105	122	140	**33.3%**
Fire Alarm Activations	112	103	134	**19.6%**
Emergency Medical	1,117	1,213	1,187	**6.3%**
Mutual Aid Calls	3	2	2	**-33.3%**
Investigations	103	123	168	**63.1%**
Other Fire Calls	61	88	168	**63.1%**
Vehicle Fires	6	6	2	**-66.7%**
Public Assist	81	47	100	**23.5%**
Structural Fires	23	31	27	**17.4%**
Wildland/Vegetation	21	20	17	**-19.1%**
Total	**1,632**	**1,755**	**1,945**	**19.2%**

The data for the three-year period reflects an increase of 19% in call volume from 2014 – 2016. This is an increase of approximately 5% more than the Big Bear Fire Authority service area overall.

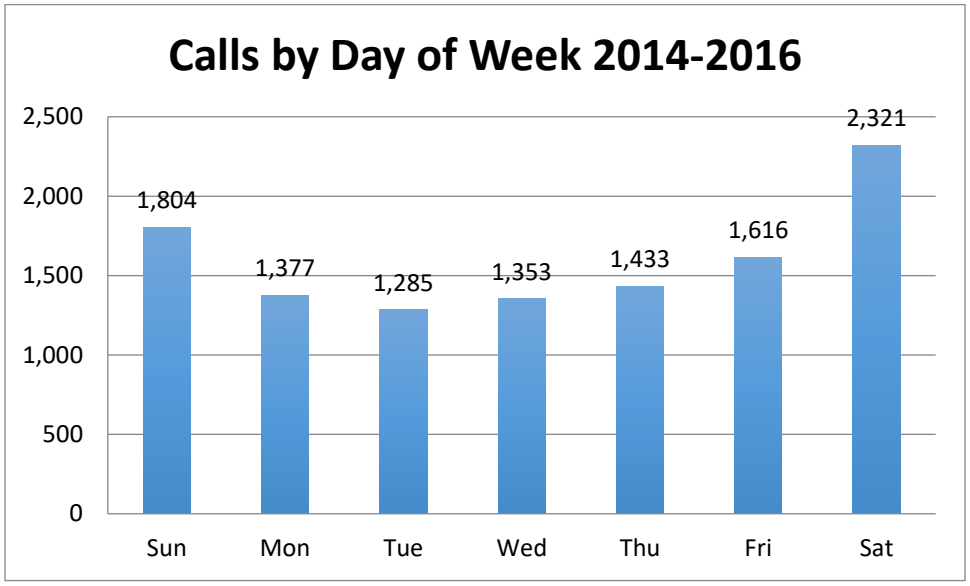
The Department also provides inter-facility transfer services for patients that require medical care beyond the scope of the local hospital where the patient is transported to a more appropriate medical facility off the mountain. In 2015 and 2016 there were a total of 985 such transfers. It is estimated that each of these transfers takes 4-5 hours of staff time for two EMS personnel.

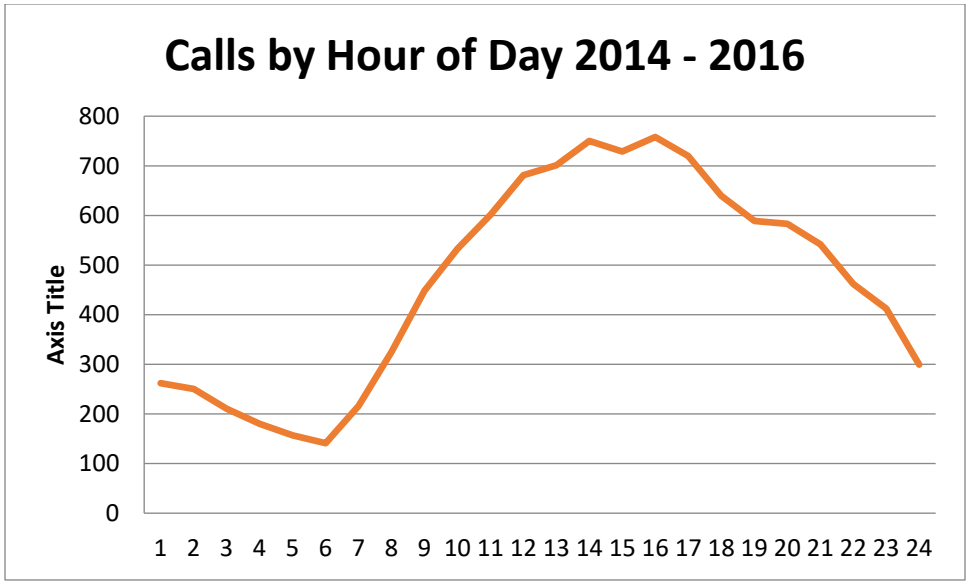
The table below shows the workloads by time of day and day of the week. The data included is from 2014 through 2016.

Calls by Time of Day and Day of Week 2014-2016

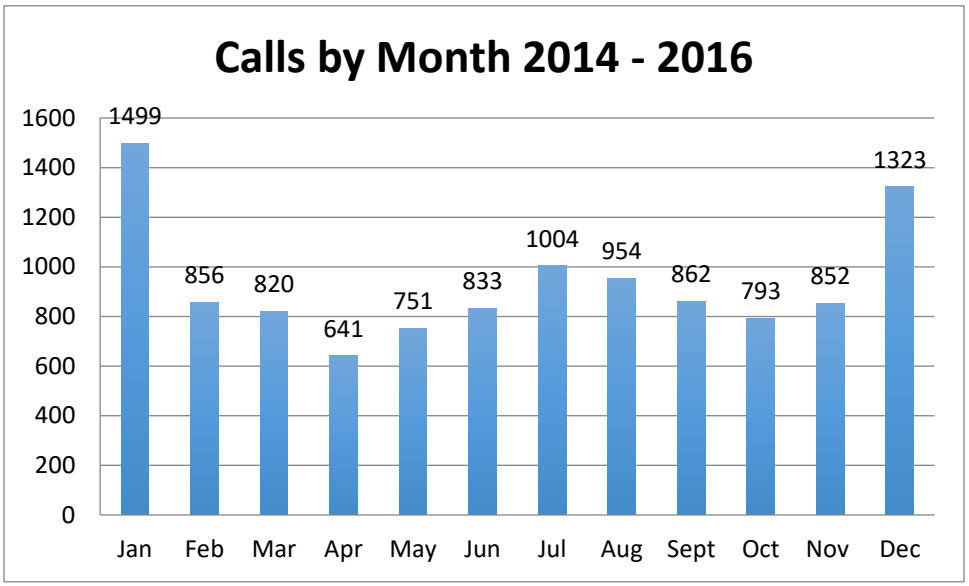
Day/Time	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Total	%
0000	58	26	31	26	33	34	54	**262**	**2.3%**
0100	65	37	23	20	31	21	53	**250**	**2.2%**
0200	51	15	23	34	27	21	39	**210**	**1.9%**
0300	25	28	23	23	24	14	43	**180**	**1.6%**
0400	32	19	20	22	17	13	34	**157**	**1.4%**
0500	17	23	17	15	26	19	24	**141**	**1.3%**
0600	36	29	28	33	28	31	31	**216**	**1.9%**
0700	52	47	47	49	39	42	49	**325**	**2.9%**
0800	62	59	59	62	65	58	83	**448**	**4.0%**
0900	78	71	62	67	85	74	96	**533**	**4.8%**
1000	98	89	72	90	67	77	108	**601**	**5.4%**
1100	122	71	65	76	85	119	143	**681**	**6.1%**
1200	120	94	88	86	78	90	145	**701**	**6.3%**
1300	124	93	75	81	101	108	168	**750**	**6.7%**
1400	126	88	81	112	86	98	138	**729**	**6.5%**
1500	116	90	87	99	88	117	161	**758**	**6.8%**
1600	112	94	72	103	85	103	151	**720**	**6.4%**
1700	90	90	75	56	92	98	139	**640**	**5.7%**
1800	85	69	73	63	99	85	115	**589**	**5.3%**
1900	98	56	75	62	74	74	144	**583**	**5.2%**
2000	82	69	61	48	74	79	129	**542**	**4.8%**
2100	61	49	52	50	50	99	101	**462**	**4.1%**
2200	55	39	50	44	39	90	95	**412**	**3.7%**
2300	39	32	26	32	40	52	78	**299**	**2.7%**
Total	**1,804**	**1,377**	**1,285**	**1,353**	**1,433**	**1,616**	**2,321**	**11,189**	**100%**
%	**16.1%**	**12.3%**	**11.5%**	**12.1%**	**12.8%**	**14.4%**	**20.7%**	**100%**	

As shown above, the busiest day of the week is Saturday with the busiest time of day between 1:00 pm and 5:00 pm. To further illustrate the data, the following charts present the data separately.





The next chart illustrates the calls by month of the year to show the seasonal variations in call volume due to ski season and summer activities in the Big Bear Recreational areas.



As shown in the previous chart, the two busiest months are December and January, which account for approximately 26% of the annual call volume for the Big Bear Fire Department.

The following tables presents the system performance in terms of response time to the calls for service both overall and by individual units. These times do not include interfacility transfers and those time components are not captured in the Computer Aided Dispatch (CAD) system. The first set of tables show the system performance for all types form 2014 – 2016.

System Performance - All Calls 2014				
	Call Processing	**Turnout**	**Travel**	**Total**
Average	2:01	1:43	6:28	10:02
90th Percentile	3:45	2:58	11:29	16:00

System Performance - All Calls 2015				
	Call Processing	**Turnout**	**Travel**	**Total**
Average	2:10	1:33	6:34	10:04
90th Percentile	3:53	2:50	12:01	16:30

System Performance – All Calls 2016				
	Call Processing	**Turnout**	**Travel**	**Total**
Average	2:23	1:41	6:53	10:38
90th Percentile	4:26	3:05	13:17	17:57

The next tables illustrate the individual unit and overall performance for the response system in fractional increments to illustrate how often the Big Bear Fire Department is meeting response time objectives and examined high priority EMS and Fire calls all only (Priority 1 and Priority 2) and not non-life-threatening calls such as alarm or public assistance calls using a 90 second turnout time standard and 6 minute 30 second travel time standard. Call processing time is only illustrated in the overall table for each year as it is not part of the unit performance.

Big Bear – 2014 Overall High Priority Call Performance

2014	Call Processing	Turnout Time	Travel Time
90%	3:20	2:58	11:36
80%	2:16	2:23	8:33
70%	1:47	2:04	7:01
60%	1:31	1:48	5:55
Benchmark Met	59.6%	47.5%	65.8%

Medic 281 – 2014

2014	Turnout Time	Travel Time
90%	2:32	10:32
80%	2:08	7:08
70%	1:46	5:59
60%	1:32	5:05
Benchmark Met	58.8%	75.0%

Medic 282 - 2014

2014	Turnout Time	Travel Time
90%	2:52	11:49
80%	2:06	8:26
70%	1:44	7:15
60%	1:27	6:03
Benchmark Met	61.4%	64.2%

Medic 283 -2014

2014	Turnout Time	Travel Time
90%	3:07	14:11
80%	2:35	9:16
70%	2:17	6:43
60%	2:01	5:31
Benchmark Met	34.8%	68.4%

Engine 281 – 2014 Medical Calls

2014	Turnout Time	Travel Time
90%	2:36	7:51
80%	2:13	6:38
70%	1:58	5:40
60%	1:49	4:55
Benchmark Met	42.9%	78.5%

Engine 282 - 2014 Medical Calls

2014	Turnout Time	Travel Time
90%	2:40	8:15
80%	2:18	6:58
70%	2:04	6:14
60%	1:50	5:30
Benchmark Met	43.1%	73.3%

Engine 283 – 2014 Medical Calls

2014	Turnout Time	Travel Time
90%	3:19	7:09
80%	3:08	5:56
70%	2:32	4:36
60%	2:23	4:13
Benchmark Met	27.1%	84.7%

Truck 281 – 2014 Medical Calls

2014	Turnout Time	Travel Time
90%	2:32	7:56
80%	2:12	6:32
70%	1:52	5:49
60%	1:34	5:12
Benchmark Met	56.4%	79.3%

Engine 281 – 2014 Fire Calls

2014	Turnout Time	Travel Time
90%	3:02	8:54
80%	2:36	6:57
70%	2:35	6:15
60%	2:33	5:36
Benchmark Met	25.0%	66.7%

Engine 282 – 2014 Fire Calls

2014	Turnout Time	Travel Time
90%	3:43	19:59
80%	3:18	10:02
70%	2:56	7:46
60%	2:40	7:00
Benchmark Met	16.7%	50.0%

Engine 283 – 2014 Fire Calls

2014	Turnout Time	Travel Time
90%	2:38	3:55
80%	1:34	3:21
70%	0:54	1:13
60%	0:25	0:14
Benchmark Met	75.0%	100.0%

Truck 281 - 2014 Fire Calls

2014	Turnout Time	Travel Time
90%	2:52	10:00
80%	2:36	7:51
70%	2:30	6:54
60%	2:14	5:45
Benchmark Met	34.9%	67.4%

Big Bear – 2015 Overall High Priority Call Performance

2015	Call Processing	Turnout Time	Travel Time
90%	3:33	2:45	12:03
80%	2:33	2:12	8:37
70%	2:01	1:51	6:57
60%	1:39	1:34	5:56
Benchmark Met	53.8%	58.1%	66.3%

Medic 281 - 2015

2015	Turnout Time	Travel Time
90%	2:30	11:47
80%	2:00	7:40
70%	1:40	5:51
60%	1:21	5:02
Benchmark Met	64.9%	74.7%

Medic 282 - 2015

2015	Turnout Time	Travel Time
90%	2:37	12:49
80%	2:02	8:23
70%	1:36	6:57
60%	1:17	6:04
Benchmark Met	67.7%	65.7%

Medic 283 - 2015

2015	Turnout Time	Travel Time
90%	5:35	11:37
80%	2:36	7:38
70%	1:35	6:17
60%	1:08	5:29
Benchmark Met	66.7%	75.0%

Engine 281 – 2015 Medical Calls

2015	Turnout Time	Travel Time
90%	2:37	8:05
80%	2:15	6:47
70%	2:01	6:08
60%	1:50	5:20
Benchmark Met	45.2%	75.5%

Engine 282 – 2015 Medical Calls

2015	Turnout Time	Travel Time
90%	2:49	9:08
80%	2:23	7:00
70%	2:07	5:31
60%	1:53	4:29
Benchmark Met	40.7%	77.0%

Engine 283 - 2015Medical Calls

2015	Turnout Time	Travel Time
90%	3:02	8:49
80%	2:31	6:15
70%	2:09	5:04
60%	1:54	4:31
Benchmark Met	40.5%	81.3%

Truck 281 – 2015 Medical Calls

2015	Turnout Time	Travel Time
90%	2:30	7:57
80%	2:08	6:31
70%	1:51	5:41
60%	1:39	4:59
Benchmark Met	50.4%	79.6%

Engine 281 – 2015 Fire Calls

2015	Turnout Time	Travel Time
90%	30:30	13:19
80%	2:22	8:04
70%	2:19	8:02
60%	2:06	6:01
Benchmark Met	33.3%	66.7%

Engine 282 – 2015 Fire Calls

2015	Turnout Time	Travel Time
90%	2:57	13:42
80%	2:46	12:07
70%	2:34	8:15
60%	2:25	7:20
Benchmark Met	28.9%	52.6%

Engine 283 - 2015 Fire Calls

2015	Turnout Time	Travel Time
90%	3:37	15:21
80%	3:27	12:19
70%	2:30	7:12
60%	2:17	6:02
Benchmark Met	25.0%	61.3%

Truck 281 - Fire Calls

2015	Turnout Time	Travel Time
90%	3:03	9:37
80%	2:41	8:49
70%	2:32	8:01
60%	2:27	6:56
Benchmark Met	27.2%	48.4%

Big Bear 2016 Overall High Priority Call Performance

2016	Call Processing	Turnout Time	Travel Time
90%	4:02	3:03	12:55
80%	2:34	2:23	8:45
70%	1:55	1:55	6:58
60%	1:34	1:35	5:51
Benchmark Met	57.9%	57.2%	66.6%

Medic 281- 2016

2016	Turnout Time	Travel Time
90%	3:04	11:58
80%	2:24	8:04
70%	1:55	6:04
60%	1:38	5:18
Benchmark Met	55.3%	73.9%

Medic 282 - 2016

2016	Turnout Time	Travel Time
90%	2:54	13:29
80%	2:12	9:13
70%	1:48	7:16
60%	1:26	6:12
Benchmark Met	62.3%	62.7%

Medic 283 - 2016

2016	Turnout Time	Travel Time
90%	3:48	20:42
80%	3:36	14:24
70%	1:45	13:22
60%	1:21	11:13
Benchmark Met	61.5%	58.3%

Engine 281 – 2016 Medical Calls

2016	Turnout Time	Travel Time
90%	2:43	8:20
80%	2:14	7:03
70%	1:51	6:10
60%	1:43	5:28
Benchmark Met	49.8%	72.5%

Engine 282 – 2016 Medical Calls

2016	Turnout Time	Travel Time
90%	2:47	9:43
80%	2:23	7:21
70%	2:10	6:14
60%	1:53	5:02
Benchmark Met	40.8%	72.4%

Engine 283 – 2016 Medical Calls

2016	Turnout Time	Travel Time
90%	2:57	10:08
80%	2:34	6:44
70%	2:12	5:29
60%	1:53	4:47
Benchmark Met	43.2%	78.1%

Truck 281 – 2016 Medical Calls

2016	Turnout Time	Travel Time
90%	2:42	8:01
80%	2:18	6:38
70%	2:03	5:49
60%	1:49	5:13
Benchmark Met	44.4%	77.4%

Engine 281 – 2016 Fire Calls

2016	Turnout Time	Travel Time
90%	3:06	9:36
80%	2:38	7:02
70%	2:31	6:20
60%	2:28	5:25
Benchmark Met	36.3%	72.7%

Engine 282 – 2016 Fire Calls

2016	Turnout Time	Travel Time
90%	3:03	11:51
80%	2:48	9:21
70%	2:44	8:23
60%	2:32	5:51
Benchmark Met	25.0%	66.7%

Engine 283 - 2016 Fire Calls

2016	Turnout Time	Travel Time
90%	3:44	12:07
80%	2:50	8:49
70%	2:17	7:11
60%	2:08	5:37
Benchmark Met	24.2%	63.6%

Truck 281 - Fire Calls

2016	Turnout Time	Travel Time
90%	3:11	12:02
80%	2:45	9:44
70%	2:28	8:02
60%	2:12	6:33
Benchmark Met	38.4%	58.9%

As shown above, there has been limited system performance improvement since 2014, with the most significant improvement in turnout time performance, which improved nearly 10% when only examining high priority calls. When all call types, including low priority calls, were examined there was a decrease in performance each year.

Concurrence and reliability are two additional measures that have an effect on system performance. The charts below illustrate the amount of time there are simultaneous calls and the amount of time units are committed to responses.

Simultaneous Calls for Service

	2014	2015	2016
Number of Instances	773	903	937
Pct. Of Total Calls	22.2%	24.4%	25.4%

Reliability

	2014	2015	2016
Committed Hours	2,565	2,688	2,884
Pct. Unavailable	29.3%	30.7%	32.9%

It is important to note the frequency of simultaneous calls is high for the agency as is the percentage of time a unit is unavailable for response.

3. CURRENT DEPLOYMENT STRATEGIES AND PERFORMANCE

In order for a fire department to successfully mitigate emergency situations, it must maintain an adequate, well-trained staff of emergency service personnel to utilize apparatus and equipment effectively and efficiently. When there are too few emergency personnel at a scene the response effectiveness is reduced and the risk of injury to those responding increases.

1. CRITICAL TASKS REQUIRED AT FIREGROUND SCENES.

There are a number of tasks that must occur simultaneously to adequately combat different types of fires. The absence of adequate personnel to perform these tasks requires each task to be prioritized and completed in chronological order. These fire ground tasks include command, scene safety, search and rescue, water supply, fire attack, pump operations, ventilation, back up, and rapid intervention.

An initial full alarm assignment should be able to provide personnel to accomplish the following tasks:

- Establish incident command outside of the hazard area. This will allow coordination and direction of the incoming emergency response personnel and apparatus. A minimum of one person should be dedicated to this task.

- Establish an uninterrupted water supply of at least 400 gallons per minute for 30 minutes. Once established the supply line can be maintained by the pump operator to ensure uninterrupted water supply. A minimum of one person is assigned to this task that can then assume support role.

- Establish an effective water flow rate of 300 gallons per minute. This will be supplied to a minimum of two hand lines each operating at a minimum flow of 100 gallons per minute. Each hand line must have two individuals assigned with one serving as the attack line and the other as a back-up line.

- Provision of one support person to handle the hydrant hookup, utility control, forcible entry, and assist in deploying fire hose lines.

- Establish a search and rescue team. Each team will consist of a minimum of two personnel.
- Establish a ventilation team. Each team will consist of a minimum of two personnel.
- Establish an initial rapid intervention team (RIT). Each RIT team shall consist of a minimum of two properly trained and equipped personnel.

Critical tasking will vary depending on the size and nature of the incident. The Commission on Fire Accreditation International (CFAI) provides a sample critical tasking analysis for the number of emergency workers required for the various levels of risk [(6)]. The CFAI analysis is summarized in the table below showing the minimum required personnel to mitigate the initial emergency response requirements by occupancy risk:

Critical Task	Maximum Risk	High Risk	Moderate Risk	Low Risk
Attack Line	4	4	4	2
Search and Rescue	4	2	2	0
Ventilation	4	2	2	0
Backup Line	2	2	2	2
Rapid Intervention	2	2	0	0
Pump Operator	1	1	1	1
Water Supply	1*	1*	1*	1*
Support (Utilities)	1*	1*	1*	1*
Command	1	1	1	1
Safety Officer	1	1	1	1
Salvage/Overhaul	2	0	0**	0
Command Aid	1	1	0	0
Operations Chief	1	1	0	0
Logistics	1	0	0	0
Planning	1	0	0	0
Staging Officer	1	1	0	0
Rehabilitation	1	1	0	0
Division Supervisors	2	1	0	0
High-rise Evacuation	10	0	0	0
Stairwell Support	10	0	0	0
Total Personnel	**50-51**	**21-22**	**14-15**	**8-9**

*Tasks can be performed by the same individual **Task can be performed by the attack crew

It is essential for the fire department to have a response plan in place to be able to deliver a sufficient number of personnel to the scene to accomplish the critical tasks.

Structure fires are the most labor-intensive incidents and depending on weather conditions can require additional personnel to maintain an effective operation. The majority of risks in the service area protected by the Big Bear Fire Department will fall into the moderate category as this risk category describes a typical single-family home and small commercial occupancies. As the size of structure, complexity of the incident, or life safety risks increase, so does the risk category. For this reason, high occupancy and unprotected structures fall into the high-risk category. This includes hotels, assemblies, schools, and buildings in the downtown area of Big Bear Lake.

At current daily staffing levels, BBFD has a minimum staffing level of 13 personnel available for immediate response to all emergencies. Two of the three shifts also have a Battalion Chief assigned that responds to critical calls to provide command and control at incident scenes. As shown above this is equal to the minimum staffing required to deploy an effective response force for the typical risk found in the service area of the Big Bear Fire Department, but not the more complex risks in the service area. It is not fiscally possible or responsible to staff for the worst-case scenarios, which is why the Big Bear Fire Department, like most communities, has mutual aid agreements in place with surrounding jurisdictions. The Big Bear Fire Department also utilizes paid call firefighters to boost staffing during critical incidents and ensure an effective response force can be deployed.

CAL FIRE staffs the Baldwin Lake fire station and is available to provide immediate aid to the Big Bear Fire Department as needed. Also, the San Bernardino County Fire Department has resources to respond to assist on larger incidents in the service area. This is important since Big Bear Fire Department conducts inter facility transfers from the

local hospital to San Bernardino which takes two personnel out of service for several hours and will leave 11 personnel in the area for emergency response, which make the availability of immediate aid important in the event of a structure fire.

There are two methods by which resources are typically shared by municipalities, mutual aid and automatic aid. Mutual aid is a traditional agreement where assistance is requested from surrounding jurisdictions when the size and scope of an incident or series of incidents exceeds the resources of the responsible agency. In an automatic aid agreement resources are shared by sending the closest available unit to emergency incidents regardless of jurisdictional boundaries. This ensures the timely arrival of emergency response personnel.

In order to receive credit under ISO requirements, an agency must have a written automatic aid agreement, which:

- Includes a prearranged first-alarm response according to a definite plan.
- Aid is provided 24 hours per day, 365 days a year.
- Offsets a need in the community. For example, a neighboring agency's ladder company responding by an automatic aid agreement can meet the ladder requirement if it is able to cover at least 50 percent of the ladder company standard.

The Big Bear Fire Department currently has an ISO 3 classification and operates with a "mutual" aid agreement with the San Bernardino County Fire Department. The current agreement, which was approved in 2000, remains in effect unless terminated.

Recommendation: Establish an automatic first alarm response plan with neighboring mutual aid partners for any reported working fire to obtain ISO credit for Automatic Aid.

2. EFFORTS TO "STANDARDIZE" SERVICE LEVEL OBJECTIVES ARE BASED ON FIRE GROWTH BEHAVIOR AND RESEARCH ON CARDIAC ARREST.

This section provides a summary of the various "standards" that have been developed for the evaluation of fire and rescue staffing and deployment. These represent a range of thinking including efforts to scientifically identify critical points in the combat of structure fires as well as the need to intervene in medical emergencies. While these neither cover every situation nor special needs specific to a community, they serve as an important starting point for conducting such an analysis.

(1) Importance of Time and Personnel Related to Fire Emergency Response.

The dynamics of fire growth is directly related to various configurations of fire station locations, built-in fire protection, and company staffing patterns. The fire suppression tasks required at a typical fire scene vary widely depending upon risk level. In order to save lives and limit property damage, fire companies must arrive at the right time with adequate resources to do the job. One of the greatest challenges facing fire service managers is to match the arrival of resources with a specific point of fire growth.

The answer for controlling variations in fire dynamics lies in finding a common reference point - one that is common to all fires regardless of the risk level of the structure, the contents of the structure, or the time the fire has burned. This reference point is called flashover.

All fires go through the same stages of growth regardless of speed or length of burn time. The flashover stage is very significant, because it marks a critical change in conditions. It is desirable to have fire companies on scene with hose-lines deployed before flashover occurs.

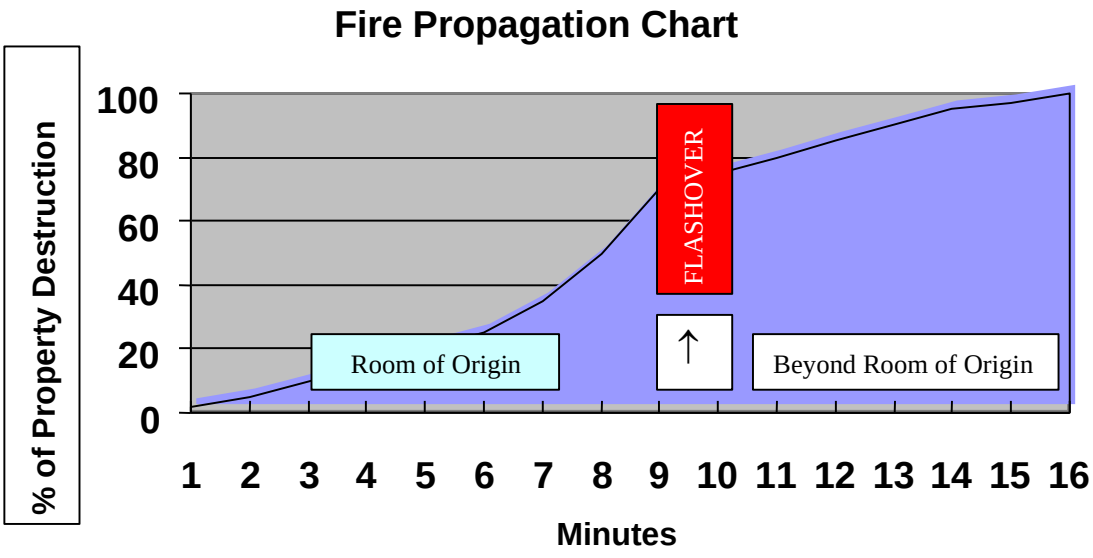
When flashover occurs, everything in the room instantaneously erupts into flame. This eruption generates a tremendous amount of heat, smoke, and pressure resulting in

enough force to extend the fire beyond the room of origin through doors and windows or breaches in walls. The combustion process then speeds up because it has an even greater amount of heat to transfer to unburned objects through convection, radiation, and conduction.

Flashover is a critical stage of fire growth for two reasons. First, the chance of saving lives drops dramatically because no living thing in the room of origin will survive. Second, flashover creates a quantum jump in the rate of combustion, and a significantly greater amount of water and resources are needed to reduce the burning material to below its ignition temperature. Once a fire has reached flashover, it is too late to save anyone in the room of origin, and a greater amount of resources (equipment and personnel) are required to handle the larger hose streams needed to extinguish the fire.

A post flashover fire will burn hotter and move significantly faster. This compounds search and rescue problems in the remainder of the structure and at the same time requires more firefighters for fire attack and extinguishment.

Flashover normally occurs from four to ten minutes after free burning begins. The time to flashover is a function of time and temperature. Fire growth occurs exponentially, doubling itself every minute of free burning that is allowed. Consequently, given the progression of a structure fire to the point of flashover, two of the most important elements in limiting fire spread are the quick arrival of sufficient numbers of personnel and equipment to attack and extinguish the fire as close to the point of origin as possible. This is why it is critical to have rapid response to fires and arrive on scene before flashover occurs, which has led to the 5-minute travel time standard in NFPA 1710 for career fire departments.



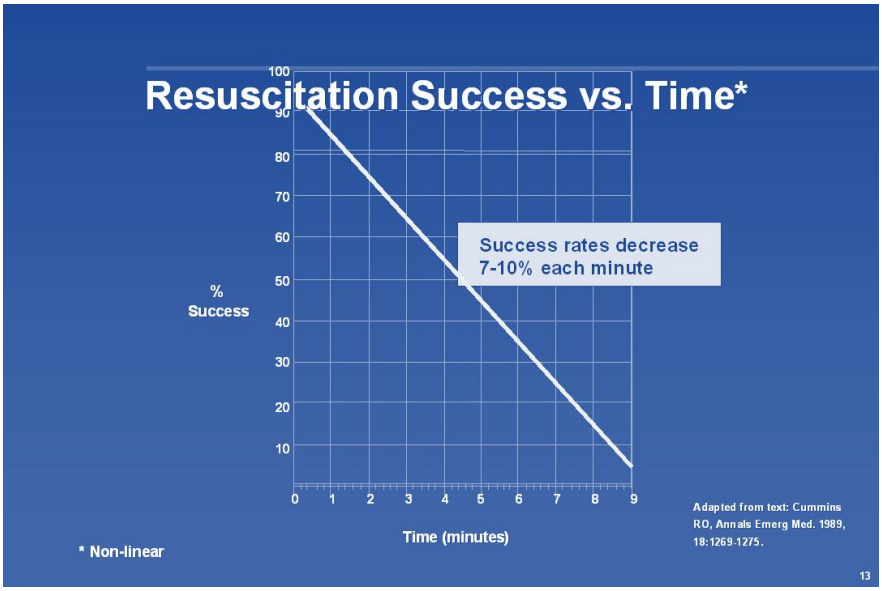
The differences or critical factors between pre-flashover and post flashover events are listed below:

Critical Factors for Flashover	
Pre-Flashover	**Post-Flashover**
Fire limited to room of origin	Fire rapidly spreads beyond the room of origin
Fire requires less and smaller attack lines (usually one hand line) to control	Fire requires more multiple and larger attack lines to control
Search and Rescue unhampered	Search and Rescue becomes greatly hampered
Requires less overall resources	Requires additional resources
Initial response can handle	Additional units needed (recall of off-duty personnel)

Source : International Fire Service Training Association

(2) Importance of Time and Personnel Related to Emergency Medical Response.

Nationwide, a great deal of effort and research has been put into developing performance objectives for the delivery of EMS services. This effort is critical for departments making decisions about deployment and location of emergency resources. The objectives promoted for EMS have their basis in research that has been conducted into the impact of the passage of time on the survivability for victims of cardiac arrest. The following graphic demonstrates the survivability of cardiac patients as related to time from onset:



Source: American Heart Association (AHA)

The previous graph illustrates that the chances of survival of cardiac arrest diminish approximately 10% for each minute that passes before the initiation of CPR and/or defibrillation. These dynamics are the result of extensive studies of the survivability of patients suffering from cardiac arrest. While the demand for services in EMS is wide ranging, the survival rates for full arrests are often utilized as benchmarks for response time standards, as they are more readily evaluated because of the ease in defining patient outcomes (a patient either survives or does not).

This research results in the recommended objective of provision of basic life support (BLS) within four minutes of notification, and the provision of advanced life support (ALS) within eight minutes of notification. The goal is to provide BLS within six minutes of the onset of the incident (including detection, dispatch and travel time) and ALS within ten minutes. This is often used as the foundation for a two-tier system where fire resources function as first responders with additional (ALS) assistance provided by responding ambulance units and personnel.

Additional recent research is beginning to demonstrate the impact and efficacy of rapid deployment of automated external defibrillators (AED) to cardiac arrests. This research – conducted in King County (WA), Houston (TX), and as part of the OPALS (Ontario Pre-Hospital ALS) study in Ontario, Canada – shows that the AED can be the largest single contributor to the successful outcome of a cardiac arrest – particularly when accompanied by early delivery of CPR. It is also important to note that these medical research efforts have been focused on a small fraction of the emergency responses handled by typical EMS systems – non-cardiac events make up the large majority of EMS and total system responses, and this research does not attempt to address the need for such rapid (and expensive) intervention on these events.

While the majority of the EMS research focuses on cardiac arrest and how to improve patient outcomes with these calls, the fact is that the same time parameters hold true for all call types where there is major trauma or other life threatening conditions present to the patient. Communities and first responders have utilized the results of these research efforts, often on their own with no single reference, to develop local response time and other performance objectives. Typically the goal for an EMS response is to have the first emergency unit arrive at the scene with a travel time of four (4) minutes 90% of the time and an Advanced Life Support (ALS) unit to arrive within eight (8) minutes 90% of the time. This is a practical goal for the population centers of the Big Bear Fire Department response area, but not practical for the outlying areas, which will be shown in GIS mapping later in the report.

3. COMPARISON OF FIRE AND EMS GOALS WITH ACTUAL PERFORMANCE IN THE BIG BEAR SERVICE AREAS.

The table below provides an overview of the discussion about fire and emergency medical service goals provided in the preceding subsections and compares them to the current system performance by the Big Bear Fire Department:

Target Area	Service Target	Performance by Big Bear Fire Department
Call Processing Time	• National Standard is to process emergency calls for service in 60 seconds or less 90% of the time.	• Current performance for call processing is 3 minutes 45 seconds 90% of the time.
Turnout Time	• National Standard is to have turnout times of 90 seconds or less 90% of the time • The Big Bear Fire Department has not formally established turnout time goals.	• Current performance for turnout times is 2 minutes 58 seconds 90% of the time.
Response Time to Fires	• National Standard is the ability to respond to fires in four minutes travel time to 90% of calls in urbanized areas, 5 minutes in suburban areas and 10 minutes in rural areas. • The Big Bear Fire Department has not established travel time goals to emergency calls	• Travel time for high priority fire calls is 9:36 for ME 281 @ 90% • Travel time for the ME 282 to high priority fire calls is 11:51 @90% • Travel time for ME 283 to high priority fire calls is 12:07 @90% • Travel time for MT 281 to high priority fire calls is 12:02 @90%

Target Area	Service Target	Performance by Big Bear Fire Department
Response Time to Medical Calls	• National Standard is the ability to respond to EMS calls in four minutes travel time for 90% of calls in urban areas at a BLS level. • National Standard is the ability to respond to EMS calls at an ALS level within eight minutes 90% in urban areas. • National Standard is the ability to respond to EMS calls in eight minutes for 90% of calls in rural areas at a BLS level. • National Standard is the ability to respond to EMS calls at an ALS level within 12 minutes 90% in rural areas. • There are no established travel time goals for EMS incidents in by the Big Bear Fire Department.	• Response time for MA 281 to priority 1 EMS calls is 11:58 @90% • Response time for MA 282 to priority 1 EMS calls is 13:29 @90% • Response time for MA 283 to priority 1 EMS calls is 20:42 @90% • Response time for ME 281 to priority 1 EMS calls is 8:20 @90% • Response time for ME 282 to priority 1 EMS calls is 9:43 @90% • Response time for ME 283 to priority 1 EMS calls is 10:08 @90% • Response time for MT 281 to priority 1 EMS calls is 8:01 @90%
Company Size	• Engine companies staffed at a minimum of three personnel. • Truck companies are staffed at a minimum of three personnel.	• The truck company is staffed with a minimum of three personnel. ME 282 and ME 283 are staffed with two personnel.
Aerial Ladder Truck Availability	• Truck company available to respond to the scene of a fire within eight minutes.	• The truck is the primary response unit except during inclement weather when personnel cross staff an engine. • Truck company travel time is currently 9:38 90% of the time to fire scenes.
Full Incident Response Capability	• 13 to 15 personnel at the scene of a fire within eight minutes in urban areas, 10 minutes in suburban areas and 14 minutes in rural areas.	• Response data indicate that this target is generally met, but there are times where less than 13 personnel are available due to interfacility EMS transports.

The following tables illustrate the overall system performance for the years 2014 – 2016 broken down by fractile assessment and the ability to meet the 60 second call processing, 90 second turnout and 6:30 travel time, which is a nationally accepted

suburban travel time standard and blends the urban, rural and suburban densities of Big Bear.

Big Bear – 2014 System Performance

2014	Call Processing	Turnout Time	Travel Time
90%	3:20	2:58	11:36
80%	2:16	2:23	8:33
70%	1:47	2:04	7:01
60%	1:31	1:48	5:55
Benchmark Met	59.6%	47.5%	65.8%

Big Bear - 2015 System Performance

2015	Call Processing	Turnout Time	Travel Time
90%	3:33	2:45	12:03
80%	2:33	2:12	8:37
70%	2:01	1:51	6:57
60%	1:39	1:34	5:56
Benchmark Met	53.8%	58.1%	66.3%

Big Bear – 2016 System Performance

2016	Call Processing	Turnout Time	Travel Time
90%	4:02	3:03	12:55
80%	2:34	2:23	8:45
70%	1:55	1:55	6:58
60%	1:34	1:35	5:51
Benchmark Met	57.9%	57.2%	66.6%

There are a number of conclusions to be drawn from the chart above. These are summarized in the following points:

- Call processing times exceed best practice targets.
- The Big Bear Fire Department is not meeting best practices for turnout times.

- The above comparison chart indicates that the Big Bear Fire Department is not able to meet best practice travel time standards at the 90th percentile for fire and EMS high priority incidents.

- The Department requires paid call personnel to deploy an effective response force when there are multiple calls and if there is an EMS interfacility transfer occurs.

- The reliance on paid call personnel has become a planning issue for the Department as these personnel are not consistently available. This will likely become an even more significant issue in the years to come. There are currently 11 paid call personnel with an authorized strength of 30, but the Department has difficulty recruiting and retaining staff for these positons.

These issues will be more fully explored in the next chapter of the report in conjunction with the development of the analysis of fire and emergency medical service needs.

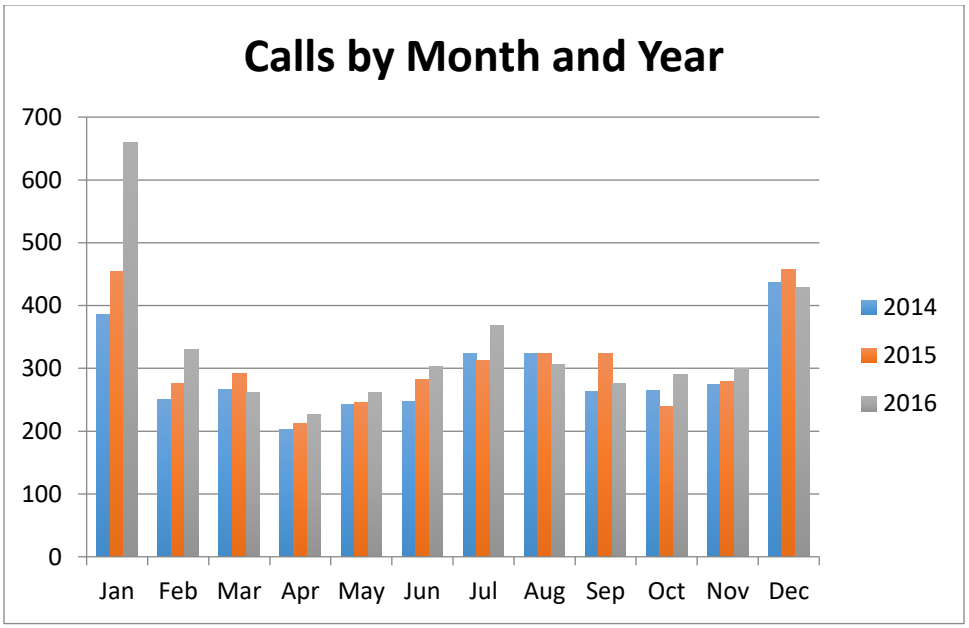
4. EMERGENCY RESPONSE ACTIVITY

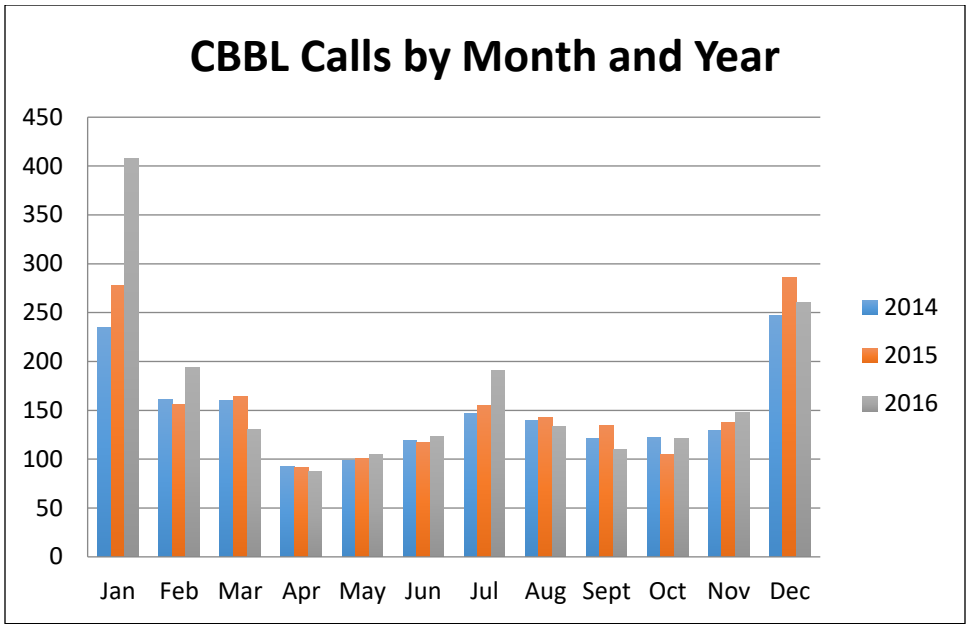
Nationwide and over the past ten years, there has been a declining trend in numbers of fire calls. As the frequency of fire calls reduced, the workload of fire departments increased as they became increasingly responsible for more issues in communities. These include: medical calls, hazardous materials incidents, technical rescue, and every type of household emergency. This has created the need for not only personnel trained as firefighters, but also who can respond to all community hazards.

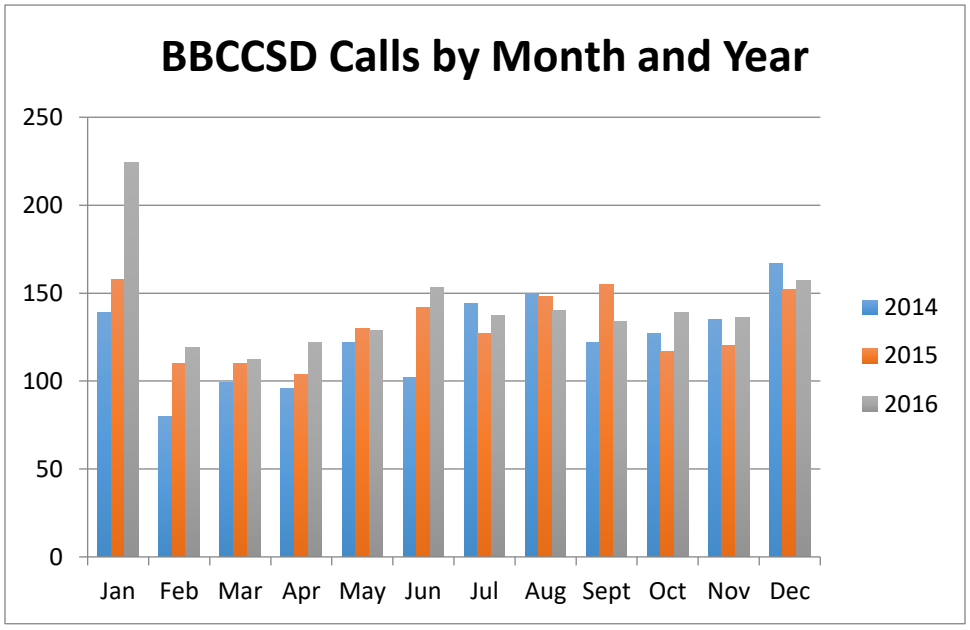
The following table and charts show the calls for service trend over the last 3 years for the Big Bear Fire Department overall and in the City of Big Bear Lake and the Big Bear Community Services District. It is important to note that the individual area charts will not add up to the total chart as that chart includes calls to the County and other mutual aid areas.

Big Bear Fire Department Calls for Service 2014 - 2016

Year	2014	2015	2016
Jan	385	454	660
Feb	250	276	330
Mar	267	292	261
Apr	203	212	226
May	243	246	262
Jun	247	283	303
Jul	323	312	369
Aug	324	324	306
Sep	263	323	276
Oct	264	239	290
Nov	274	279	299
Dec	436	458	429
Total	**3,479**	**3,698**	**4,011**





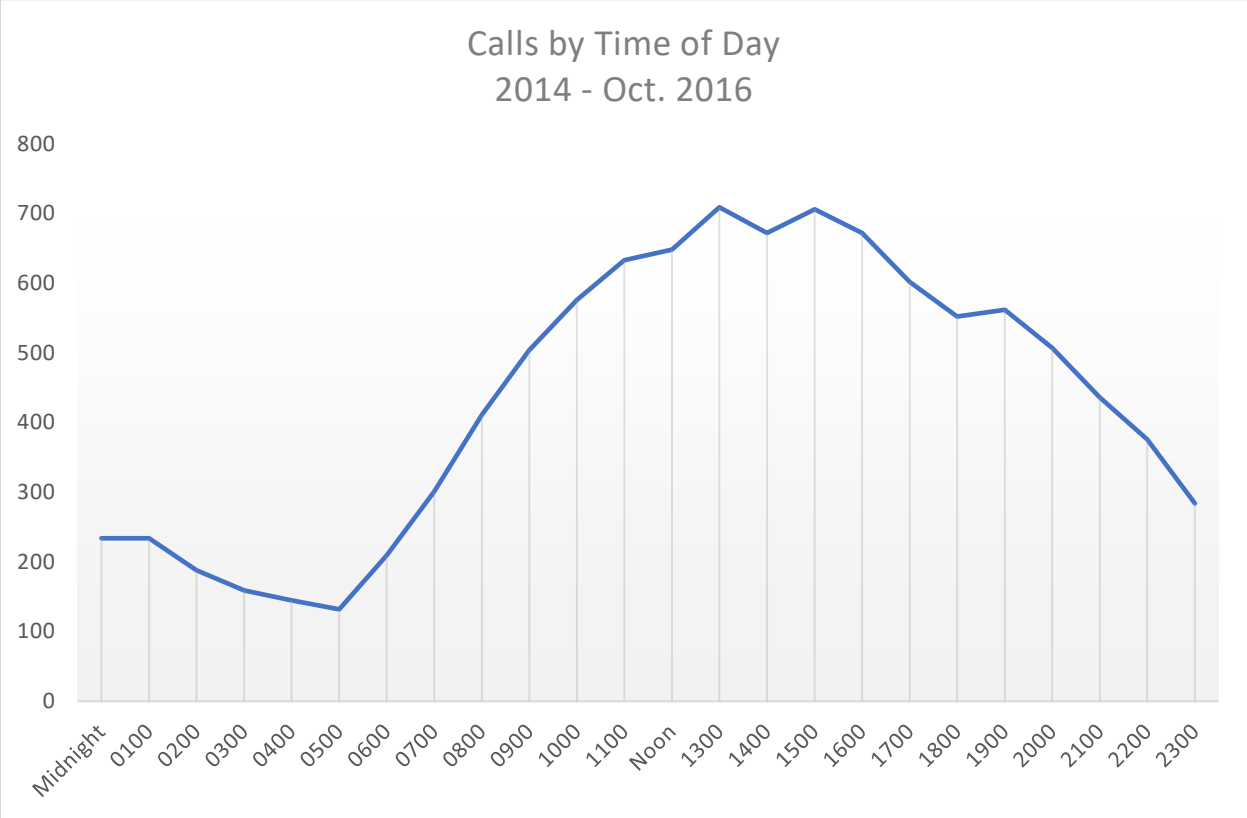


As illustrated above, the call demand has increased 15.4% over the past three years.

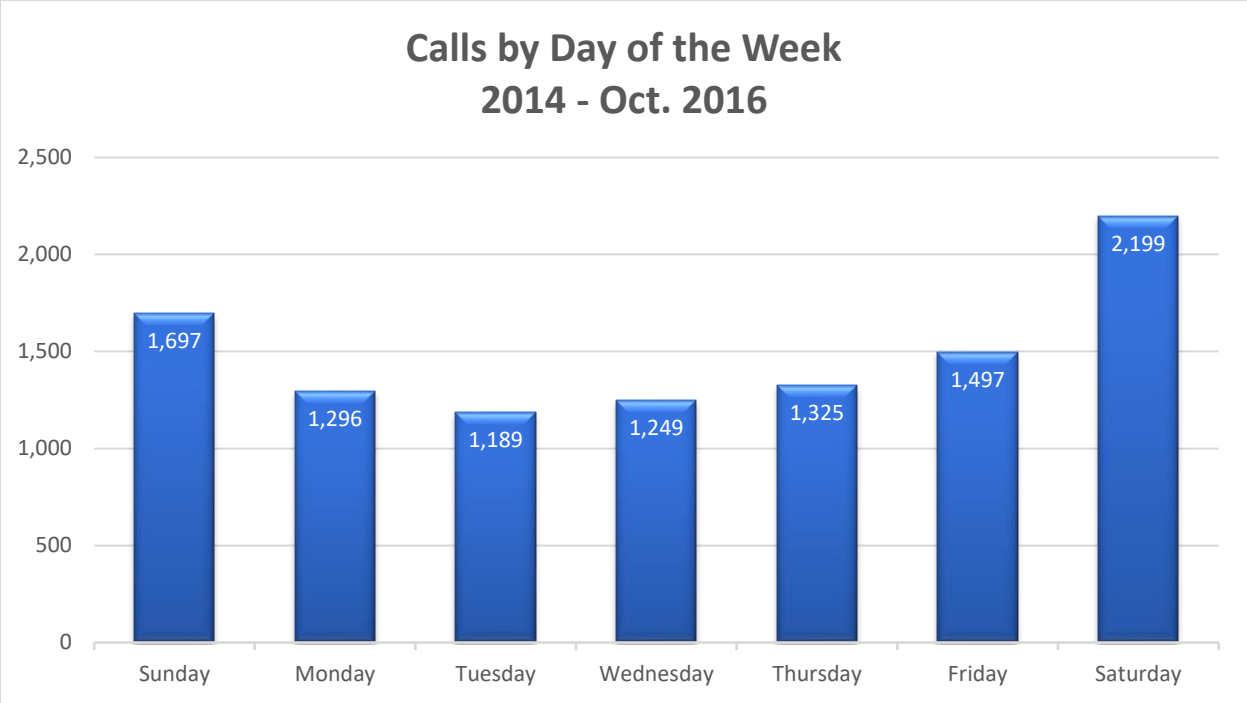
When calls for service are examined by time of day, the Big Bear Fire Department shows a trend of responding to the majority of calls between 8:00 a.m. and 11:00 p.m.

The lowest demand of calls for service occurs between midnight and 7:00 a.m. The peak call hours are from 10:00 am – 7:00 pm.

The following chart illustrates the calls for service by hour of day:



When calls are examined by day of week it is clear that the busiest days for the Big Bear Fire Department are Friday through Sunday, with weekdays having lower call demand over the past three years. This is expected in an area that has population increased on the weekend due to vacation homes and the variety of outdoor activities available all four seasons in the area. Calls for service range from a low 1,189 on Tuesday to a high of 2,199 on Saturday.



Seasonally there are also variations in the call demand for the Big Bear Fire Department with winter months having the highest call demand and summer months being slightly higher than the fall and spring months. The winter spike is largely due to the ski season and a large increase in visitors skiing in the mountains.

When calls are examined by the type of incident, it is clear that emergency medical related calls place the largest call demand on the Big Bear Fire Department. The following tables illustrate the call demand for the entire system and for the City of Big Bear Lake and the Big Bear City Community Services District by type of call.

Incidents by Type – All Incidents

Incident Type	2014	2015	2016	% Change
Auto Accidents	178	207	237	**33.2%**
Fire Alarm Activations	327	327	394	**20.5%**
Emergency Medical	2,401	2,553	2,543	**5.9%**
Mutual Aid Calls	10	7	14	**40.0%**
Investigations	246	259	326	**32.5%**
Other Fire Calls	119	157	267	**130.4%**
Vehicle Fires	14	10	7	**-50.0%**
Public Assist	109	92	126	**15.6%**
Structural Fires	44	54	62	**40.9%**
Wildland/Vegetation	31	32	35	**12.9%**
Total	**3,479**	**3,698**	**4,011**	**15.4%**

* Totals include out of district responses and are not a total of the City of Big Bear Lake and Big Bear City

Incidents by Type – City of Big Bear Lake

Incident Type	2014	2015	2016	% Change
Auto Accidents	66	81	88	**33.3%**
Fire Alarm Activations	215	224	259	**20.5%**
Emergency Medical	1,268	1,331	1,348	**6.3%**
Mutual Aid Calls	0	0	2	**0.0%**
Investigations	143	136	142	**-0.7%**
Other Fire Calls	52	64	148	**184.6%**
Vehicle Fires	7	3	2	**-71.4%**
Public Assist	28	44	26	**-7.1%**
Structural Fires	20	20	27	**35.0%**
Wildland/Vegetation	7	8	13	**85.7%**
Total	**1,806**	**1,911**	**2,055**	**13.8%**

Incidents by Type – Big Bear City Community Services District

Incident Type	2014	2015	2016	% Change
Auto Accidents	105	122	140	**33.3%**
Fire Alarm Activations	112	103	134	**19.6%**
Emergency Medical	1,117	1,213	1,187	**6.3%**
Mutual Aid Calls	3	2	2	**-33.3%**
Investigations	103	123	168	**63.1%**
Other Fire Calls	61	88	168	**63.1%**
Vehicle Fires	6	6	2	**-66.7%**
Public Assist	81	47	100	**23.5%**
Structural Fires	23	31	27	**17.4%**
Wildland/Vegetation	21	20	17	**-19.1%**
Total	**1,632**	**1,755**	**1,945**	**19.2%**

As shown above, the overall service area has experienced an increase in call demand of 15.4% in the past three years, while the Big Bear City Community Services District has seen an increase of 19.2% or roughly 5% more than the overall service area.

Another issue for the Fire Department is the number of simultaneous calls for service. This is when more than one call occurs during the same time period. Often this results in emergency apparatus having to respond into another response area outside their first due area and subsequently longer response times result.

The following tables illustrate the simultaneous calls for service and the system reliability for the past three years.

Simultaneous Calls for Service

	2014	2015	2016
Number of Instances	773	903	937
Pct. Of Total Calls	22.2%	24.4%	25.4%

Reliability

	2014	2015	2016
Committed Hours	2,565	2,688	2,884
Pct. Unavailable	29.3%	30.7%	32.9%

As shown above, call concurrence is an issue for the Fire Department as over 25% of the time there is more than one call occurring at the same time when a call occurs. This results in low reliability of units as they are unavailable to respond to calls for service over 32% of the time. When this occurs response time reliability diminishes because first due units are often unavailable to respond to emergency incidents and another station must respond to handle the call. This is a key factor in Big Bear not being able to meet industry best practices for travel time to high priority incidents. This issue is compounded by the fact that interfacility transfers are not include in the call concurrence table and take approximately 4 hours each to transport the patient and return to the service area. In 2016 there were a total of 434 interfacility transfers which would account for approximately 1,736 hours where two personnel were out of the service area and unavailable for emergency response. The following table illustrates the interfacility transports by year since 2014.

Hospital Inter Facility Transport				
	2014	2015	2016	Totals
CSD	353	263	207	823
	48.1%	**47.7%**	**47.7%**	**47.9%**
FPD	219	163	120	502
	29.8%	**29.6%**	**27.6%**	**29.2%**
Other	162	125	107	394
	22.1%	**22.7%**	**24.7%**	**22.9%**
Total	**734**	**551**	**434**	**1,719**

Recommendation: The Big Bear Fire Authority should begin planning for the need to add additional response resources to improve system reliability.

The project team examined the call demand by unit in the Big Bear Fire Department. This is important to allow examination of which apparatus have the highest utilization to determine the planning of where additional resources will most benefit the emergency response system.

The following table illustrates the call demand by unit for the Fire Department for the years 2014 - 2016.

Unit Responses by Year 2014 – 2016

Unit	2014	2015	2016	Total	% Responses
Station 281					
MA 281	1,183	1,251	1,250	**3,684**	**17.1%**
MT 281	1,085	1,243	1,035	**3,363**	**15.6%**
ME 281	271	510	762	**1,543**	**7.2%**
Station 282					
MA 282	1,049	1,159	1,114	**3,322**	**15.4%**
MA 282A	130	1,130	1,154	**2,414**	**11.2%**
MA 282B	45	70	110	**225**	**1.0%**
MA 282C	28	50	3	**81**	**0.3%**
ME 282	1,203	1,180	1,407	**3,790**	**17.6%**
Station 283					
MA 283	759	75	64	**898**	**4.2%**
ME 283	130	1,013	1,035	**2,229**	**10.3%**
Total	**5,883**	**7,681**	**7,985**	**21,549**	**100.0%**

The overall call demand by unit is not excessive, which points to the high call demand in the winter months and peak call demand hours causing the system reliability issues.

4. SYSTEM DEMAND PROJECTIONS

The Big Bear Fire Department faces challenges related to organizational growth and management in addition to the operational challenges of providing efficient and effective emergency response services. The project team developed population projections for the City of Big Bear Lake, and Big Bear City and the remaining service area. Data were collected from various sources to determine appropriate growth assumptions for the service area. In addition to collecting information from United State census counts, project team members conducted interviews with City of Big Bear Lake and Big Bear City staff along with staff from the Visitor Bureau relating to planning, development and growth within the Department's service area. The table below presents a comparison of the service area population and housing units:

Area	Population / Housing Units			
	2000	**2010**	**2016 Estimate**	**% Change**
City of Big Bear Lake				
Population	5,438	5,019	5,235	-3.7%
Housing Units	8,705	9,705	9,643	+10.8%
Big Bear City				
Population	5,779	12,304	12,528	+117.8%
Housing Units	4,801	12,226	12,453	+159.4%
Remainder of Big Bear CITY CSD				
Population	8,523	3,122		
Housing Units	10,262	4,308	Not Available	
Total				
Population	**19,740**	**20,445**		
Housing Units	**23,768**	**26,239**		

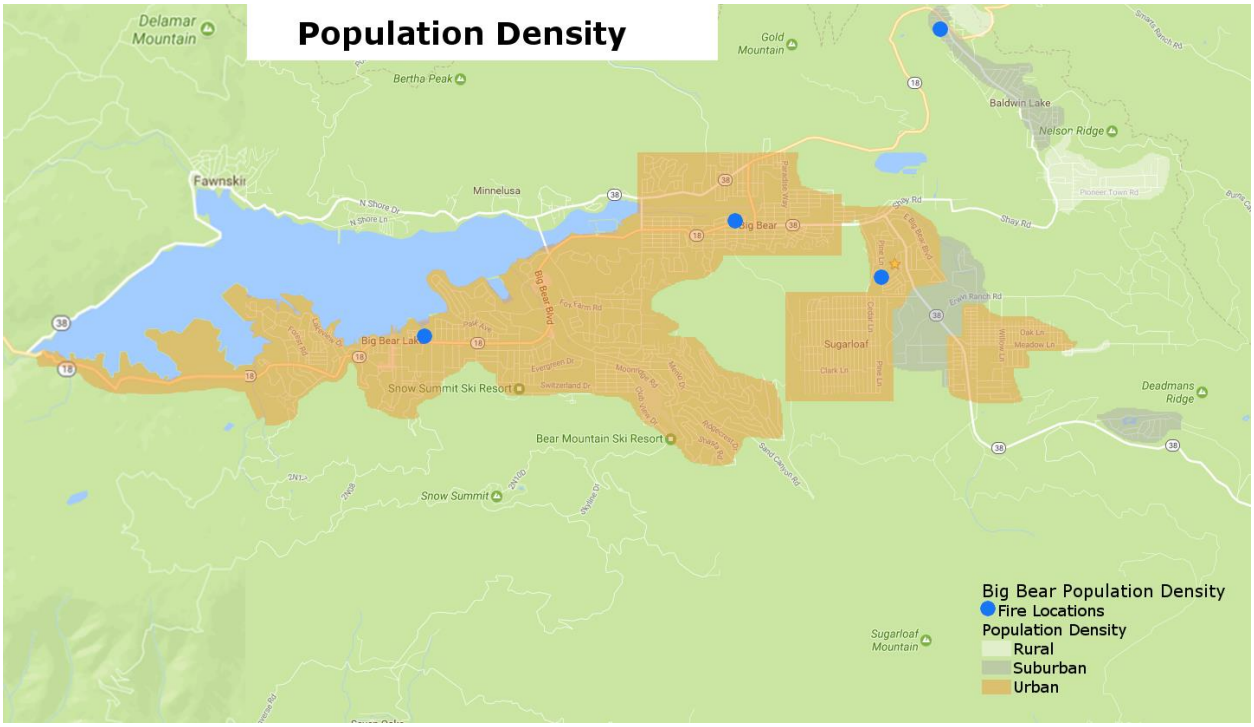
As the above table shows, the population in the City of Big Bear Lake remained fairly constant since 2000, declining approximately 3.7%. Big Bear City has seen dramatic growth of approximately 118% Additionally, there is a focus to increase tourism to make the area a four-season tourist destination by increasing visitation in the spring, summer and fall months, which causes population spikes, particularly on the weekends and holidays.

1. POPULATION GROWTH WITHIN THE CITY

The table below presents the projected population growth data for the City of Big Bear Lake and Big Bear City. This includes census data from 2000, and 2010 census, and State estimated increases in population to the years 2020 and 2030:

	2000	2010	2020	2030
Population	19,740	20,445	20,975	22,045
% Increase	N/A	3.6%	2.6%	5.1%

As the table indicates, the population in the service area is projected to grow by approximately 5% to 2030. The following table illustrates the population density in the service area.



As shown, the service area is a mix of urban (2,000+ per sq. mile), suburban (1,000 – 1,999 per sq. mile) and rural (< 1,000 sq. mile) population densities.

2. LAND USE WITHIN THE SERVICE AREA

The project team collected information from City of Big Bear Lake and Big Bear City with respect to land use and how the service area plans to grow. The plan for commercial growth is primarily focused on the City of Big Bear Lake and includes potential development of a full resort with multi-story hotel in the ski area, which would potentially bring new businesses as tourism increases in the area. Big Bear City plans to continue to be primarily a residential area with small businesses and restaurants in small defined areas.

3. CALLS-FOR-SERVICE PROJECTIONS

The project team developed calls-for-service projections based on the relationship between calls-for-service and population and trends in call volume for the Fire

Department, because in a service area such as the one protected by the Big Bear Fire Department, population alone will not drive call demand. Factors, such as tourism and the types of activities engaged in such as skiing, snowboarding, hiking and water sports will also affect call demand; therefore, an additional 3% increase in annual call demand is factored as part of the calculations through 2020 as the effort to increase tourism continues. An additional flat 10% is applied to the 2030 figure in addition to the population increase as there will be a point where tourism peaks in the area.

To illustrate the system demand caused by visitors to the area, the following information was obtained from Fire Department records.

Recreational Related Incidents (Total)

	2014	2015	2016	Totals
Incidents	447	526	497	1470
Residents	42	61	31	134
Visitors	405	465	466	1336
Residents %	**9.4%**	**11.6%**	**6.2%**	**9.1%**
Visitor%	**90.6%**	**88.4%**	**93.8%**	**90.9%**

Recreational Related Incidents (Ski Slopes Only)

	2014	2015	2016	Totals
Incidents	348	405	397	1150
Residents	22	28	14	64
Visitors	326	377	383	1086
Residents %	**6.3%**	**6.9%**	**3.5%**	**5.6%**
Visitor%	**93.7%**	**93.1%**	**96.5%**	**94.4%**

As shown above, call demand in the recreational areas was caused by visitors approximately 91% of the time over the past three years.

The table below presents the projected number of calls for service in the years 2020 and 2030:

Year	2016	2020	2030
Population	20,885	20,975	22,045
% Increase	N/A	0.43%	5.1%
Calls For Service	4,009	4,507	5,188
Avg. Calls Per Day	11.0	12.3	14.2

As the table indicates, the number of calls for service that the Fire Department will need to respond to will increase from 4,009 in 2016 to an estimated 4,507 in 2020 and 5,188 in 2030. Further, the average number of calls for service per day will increase from an average of 11 in 2013 to 12.3 in 2020 and 14.2 in 2030. Additionally, the population projections indicate a growth of 0.43% between 2016 to the year 2020 and 5.1% between the year 2020 and 2030.

5. CURRENT AND FUTURE DEPLOYMENT RECOMMENDATIONS

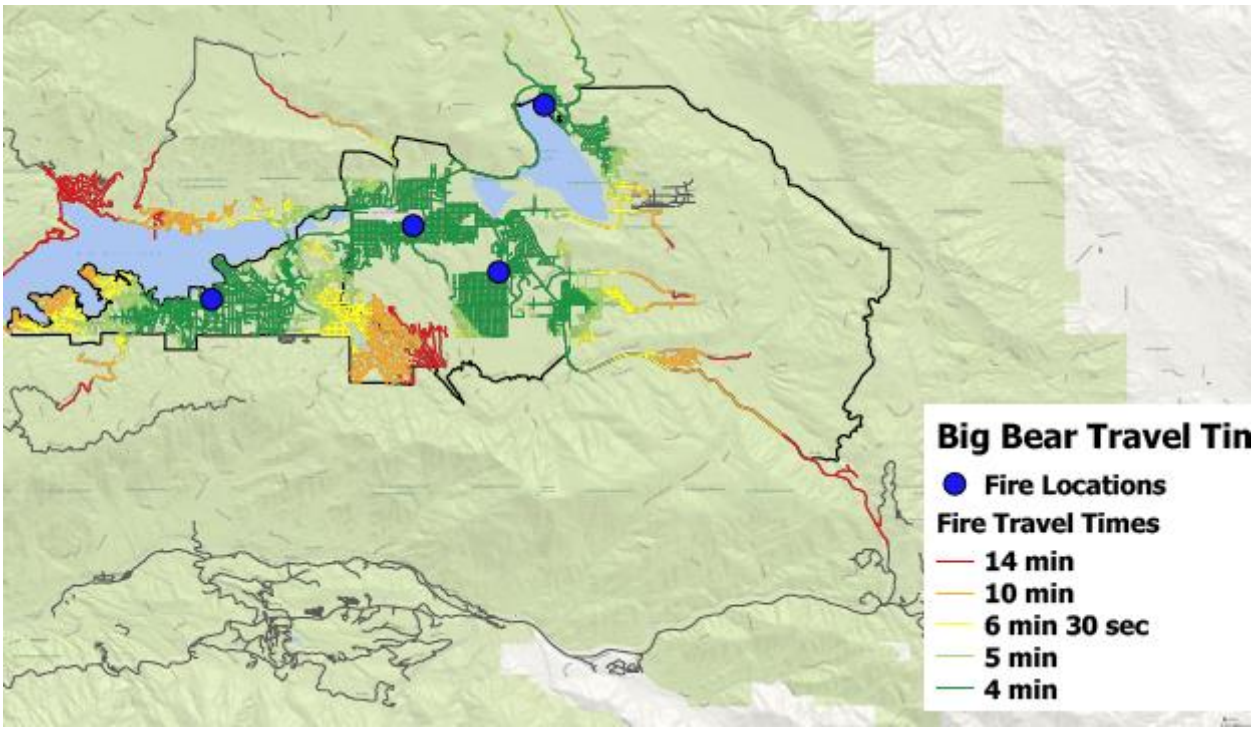
This chapter of the report focuses on analyzing the current and projected organizational needs of the Big Bear Fire Department in terms of deployment and staffing.

1. THE DISTRIBUTION ANALYSIS SHOWS ISSUES WITH CURRENT STATION LOCATIONS.

The Big Bear Fire Department operates from three staffed fire stations located in the City of Big Bear Lake, Big Bear City and Sugarloaf. There is also a fourth station staffed by CAL FIRE personnel in the Baldwin Lake area of Big Bear City. These stations are responsible for providing emergency response in an area of approximately 38.5 square mile.

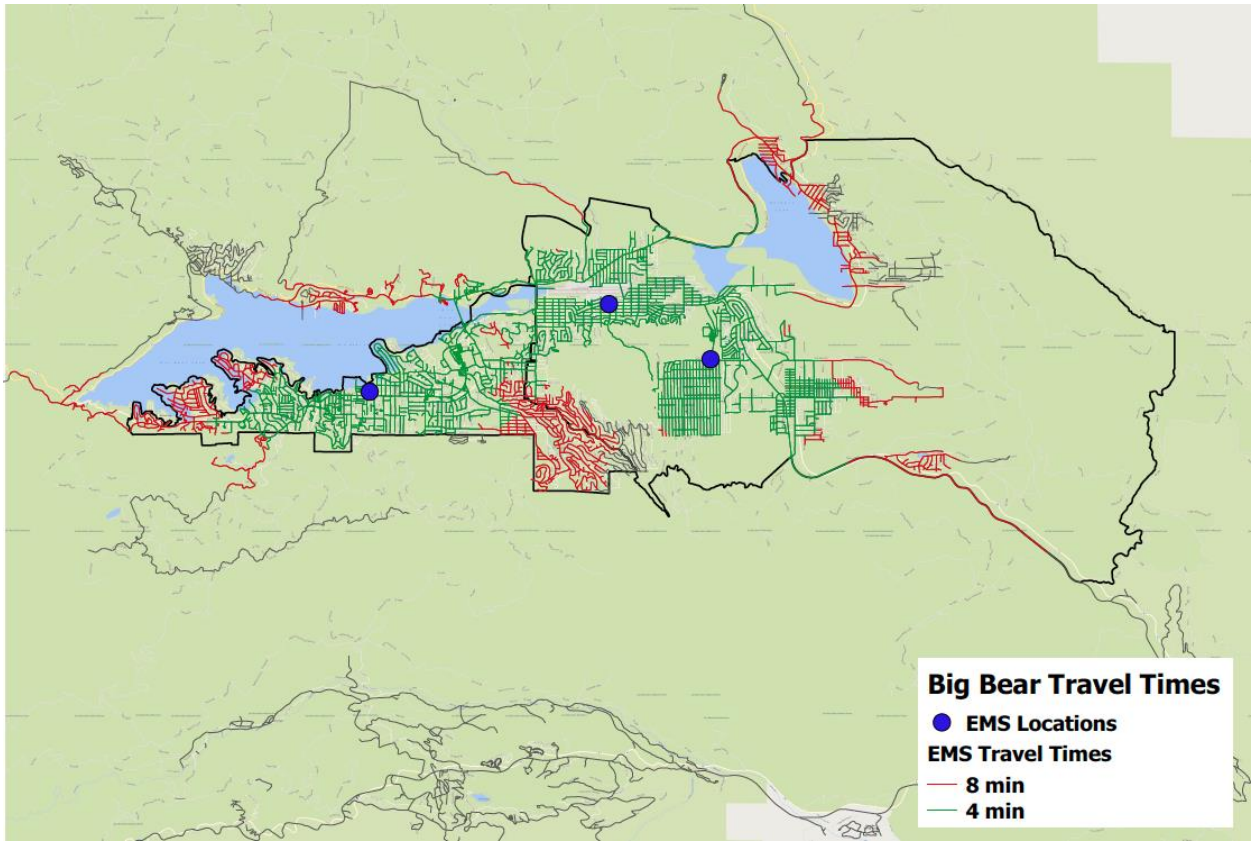
The most relevant grow plan shows a projection for growth in the Moonridge area, near Bear Mountain.

The following maps demonstrate the travel time capability for emergency apparatus from the staffed fire station locations. The first map illustrates the projected travel times for fire apparatus.



As shown above, the current stations provide excellent travel times to the majority of the Fire Department service area, but are unable to effectively service the Moonridge area and the far western portion of the City of Big Bear Lake within an acceptable travel time of 6 minutes 30 seconds. The map also indicates that service to the Baldwin Lake area could improve by relocating the station further south to the area near Minnow at Baldwin Rd.

The next map illustrates the projected travel times for ambulances in the service area



As with the fire travel time projections, there are several areas that cannot be reached within the eight minute travel time standard, which was discussed earlier is critical for the initiation of advanced life support efforts.

2. WORKLOAD AND FAILURE RATES

The workload of emergency response units can be a factor in response time performance. If a station is committed to a call, it is not available for emergency response and another station would be required to respond out-of-district or area to handle the emergency.

One method for reviewing resource workload and availability is examining concurrent calls for service (more than one emergency call occurring at the same time). When this occurs, the already-limited resources are quickly stretched thin, and response

times extended, as mutual aid units must be called or the calls hold until apparatus can "clear" from the current emergency call.

The following chart examined calls from 2014 - 2016 to see how often multiple calls were received during the same time periods:

Simultaneous Calls for Service

	2014	2015	2016
Number of Instances	773	903	832
Pct. Of Total Calls	22.2%	24.4%	25.4%

As shown in the table above, the majority of fire calls in Big Bear happen singularly, but there is a trend for increasing concurrent calls. The greatest risk for call concurrence is during the peak demand periods of 8:00 a.m. – 11:00 p.m. As the area continues to grow it is important to measure the call concurrency issue as it causes apparatus to respond outside of their first-due area and increases overall response time performance, which the earlier analysis indicated to be an issue in the service area.

As discussed earlier in the report, the typical daily staffing for emergency response is 13 personnel. This staffing level does not allow enough flexibility for growing call demands as there are a large number of interfacility transfers from the local hospital to a more appropriate medical facility, which reduces the number of staff in the area to 11 personnel. This is an issue as two engine companies are currently staffed with two personnel and without the availability of the ambulance personnel they must wait for additional apparatus to respond to operate safely. Best practices require a minimum staffing of three personnel on engine companies.

Recommendation: Increase staffing of all engine companies to a minimum of three personnel.

3. RESPONSE TIME STANDARDS

The primary goal of an emergency service delivery system should be to provide sufficient resources to the scene of an emergency in time to take effective action to mitigate the impacts of the situation. Rapid response is required for fires, medical calls, and many other emergency situations.

When calculating response times there are three components that should be recorded:

1. **Call Processing**: The time from call receipt to dispatch of emergency personnel.
2. **Turnout**: The time from dispatch of the call to units responding to the call.
3. **Travel Time**: The time from initial response to arrival at the emergency.

National best practices have established the goal (benchmark) for call processing should be 90% of priority one calls in 60 seconds or less as optimal performance. Having 90% of calls processed in 90 seconds is the minimal baseline acceptable performance standard. The goal (benchmark) for turnout should be 90% of calls responded to within 60 seconds with 90% responded to in 90 seconds the minimal (baseline) performance standard. The goal for travel time will be dependent on the type of area being served and will be discussed later in the report. This is important as the two components of response time that are controllable are dispatch and turnout times. Travel time will be dictated by distance, weather and road conditions. The Big Bear Fire Department does not currently have performance goals in place and are not routinely reporting response time performance in annual reports.

The examination of the response time data shown earlier indicated the system should improve in call processing and turnout times, which are both controllable factors if the call data is analyzed and performance goals are in place for personnel.

Recommendation: Work with the Dispatch Center to improve call processing times to achieve a performance standard of 60 seconds 90% of the time.

4. NFPA STANDARDS FOR CAREER FIRE DEPARTMENTS

The National Fire Protection Association (NFPA) has developed response time standards for fire departments staffed by career firefighters. It is important to note that NFPA standards are not legal mandates, but rather something to benchmark a fire department against to measure performance.

NFPA 1710 contains time performance standards for structural fire response as well as medical response.

It is recommended that the first company arrive at the scene of a structure fire within five minutes of being dispatched 90% of the time. The use of the 90th percentile allows the majority of incidents to be evaluated as compared to “average” performance. This standard allows unusually long response times to be removed from the equation, as they are not typical of agency performance. It also provides the community with a real expectation of how long emergency response will take after they initiate a 911 call.

The standard also establishes a “company” as consisting of four personnel. This does not mean that four people must staff engine companies, but that true response time is not counted until four people have reached the scene to function as a single unit. For example, in Big Bear if the Battalion Chief responds to all structure fires and the engine is staffed with three personnel, when all four members are on scene the response time would be measured.

NFPA 1710 describes the following performance as meeting the structure fire response criteria:

- Turnout time within one minute, 90 percent of the time.
- Arrival of the first "company" within five minutes of dispatch 90 percent of the time, or
- Arrival of the entire initial response assignment (all units assigned to the call) within nine minutes of dispatch, 90 percent of the time.

NFPA 1710 also has three time standards within the standard for emergency medical response:

- Turnout time within 90 seconds, 90 percent of the time.
- Arrival of a unit with first responder or higher capability within five minutes of dispatch, 90 percent of the time.
- Arrival of an advanced life support unit, where this service is provided by the fire department, within nine minutes of dispatch, 90 percent of the time.

The Commission on Fire Accreditation International (CFAI) understands the cost implications for most communities to fully comply with the above standards. For a community with urban, suburban, and rural areas like Big Bear, accreditation standards allow for a longer response time. This nationally recognized "best practice" standard is a great place to start as communities are looking to improve the performance of their fire department [(6)].

The benchmark performance standard (one that municipalities should strive to achieve) for fire calls in urban areas is as follows:

- Dispatch of units (call processing) within 60 seconds of call, 90% of the time.
- Turnout time within 80 seconds of dispatch, 90% of the time.
- Arrival of the first unit within 4 minutes of turnout and the second unit within eight minutes, 90% of the time.

The baseline performance standard (acceptable performance to be a credible agency) for fire calls in urban areas is as follows:

- Dispatch of units (call processing) within 90 seconds of call, 90% of the time.
- Turnout time within 90 seconds of dispatch, 90% of the time.
- Arrival of the first unit within five minutes/12 seconds (travel time) and the second unit ten minutes/24 seconds, 90% of the time.

For EMS calls, the performance standards are the same, with the exception of a 60 second turnout time expectation for benchmark performance.

In areas classified as suburban, the benchmark is for arrival of the first unit within five minutes of turnout and the second unit within eight minutes of turnout. The baseline performance in suburban settings is six minutes 30 seconds, and ten minutes 24 seconds, respectively.

In the areas classified as rural, the benchmark is for the first unit to arrive in ten minutes 90% of the time, and the second unit in 14 minutes 90% of the time after turnout. The baseline performance expectations are measured at the 70% for rural areas and are 13 minutes and 18 minutes 12 seconds, respectively.

Recommendation: Adopt baseline service level standards for urban, suburban and rural areas and begin tracking and reporting Fire Department performance on a quarterly basis.

5. HISTORICAL RESPONSE TIME PERFORMANCE

The adoption of the baseline performance expectations would require that Big Bear Fire Department respond to 90% of fire and EMS calls within six minutes 42 seconds, total response time in the areas classified as urban, which is the majority of the service area.

As stated earlier in the report, the performance for 2016 at the 90th percentile for emergency calls occurring in in the Big Bear service area on a system-wide basis are below best practice standards for providing fire and EMS service delivery.

Big Bear System Performance - 2016

2016	Call Processing	Turnout Time	Travel Time
90%	4:02	3:03	12:55
80%	2:34	2:23	8:45
70%	1:55	1:55	6:58
60%	1:34	1:35	5:51
Benchmark Met	57.9%	57.2%	66.6%

This data shows the need for improvement in all aspects of response time performance.

An agency must separate non-emergency calls from true emergency calls to determine how well they are performing. The Big Bear Fire Department currently designates calls by priority with priority 1 being emergency medical calls and priority 2 high priority fire calls.

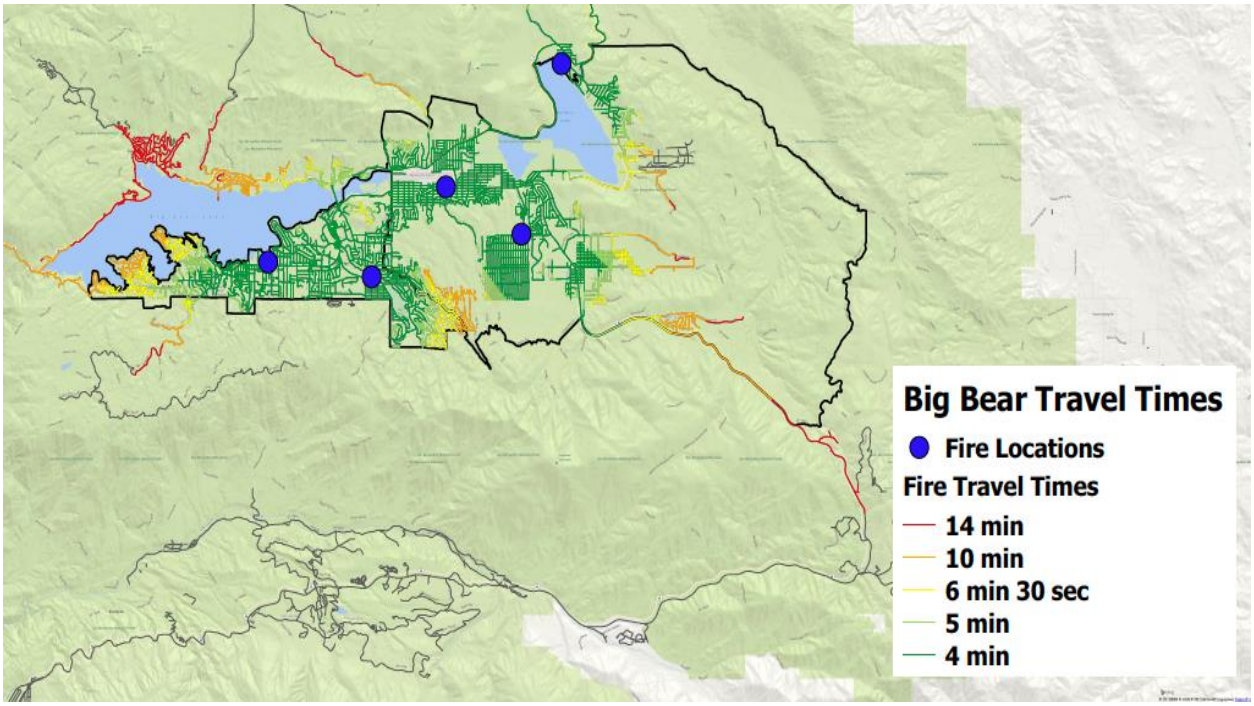
Recommendation: Continue to use the priority system to track calls and use priority one and priority two calls to report system performance.

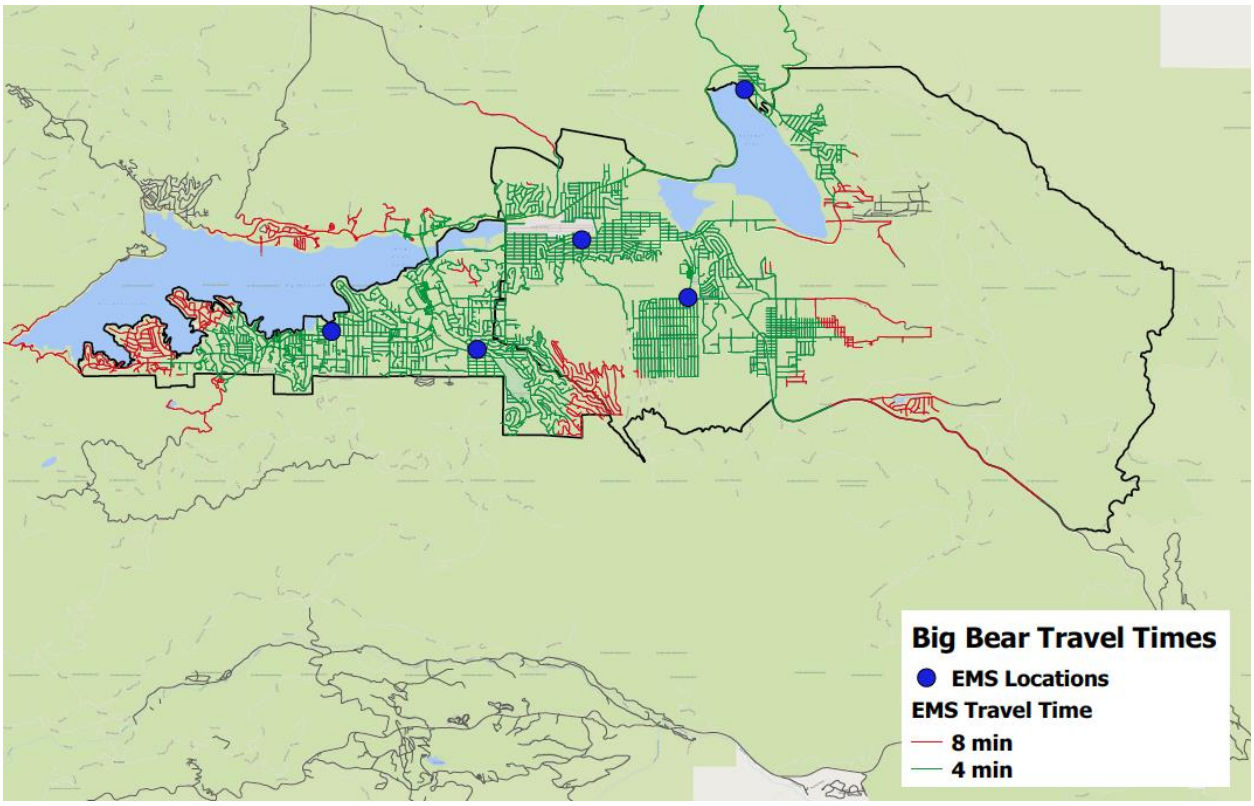
6. THE DEPARTMENT HAS REACHED TRIGGER POINTS INDICATING THE NEED FOR ADDITONAL RESOURCES.

The table below quantifies the trigger points for opening a new fire station in a developing community. This serves as a good indicator of when to construct a new facility, whether or not calls for service increases are experienced as growth occurs in accordance with the development plans for the service. Given the timeframe required to design and construct a new facility, it is important these decisions are properly anticipated by good planning.

Action	Travel Distance	Response Time	Percent of Calls	Building/Risk Inventory
Maintain Status Quo	All risks within locally adopted distance.	First due unit is within locally adopted standards.	Low % of current out of response area calls.	Low local building/risk inventory.
Temporary facilities and minimal staffing	Risks 1.5 to 3.0 miles from existing station.	First due unit exceeds five minute travel time 10% of the time, but does not exceed eight minutes.	More than 10% of calls are out of response area.	New area has 25% of the same risk distribution as in initial area of coverage.
Permanent Station Needed	Risk locations exceeding four miles from the station.	First due company exceed 5 minute travel time 20 – 25% of the time. Some calls over eight minutes.	More than 20 – 25% of calls in outlying areas.	Area has 35% of same risk distribution as in initial area of coverage.
Permanent Station Essential	Outlying risk locations exceed five miles from station.	First due unit exceeds five minute travel time 30% of the time. Some calls over ten minutes.	More than 30% of calls are in outlying area.	New area has 50% of same risk distribution as in initial area.

As shown in the earlier response maps, Big Bear is in need of a permanent station to serve the Moonridge portion of the response area. This area has travel time designations of 10 to 14 minutes and has dense housing units, a ski area, golf course and local zoo. There are also several low risk commercial occupancies in the area. The following maps illustrate the improvement to travel times in the Moonridge area if the existing station were to be staffed with fire and EMS personnel.





As illustrated above, the response times greatly improve by staffing the station located in the Moonridge area.

Recommendation: Add living quarters to the Moonridge fire station and staff the station with a cross-staffed engine company and ambulance.

7. THE SUGARLOAF STATION IS NOT ADEQUATELY SERVING THE NEEDS OF THE FIRE DISTRICT.

As part of the project, each station was toured to allow an understanding of the current capabilities of the stations and to ensure they provided a safe place for Department personnel to work. Station 283 (Sugarloaf) is a 2 bay station that was redesigned from a paid call station and rebuilt by FEMA after being condemned due to damage from an earthquake. The requirement from FEMA was to use the same footprint for the reconstruction. This resulted in sleeping quarters being located on the third floor of the station and the kitchen and day room on the second floor. There is no secondary exit for personnel from these locations. The only bathrooms are located in the apparatus bay and the windows from the kitchen open directly into the apparatus bay.

Currently the staffing is two personnel at this station who cross-staff an engine and ambulance. The station can accommodate a third person, but is not ideally designed for more than two personnel. As part of the long-range planning, the Fire Department should locate a suitable site to construct a new fire station and replace the Sugarloaf station.

Recommendation: Begin planning for the design and construction of a new fire station to replace the existing station in Sugarloaf.

8. THE BIG BEAR FIRE DEPARTMENT SHOULD IMPROVE THE PAID CALL FIREFIGHTER PROGRAM.

The Big Bear Fire Department utilizes paid call firefighters (PCF) to augment full time paid personnel. The Department currently has 30 authorized, but a staffing level of 11 paid call firefighter positions. Improving the ability to recruit and retain these positons

is an excellent opportunity to add personnel during peak call times and when an interfacility transfer takes personnel away from the service area for many hours.

Often, the paid call personnel are not available during the daytime, as many of them work in other professions that do not allow for emergency response during normal business hours. While they do provide the ability to add personnel for critical emergency scenes, the lack of availability during peak call times is an issue for the Department.

Given these factors the Department should find ways to recruit and retain PCFs as they are a critical component in ensuring an effective response force can be deployed in a timely fashion. Several agencies have found it beneficial to "schedule" the PCFs, which in effect allows them to tell the agency when they are available to respond to calls and attend training. This can be done on monthly basis with the agency requiring a commitment of at least 24 hours per month for training and emergency response availability for a PCF to remain active. This would ensure the Department knows when PCFs are available, and would allow recruiting efforts to focus on finding candidates who can serve in times of low participation from the existing personnel.

Recommendation: The Department should require a minimum number of service hours from PCFs and "schedule" these hours to better know when a PCF response is likely.

9. THE FIRE DEPARMENT SHOULD ADD AN ADDITONAL BATTALION CHIEF TO ENSURE CONSISTENT COMMAND AND CONTROL ON SHIFTS.

Currently the Bib Bear Fire Department has two Battalion Chiefs assigned to oversee shift operations. This means one shift is without an incident commander and chief officer to handle administrative or personnel issues on the shift. Typically, the Fire Chief and Fire Marshal rotate who will respond if needed on the shifts when there is no Battalion Chief. This delays the arrival of the incident commander on critical calls,

especially those occurring after normal business hours or on the weekend, which is the busiest time for the Department.

It should be a priority of the Department to staff the third Battalion Chief position to ensure effective oversight and control of all three shifts.

Recommendation: The Big Bear Fire Department should add a third Battalion Chief to oversee operations by FY 2018.

10. THERE ARE IMPROVEMENTS NEEDED IN THE FIRE PREVENTION DIVISION.

The Fire Prevention Division is charging fees for the services they provide. The existing fee schedule is outdated and is not recovering the true costs of providing plan review and inspection services in the service area. The Department has a Fire Marshal and Assistant Fire Marshal, who are supplemented by shift personnel to conduct inspections of commercial occupancies in the service area. Rental properties are inspected by City Code Inspectors and are not the responsibility of the Fire Department. In the employee survey, the majority of respondents thought receiving training on conducting inspections would be beneficial to them providing this service.

Captains are serving as the fire investigator to determine cause and origin of fires in the service area. This prolongs scene times for the engine companies and delays their ability to get back in service. An effective way to mitigate this is to train several Department personnel in origin and cause investigation so there are always trained fire investigators on shift available to assist with the investigation of suspicious fires.

Recommendations:

The Big Bear Fire Department should conduct a fee study to determine the true costs of providing fire prevention services and update the current fee schedule.

The Big Bear Fire Department should train 6 shift personnel in cause and origin investigation.

Conduct training for shift personnel on conducting commercial occupancy inspections and the types of violations to look for.

11. SUMMARY OF PROJECTED STAFFING NEEDS.

The following table summarizes the staffing needs of the Big Bear Fire Department as discussed above.

Fiscal Year	Staff/Shift	Total Staff	Purpose	Cost Per Year*
FY 2018/19	2	6	Increase engine company staffing to a minimum of three personnel.	$770,454
FY 2018/19	1	1	Add a third Battalion Chief positon to oversee shift operations.	$193,262
FY 2020/21	3	9	Staff an additional engine company and cross staff an ambulance to serve the Moonridge area.	$911,896
Total	**6**	**16**		**$1,875,612**

* Cost is projected at current pay and highest benefit rates

12. PURCHASING APPARATUS HAS BEEN DEFERRED WHILE THE AGENCY WORKS THROUGH CONSOLIDATION.

As the City of Big Bear Lake and Big Bear City Community Services District continue to work through the final pieces of consolidation into a single Fire Authority, apparatus replacement has been deferred because it is unclear who will be responsible for purchasing the apparatus and ultimately who would own it if full consolidation is not achieved. The current replacement schedule is based on replacement cycles of eight

years for ambulances, fifteen years for engines, twenty years for aerials and ten years for staff vehicles.

The following table shows the current apparatus and recommended replacement dates:

Big Bear Fire Department - Recommended Vehicle Replacement Schedule

Year	Type	Age	Assignment	Front Line	Reserve	Replacement
2004	KME Engine	13	Front Line ME 281	15 years	5 years	2024
2011	KME Engine	6	Front Line ME 282	15 Years	5 Years	2031
2004	KME Engine	13	Front Line ME 283	15 years	5 years	2024
2001	E-One Aerial	16	Front Line MT 281	20 Years	N/A	2021
2003	Pierce Brush	14	Front Line BE 281	15 Years	5 Years	2023
1989	Segrave	27	Reserve/OOS	15 Years	5 years	2018
1990	Beck	26	Reserve/OOS	15 Years	5 Years	2018
1990	Beck	26	Reserve/OOS	15 Years	5 Years	2018
1999	Westmark Brush	18	Front Line BE 282	15 Years	5 years	2019
2005	Pierce Water Tender	12	Front Line WT 281	20 Years	N/A	2025
2007	KME Water Tender	10	Front Line WT 282	20 Years	N/A	2027
2013	Ford Ambulance	4	Front Line MA 281	8 Years	4 Years	2025
2009	Dodge Ambulance	8	Front Line MA 281A	8 Years	4 Years	2021
2016	Ram Ambulance	1	Front Line MA 282	8 Years	4 Years	2024
2009	Chevy Ambulance	8	Front Line MA 282A	8 Years	4 years	2021
2007	Chevy Ambulance	10	Reserve MA 282B	8 Years	4 Years	2019
2014	Chevy Ambulance	3	Front Line MA 282C	8 Years	4 Years	2026
2006	Chevy Ambulance	11	Front Line MA 283	8 Years	4 Years	2018
2003	Ford Ambulance	14	Reserve MA 284	8 Years	4 Years	2015
2010	Ford Expedition	7	Front Line BC 2805	10 Years	N/A	2020
2010	Ford F-350	7	Front Line AC 2801	10 Years	N/A	2020
2011	Ford F-350	6	Front Line BC 2807	10 Years	N/A	2021
2005	Ford Expedition	12	Front Line BC 2808	10 Years	N/A	2015
2008	Chevy Tahoe	9	Front Line C 2800	10 Years	N/A	2018
2006	Ford Explorer	11	Front Line FR 281	10 Years	N/A	2016
2011	Ford F-250	6	Utility Truck U 281	10 Years	N/A	2021

The table shows that the agency currently has several vehicles that are past their replacement date, three vehicles due for replacement in 2018 and another two in 2019, plus 3 others past their replacement date. Continuing to delay the purchase of vehicles

will cause a large single year financial burden for the Fire Authority as replacing these assets is inevitable to continue to provide effective emergency services in the area. The project team recommends purchasing a new engine and placing Engine 283 in reserve status, purchasing a new ambulance and two new staff vehicles. The estimated cost to replace these vehicles is approximately $940,000.

Recommendation: Develop a plan to begin replacing vehicles and apparatus according to the established replacement schedule.

13. TRAINING FACILITIES

The Big Bear Fire Department currently maintains a small training center with training props in Big Bear City. The Department leases the land and has a training room that seats 24 personnel, and convex containers for 3 story burn simulations, a Denver drill prop, entanglement drill prop and roof ventilation simulator. There are also tie ins to allow for rappelling and ladder drills on the convex containers. While the current props are adequate to meet the basic perishable training needs of the organization, the Department is finding it difficult, with the current call load, to effectively schedule and attend hands on training drills as frequently as they would like. This has led to the use of Target Solutions, an online-based training tool, to ensure personnel receive necessary training hours as time permits during their shift. In the employee survey, most employees agreed that they receive the appropriate amount of training to do their job well.

Recommendation: Continue with the training plan and budget to allow scheduled single and multi-company drills to be conducted by back filling apparatus.

6. LONG TERM STRATEGY AND PLANNING

This chapter focuses on the long-term strategy related to the fire station locations, and how Big Bear Fire Authority officials can determine timing for adding additional stations and relocating stations if warranted. As shown previously, the current station locations are not meeting baseline travel time standards. Therefore, the Fire Authority should incorporate planning for a construction, relocation and reconstruction of the three stations noted earlier in a coordinated planned process over the next several years.

1. FIRE STATION LOCATIONS

The preferred method used today for determining fire station locations is through geographical information systems (GIS). This method can take into account road networks, impedance factors, turn impedance, and elevation impedance.

For many years the basic criterion for station placement was road mileage only. The standard came from the ISO based on 1.5-mile station separation. The thought was that a fire apparatus could respond on 1.5 miles of roadway within five minutes of an emergency call.

The concept of using actual travel time more accurately represents the level of service for an all-risk approach. This method is performance-based and when performance lags, steps can be taken to correct the issue.

One point that warrants restatement is that response time criteria should only be applied to calls that are high priority emergency calls. When incidents are analyzed, the data should be reviewed to ensure that nonemergency calls are not used when calculating performance. Non-life-threatening calls, which are routinely handled by BBFD,

should not be included in this analysis. To include these times in the analysis will skew the outcome, leading to false service indicators.

2. DETERMINING WHEN A STATION OR ADDITONAL APPARATUS ARE NEEDED.

Proper timing for construction of a new station will require careful analysis and planning. A quantifiable threshold must be developed to determine the point at which a station is needed. Ultimately, a combination of financial measures and professional judgment from the leaders in the Fire Authority will determine when a new station will be appropriate.

The Commission on Fire Accreditation International (CFAI) has developed a Trigger Mechanism Decision Matrix to provide options available when faced with various factors [(9)]. The system approach would suggest a tiered application of solution based on thresholds. In this system, first actions are to be analyzed when the performance indicators are within ten percent of the threshold values. At the point the threshold values are met, additional actions are indicated, and if the threshold are exceeded, new resources may need to be employed within the first due area to increase performance.

The Trigger Mechanism Decision Matrix is found on the following page:

Threshold	Possible Solutions
Units within 90% of Threshold values: Unit/Station call loading • Above 3,150 calls per year – single unit • Above 7,900 calls per year – two units • Above 12,600 calls per year – three units First due unit availability less than 82% First due reliability under 82% Performance gap rate of 1 - 2%	• Change cover status/dynamic deployment • Decrease first-due area • Redeploy adjacent resources • Reconfigure station resources • Eliminate planned out of service time
Units at Threshold Values: Unit/Station call loading • 3,500 calls per year – single unit • 8,760 calls per year – two units • 14,000 calls per year – three units Unit availability under 80% First due reliability under 80% Performance gap rate of 3 – 5%	• Increase capacity of adjacent units • Increase/decrease mutual aid • Implement peak staffed units • Redeploy resources to problem areas • Relocate existing fire stations
Units over 110% of Threshold Values: Unit/Station call loading • Above 3,850 calls per year – single unit • Above 9,650 calls per year – two units • Above 15,400 calls per year – three units Unit availability under 78% First due reliability under 78% First due availability under 78% Performance gap rate over 5%	• Add new resources to station • Add new resources to adjacent stations • Add new station(s)

According to CFAI, trigger mechanism, when developed and employed with good science and data, can be a very valuable tool in compliance methodology [(9)].

Currently the Department is operating from three staffed stations with CAL Fire staffing a fourth station in the area. BBFD runs just over 4,000 calls per year.

Recommendations:

Plan for the relocation of the Baldwin Lake Station as growth continues in the area and trigger points are realized. The station should be designed as a 2 bay station capable of housing 6 personnel to allow for overnight paid call staffing, but staffed as a 5 person station daily.

Continually monitor apparatus utilization rates to determine points when additional resources are needed to effectively service the area near Boulder Bay with a future station to be staffed with 5 personnel daily.

7. FUNDING OPTIONS

Currently the Big Bear Fire Department is funded through the Big Bear Lake Fire Protection District, Big Bear City Community Services District and the Big Bear Fire Authority. The breakdown of each of these funding sources is shown on pages 10 – 14 of the report and results in a total budgeted revenue of $15,812,156 in FY 2016/17 to fund the services provided by the Big Bear Fire Department. This funding has resulted in a deficit compared to the costs of operating the Department. In the Community Services District, the Department receives 7.5% of the 1% taxable value of property taxes plus a parcel tax of $130 for developed parcels and $65 for undeveloped parcels. In the Fire Protection District, the Department receives 15.5% of the 1% taxable value of property taxes. There are opportunities to enhance the funding of the Fire Department through

- District Consolidation
- Parcel Tax
- Impact Fees
- Transient Occupancy Tax (TOT)
- Benefit Assessment District

1. DISTRICT-INITITATED CONSOLIDATION

The legislative bodies are allowed to initiated consolidation between the Fire Protection District and the Community Services District for the purposes of providing fire and EMS services. This would require application to the LAFCO Executive Officer in San Bernardino County through a Resolution of Application to consolidate the districts with

states the district that shall be the successor and specify under with principal act the successor shall conduct itself and include the following information:

a. Statement that the proposal is made pursuant to Part 3 of Division 3 of the Act [(56650 et seq.)];

b. State the nature of the proposal and list all proposed changes in the organization;
c. Set forth a description of the boundaries of the affected territory accompanied by a map showing the boundaries;

d. Set forth any proposed terms and conditions;

e. State the reason or reasons for the proposal;

f. State whether the petition is signed by registered voters or owners of the land; (at least 25% of the number of landowners within the territory, who own at least 25% of the assessed value of the land or at least 25% of the voters entitled to vote as a result of residing within, or owning land within, the territory).

g. Designate not to exceed three persons as chief petitioners, setting forth their names and mailing addresses;

h. Request that the proceedings be taken for the proposal [pursuant to Part 3 of Division 3 of the act (56650 et seq.)]; and

i. State whether the proposal is consistent with the sphere of influence of any affected city or affected district.

Special terms and conditions for the consolidation of these districts can include stipulating the makeup of the Board to ensure that both the residents of the City of Big Bear Lake and Big Bear City are fairly represented on the Board. This could include two representatives from each area and an at large representative from either area to make up the five-person Board.

Once the protest is accepted there would be a question submitted to the voters of each territory with a question along with any terms and conditions of the consolidation with the voters either confirming or denying the consolidation. Once completed the

LAFCO Executive Officer will file the certificated of completion and an effective date of the consolidation will be set.

The consolidation of the districts into a single district for the provision of fire protection and emergency medical services will allow a single effective tax rate to be set and ensure uniform collection throughout the district.

2. PARCEL TAX

Once a single District is formed through consolidation, the Board can determine if additional revenue is needed through a parcel tax to ensure appropriate funding of fire protection services.

A parcel tax is a tax on parcels of real property collected as part of the property tax bill, but unlike property taxes, it is not based on property value. A parcel tax is typically a flat rate tax that does not vary regardless of the size or characteristic of the

parcel of land. A Parcel Tax can also have a provision for increases tied to the consumer price index if desired.

The two most common types of parcel taxes are "fixed amount flat rate" and "fixed amount square footage", however there are many forms a parcel tax can take as illustrated below:

- **Age** – This parcel tax levies the tax based on the age of a property, with rates varying depending on the property's age.

- **Flat Rate** – This parcel tax levies a tax of a specified dollar amount on each parcel.

- **Frontage** – This parcel tax levies a tax based on the size of the frontage of a parcel and varies depending on how much space the parcel takes up on a street.

- **Property Usage** – This parcel tax levies various tax rates based on the use of parcel.

- **Per Room** – This parcel tax levies various rates based on the number of rooms located on a parcel.

- **Square Footage** – This parcel tax levies a tax of a specified percentage or dollar amount based on the square footage of the parcel.

According to the California Taxpayers Association, parcel taxes are regressive as they have the greatest impact on low-income, middle-income and small business owners[1].

To enact a parcel tax a local district must put the measure on a ballot and obtain 2/3 voter approval. According to Ballotpedia[2] there were a total of 828 parcel elections

[1] *The Other Property Tax, An overview of Parcel Taxes in California, March 2013, www.caltax.org/parceltaxpolicybrief.pdf*
[2] Ballotpedia, *Parcel Tax Elections in California*, https://ballotpedia.org/parcel_tax_elections_in_California

placed on local ballots from 2003 – 2014, of these 625 or 75% were brought forward by school districts and 55.9% were approved by voters as shown in the following table:

Parcel Tax Measures from 2003 - 2016

Status	Number	Percent
Approved	516	56.6%
Defeated	395	43.4%
Total	911	100%

At the end of 2012, the median parcel tax approved was $68 for special districts. The next table shows parcel tax elections in 2014, 2015, 2016 and 2017 related to police and/or fire initiatives and the outcome:

2014 – 2017 Parcel Tax Public Safety Ballot Measures

City/District	Measure	Amount	Expires	Outcome
2017 Election Results				
Peninsula	Fire Protection	$280/$295 per Parcel	Never	Pass
Palos Verdes Estates	Fire and Paramedic	$342.34 plus $0.2 per sq. ft.	12 Years	Fail
Lake County	Fire Protection	$120 per Single Family House	Never	Pass
Penryn	Fire Protection	Varies by Property Type	Never	Pass
Foresthill	Fire Protection	$180 per Parcel	Never	Fail
2016 Election Results				
San Mateo County	Police and Fire	$65 per Parcel	4 Years	Pass
Cayucos	Fire Protection	$125 per Parcel	Never	Fail
Apple Valley	Fire Protection	$126.9 per Parcel	Never	Pass
Rodeo-Hercules	Fire Protection	$216 per Parcel	Never	Pass
Daly City	Police and Fire	$162 per Parcel	5 Years	Fail
Ross	Public Safety	$970 per Parcel	8 Years	Pass
Muir Beach	Fire Protection	$213 per Parcel	10 Years	Pass
Union City	Public Safety	$123 per Residential Parcel	Never	Pass
Zayante	Fire Protection	$68 per Parcel	Never	Pass
Calaveras	Fire Protection	$96 per Residential Unit	Never	Fail
Idyllwild	Fire Protection	$130 per Parcel	Never	Fail
Inyo	Fire Protection	$3.70 to $1,000	Never	Fail
2015 Election Results				
Claremont	Public Safety	$286 / Parcel	40 years	Fail
San Marino	Public Safety	Varies	4 years	Pass
Clements	Fire District	Varies	Never	Fail
Elkhorn	Fire District	$2.50 / Acre	Never	Pass
Greenfield	Fire District	$73 / Unit	Never	Fail
Higgins	Fire District	$141 / Single Family	Never	Fail
Southern Inyo	Fire District	Varies	Never	Fail
2014 Election Results				
Albion-Little River	Fire District	$75 per Unit	Never	Pass
Apple Valley	Fire District	$23.88 / Parcel	2034	Fail
Bodega Bay	Fire District	$50 / Unit	Never	Fail
Desert Hot Springs	Public Safety	$372.68 / vacant acre	2019	Fail
Fort Bragg	Fire Equipment	$22 per Unit	2014	Pass
Happy Camp	Fire District	$12 - $39 per Parcel	Never	Pass

City/District	Measure	Amount	Expires	Outcome
Julian Cuyamaca	Fire District	$197 per Parcel	Never	Fail
Kentfield	Fire District	$50 - $75 per Parcel	2019	Pass
Kneeland	Fire District	$80 / Improved $60 / unimproved	Never	Pass
Lake Valley	Fire District	$120 per Parcel	Never	Fail
Lone Pine	Fire District	$100 per Parcel	2024	Pass
Monte Rio	Fire District	$60 Single Family $39 Campsites $1 per acre timberland	Never	Fail
North San Juan	Fire District	$61.50 Single Family $123 Commercial $184.50 Industrial $43.66 Vacant Land	Never	Pass
Olivehurst	Fire District	$120 per Parcel	2024	Fail
Orange Cove	Police and Fire	$95 Single Family $65 per unit Multi-family $95 Agricultural $495 Commercial $750 Industrial	Never	Pass
Parlier	Police and Fire	$180 Single Family $480 Commercial $2,400 Industrial $300 + $100 each Multi-family $300 per acre undeveloped	2019	Fail
Sleepy Hollow	Fire District	$50 - $75 per Parcel	2018	Pass

As shown above, there were 41 parcel tax elections public safety or fire protection since 2014, of those elections 21 or 51% passed with the 2/3 voter approval required for implementing a parcel tax.

Currently there are 11,302 parcels in the Fire Protection District and 18,394 parcels in the Community Services District. The following table illustrates the improved and unimproved parcels in each area:

Parcels in FPD and CSD

Fire Protection District	
Improved	9,293
Unimproved	1,739
Total	11,032
Community Services District	
Improved	13,727
Unimproved	4,667
Total	18,394
Combined Total	**29,696**

The amount of revenue available for the District from this type of a tax would be dependent on the amount and structure of the parcel tax.

3. IMPACT FEES

Impact fees are charged to developers to recover the costs associated with the impact of new development on providing fire protection services. These are typically enacted in rapidly growing areas to offset the cost of providing services to newly developed areas until a stable tax revenue is generated from the new commercial or residential development.

The fees collected are allowed to be used to purchase land, construct new facilities, upgrade existing facilities and purchase vehicles and equipment with a greater than five-year life span as allowed by Government Code 66000. An impact fee study is required to determine the impact fees to charge developers associated with residential

and non-residential construction projects. The impact of this type of fee would be minimal unless significant construction projects occur within the service area.

4. TRANSIENT OCCUPANCY TAX

A Transient Occupancy Tax (TOT) is charged in most of the United States to offset the impact of tourism on the cost to provide services in a local area. These taxes are typically charges where travelers rent accommodations and is paid at the location of the stay and remitted by the lodging operator to the City or County where collected. It can also be collected at camping sites and recreation vehicle parks.

In California, the authority to levy the tax is granted to the legislative bodies of both cities and counties by California Revenue and Taxation Code 7280. The authority to collect the tax is generally granted to the county tax collector by an ordinance of the Board of Supervisors of the county.

5. Benefit Assessment

A Benefit Assessment is used by local governments to pay the costs of providing fire suppression, flood control and other services to a particular community. These charges are based on the concept of assessing only those properties that directly benefit from the services or improvements financed. Because these charges are based on a specific benefit, they are not subject to Proposition 13 limitations.

There are several types of Benefit Assessments that are common on property tax bills, including assessments for fire suppression. These types of assessments will allow the Fire Protection District to finance the costs of needed services to effectively serve an underserved area by assessing specific property owners in the area being assessed.

Prior to creating a new assessment, the city, county, or special district must generate a detailed professional engineer's report outlining the proposed area, proposed project costs, annual cost to each property, and the benefit formula used to determine each property's share of the cost. Then, all owners of property within the proposed assessment district must be mailed a detailed notice of public hearing and a ballot with which to voice their approval or disapproval of the proposed district at least 45 days prior to the hearing. At the hearing, the governing body of the agency must consider all protests to formation of the district. Assessment district proceedings must be abandoned if a majority of the ballots received by the conclusion of the hearing protest creation of the district. Ballots are weighted according to the proportional financial obligation of the affected property. If the District is approved, the assessment is created and will be billed on the property tax bills each year. Once an assessment is created, it may be repealed or reduced by popular initiative.

By law (Prop. 13), benefit assessments cannot be based on property value. Instead, each assessment district includes a benefit formula and each parcel in the service area is assessed according to the specific benefit it receives from the services and improvements. The charge is calculated based on this formula and placed on the county property tax bill.

The amount of the benefit assessment cannot be increased without the consent of the property owners. Prior to increasing the annual assessment, the agency is required to give written notice to all affected property owners, hold a public hearing and an assessment ballot vote. A majority vote is required to approve the rate increase.

Most benefit assessments will continue as long as services are provided.

8. RESULTS OF THE EMPLOYEE SURVEY

The Matrix Consulting Group conducted an online survey of the employees of the Big Bear Fire Department in order the gauge the sentiments of the employees on a variety of issues. There were 30 responses for a response rate of 46% of Department personnel to the survey and all results are confidential.

1. SURVEY OVERVIEW

The survey contained three sections. The first section asked respondents to provide demographic data for the purposes of filtering responses. Respondents provided their current assignment, rank, and their length of service.

The second section contained 40 statements to which they were asked to select one of the following responses; “Strongly Agree”, “Agree”, “Disagree” and “Strongly Disagree”.

The third section consisted of five open-ended statements allowing the respondents to answer in their own words. These types of questions allow the employee to comment on issues they feel are most pressing from their view.

2. DEMOGRAPHIC IDENTIFIERS

While the responses are confidential, respondents were asked to provide information about their position in the department. The table below outlines the breakdown by assignment and length of service. A review of the length of service indicates the department has a considerable amount of experience.

Demographics

Rank	Number of Responses	Pct. of the Total
Captain, Battalion Chief, or higher	6	20.00%
Engineer, Firefighter	14	46.70%
Apprentice Firefighter	2	6.70%
Office/Administration/Prevention	8	26.70%
Assignment	**Number of Responses**	**Pct. of the Total**
Administration/Prevention	10	33.30%
Suppression	20	66.70%
Length of Service	**Number of Responses**	**Pct. of the Total**
Less than 1 year	1	3.45%
1 - 5 years	9	31.03%
6 - 10 years	7	24.12%
11 - 15 years	6	20.69%
16 - 20 years	2	6.90%
More than 20 years	4	13.79%

The survey was an online system and available to all the employees of the Big Bear Fire Department.

The next section describes the employee responses to the multiple-choice statements regarding their perceptions and attitudes about a variety of subjects within the department. The responses varied widely in this portion of the survey with some statements receiving strong agreement while others were more negative.

3. MULTIPLE CHOICE STATEMENTS

The following sections describe employees' responses to the multiple-choice statements from the second section of the survey regarding their perceptions and attitudes about various aspects of the department. Responses varied widely in this portion of the survey with some statements receiving strong agreement some statements receiving strong disagreement.

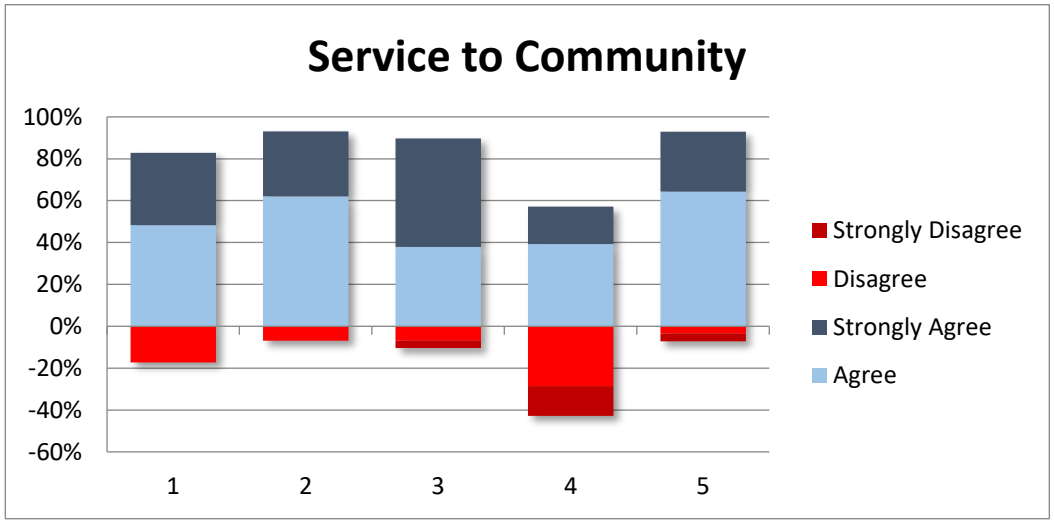
(1) Service to the Community

The following chart outlines the employees' responses to statements regarding the department's service to the community.

Service to the Community

Statement	Strongly Agree	Agree	Disagree	Strongly Disagree
1. Our department provides a high level of service for the community	34.48%	48.28%	17.24%	0.00%
2. Residents view our department as a high priority.	31.03%	62.07%	6.90%	0.00%
3. We provide effective mutual aid to neighboring fire departments.	51.72%	37.93%	6.90%	3.45%
4. We receive effective mutual aid from our neighboring fire departments.	17.24%	37.93%	27.59%	13.79%
5. The 911 dispatch system works well for fire/rescue calls.	27.59%	62.07%	3.45%	3.45%

The following graph provides a visual representation of the number of agreeing (blue) and disagreeing (red) responses to each statement in this category.



Please note the following points:

- **Statements #1-3:** These statements received majority of agreeing responses with a much smaller number of disagreeing responses.
- **Statement #4: "***We receive effective mutual aid from our neighboring fire departments."* This statement received almost an equal amount of agreeing and

disagreeing responses. This may indicate that there are mixed feelings with regards to neighboring fire departments.

- **Statement #5:** This statement received a majority agreeing responses with a much smaller number of disagreeing responses.

The respondents made it clear they feel the department provides a high level of service to the community and neighboring fire departments. They also made it clear that they do not feel they receive effective aid from neighboring fire departments.

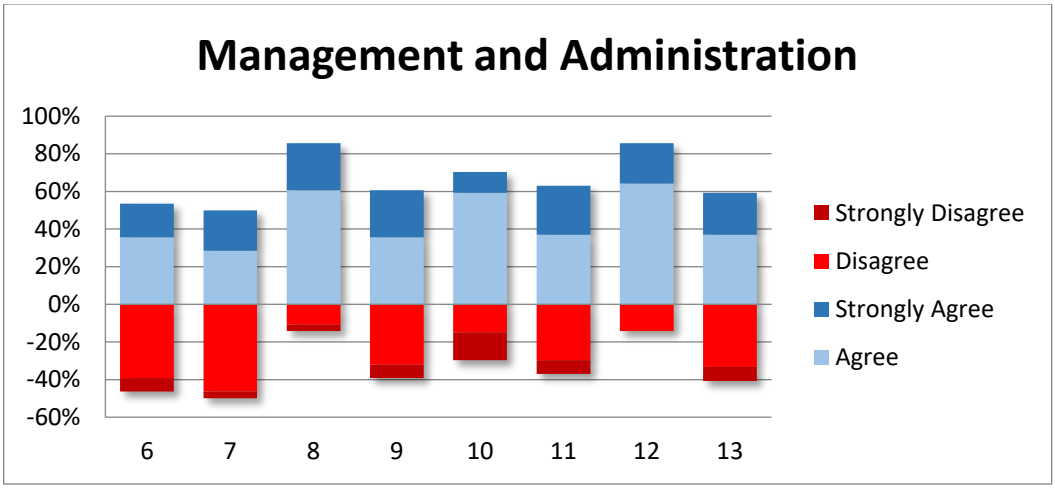
(2) MANAGEMENT AND ADMINISTRATION

The following chart outlines the employees' responses to statements regarding the management and administrative effectiveness of the department.

Management and Administration

Statement	Strongly Agree	Agree	Disagree	Strongly Disagree
6. Our department has a clear vision/direction for the future.	17.86%	35.71%	39.29%	7.14%
7. I am kept informed of departmental information.	21.43%	28.57%	46.43%	3.57%
8. My performance expectations are made clear.	25.00%	60.71%	10.71%	3.57%
9. Our department seems to be innovative and progressive.	25.00%	35.71%	32.14%	7.14%
10. Our department does a good job planning our shift assignments (e.g. training, inspections).	11.11%	59.26%	14.81%	14.81%
11. The supervision at emergency scenes is sufficient.	25.93%	37.04%	29.63%	7.41%
12. Spans of control in the Fire Department are appropriate.	21.43%	64.29%	14.29%	0.00%
13. The Fire Department management and administration operates efficiently.	22.22%	37.04%	33.33%	7.41%

The following graph provides a visual representation of the number of agreeing (blue) and disagreeing (red) responses to each statement in this category.



Please note the following points:

- **Statement #6:** "*Our department has a clear vision/direction for the future."* This statement received a majority of agreeing responses along with a significant number of disagreeing responses. This may indicate that there are mixed feelings with regards to whether or not the department has a clear vision and clear direction for the future.

- **Statement #7:** ***"****I am kept informed of departmental information."* This statement received an equal number of agreeing and disagreeing responses. This indicates that half of the Department does not feel that they are kept in the loop about information regarding the Department.

- **Statement #12:** ***"****Spans of control in the Fire Department are appropriate."* This statement received a majority of agreeing responses with a small number of disagreeing statements.

Respondents, for the most part, feel that their work expectations are made clear and that shift assignments are handled sufficiently. One area that should be looked at more clearly is the dissemination of departmental information. Respondents were neither in agreement nor disagreement about this statement.

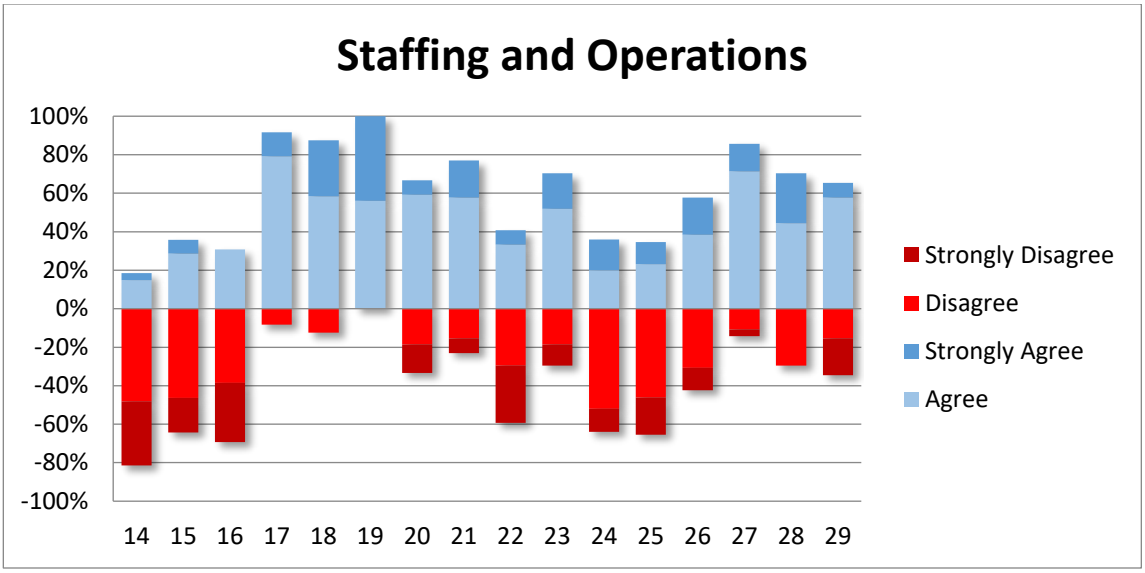
(3) STAFFING AND OPERATIONS

The following chart outlines the employees' responses to statements regarding the staffing and operations of the department.

Staffing and Operations

Statement	Strongly Agree	Agree	Disagree	Strongly Disagree
14. Staff resources are adequate to meet the current emergency call needs of the communities we serve.	3.70%	14.81%	48.15%	33.33%
15. Our department is adequately staffed to meet demands for non-emergency services.	7.14%	28.57%	46.43%	17.86%
16. Current apparatus staffing allows us to effectively perform our duties on emergency services.	0.00%	30.77%	38.46%	30.77%
17. Dispatch information provided to us on incidents is accurate.	12.50%	79.17%	8.33%	0.00%
18. Dispatch information provided to us on incidents is received in a timely fashion.	29.17%	58.33%	12.50%	0.00%
19. Our personnel work well with each other on calls for service to which they respond.	44.00%	56.00%	0.00%	0.00%
20. We receive the practical training we need to keep all of our skills high.	7.41%	59.26%	18.52%	14.81%
21. Our department places a high value on ensuring proper training for field personnel.	19.23%	57.69%	15.38%	7.69%
22. Policies related to operations are adequate and clearly defined.	7.41%	33.33%	29.63%	29.63%
23. Our department makes effective use of technology.	18.52%	51.85%	18.52%	11.11%
24. The current shift staffing model works well.	16.00%	20.00%	52.00%	12.00%
25. The Fire Department makes effective use of paid call personnel.	11.54%	23.08%	46.15%	19.23%
26. The Fire Department makes effective use of apprentice firefighters.	19.23%	38.46%	30.77%	11.54%
27. Training for firefighters to assist the Fire Marshal Office with basic inspections would be beneficial for the Department.	14.29%	71.43%	10.71%	3.57%
28. There are ways I could be used more effectively at work.	25.93%	44.44%	29.63%	0.00%
29. The Fire Department operations and staffing operates efficiently.	7.69%	57.69%	15.38%	19.23%

The following graph provides a visual representation of the number of agreeing (blue) and disagreeing (red) responses to each statement in this category.



Please note the following points:

- **Statement #14:** "*Staff resources are adequate to meet the current emergency call needs of the communities we serve."* This statement received the greatest number of disagreeing responses, over 80% of respondents disagreed with this statement.

- **Statement #17:** "*Dispatch information provided to us on incidents is accurate."* This statement received a majority of agreeing responses with a small number of disagreeing responses.

- **Statement #19:** "*Our personnel work well with each other on calls for service to which they respond."* This statement received 100% of agreeing responses. Every respondent agrees that the personnel in the Department work well with each other.

- **Statement #26**: "*The Fire Department makes effective use of apprentice firefighters."* This statement received mixed reaction with a slightly higher number of agreeing responses than disagreeing responses.

Respondents were very clear with their opinions about staffing and available resources. They were all in agreement about how well personnel work together. There were mixed reactions related to policies and the use of apprentice firefighters.

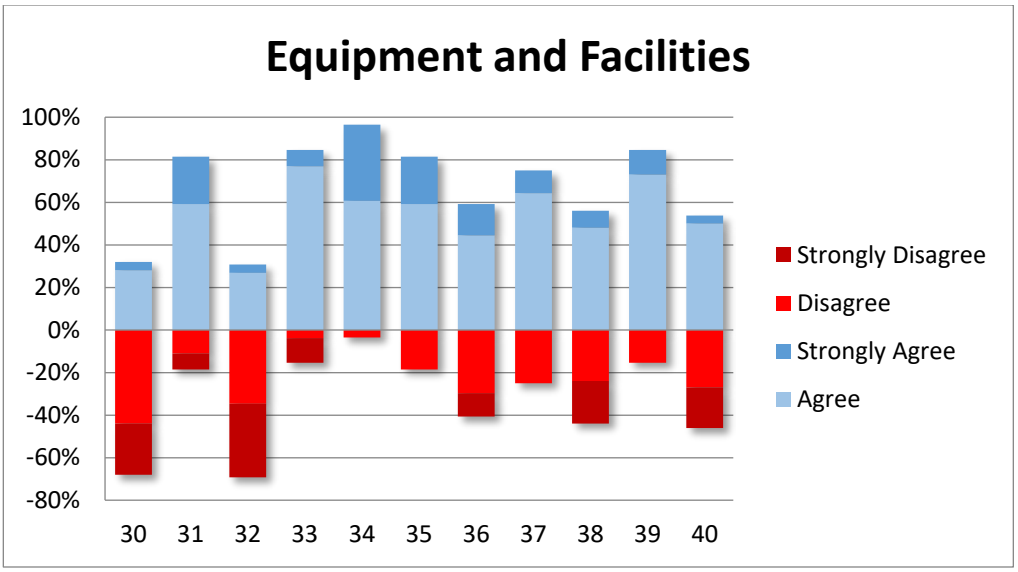
(4) EQUIPMENT AND FACILITIES

The following chart outlines the employees' responses to statements regarding the equipment and facilities of the department.

Equipment and Facilities

Statement	Strongly Agree	Agree	Disagree	Strongly Disagree
30. We have appropriate equipment to provide high levels of service.	4.00%	28.00%	44.00%	24.00%
31. Our fire equipment is well maintained.	22.22%	59.26%	11.11%	7.41%
32. The Department has sufficient reserve apparatus.	3.85%	26.92%	34.62%	34.62%
33. The locations of our fire stations are effective in meeting community needs.	7.69%	76.92%	3.85%	11.54%
34. Our fire stations provide a safe workplace.	35.71%	60.71%	3.57%	0.00%
35. Our fire stations are well maintained.	22.22%	59.26%	18.52%	0.00%
36. Our fire stations meet the needs of the Department.	14.81%	44.44%	29.63%	11.11%
37. Our fire stations meet the needs of the communities we serve.	10.71%	64.29%	25.00%	0.00%
38. The Fire Department apparatus meets the service needs of the community.	8.00%	48.00%	24.00%	20.00%
39. The Fire Department facilities meet the service needs of the community.	11.54%	73.08%	15.38%	0.00%
40. The Fire Department tools and equipment meets the service needs of the community.	3.85%	50.00%	26.92%	19.23%

The following graph provides a visual representation of the number of agreeing (blue) and disagreeing (red) responses to each statement in this category.



Please note the following points:

- **Statement #32:** "*The Department has sufficient reserve apparatus."* This statement received a majority of disagreeing responses along with a small number of agreeing responses.

- **Statement #34:** "*Our fire stations provide a safe workplace."* This statement received the largest number of agreeing responses with a small number of disagreeing responses.

- **Statement #38:** "*The Fire Department apparatus meets the service needs of the community."* This statement received a majority of agreeing responses with a similar number of disagreeing responses.

- **Statement #40:** "*The Fire Department tools and equipment meet the service needs of the community."* This statement also received a majority of agreeing responses with a similar number of disagreeing responses.

Respondents believe the equipment is well maintained and that the fire stations are a safe place to work. However, they also believe they do not have the appropriate equipment or sufficient reserve apparatus.

4. OPEN-ENDED PROMPTS

There were four questions to clarify any answers to their statements above and a section allowing for respondents to give any additional comments. The following sections summarize those comments found at the end of the survey.

(1) Please provide additional comments for the service to the community.

There were 16 responses to this prompt. Themes that appeared in multiple responses are outlined below:

- Provide a high level of service to community (5 responses)
- Need increase in man power (5 responses)
- Communication is difficult (4 responses)
- Poor work performance (3 responses)
- Unqualified employees (3 responses)
- Concern of overwhelming their services (2 responses)
- Response from County resources is sub-par (2 responses)
- Poor training (2 responses)
- Insufficient funds (2 responses)
- Organization is respected by the community (1 response)
- No policies (1 response)
- Outdated equipment (1 response)
- Residents don't know what they do (1 response)

These responses align with the Service to Community section earlier in this survey. The overall opinion of the employees is they are doing the best they can with the resources they have.

(2) Please provide comments for any questions related to management and administration.

There were 14 responses to this prompt. Themes that appeared in multiple responses are outlined below:

- Disconnect between floor personnel and administration (5 responses)
- No clear vision or direction of department (5 responses)
- Poor dissemination of information (4 responses)
- Lacking supervision (3 responses)
- Administration is overly staffed (3 responses)

- Department is not innovative (3 responses)
- Department is innovative (2 responses)
- Outdated equipment (2 responses)
- Inadequate span of control (2 responses)
- Performance expectations unknown (2 responses)
- Poor internal customer service (2 responses)
- No accountability (2 responses)
- Improve training (2 responses)
- Need more suppression members (1 response)
- Tactical channels are highly underused (1 response)

Many respondents felt that there was a disconnect between the floor personnel and the administration and that there is no clear vision or direction for the Department. This response mirrors the response noted in the multiple-choice statements in the Management and Administration section.

(3) Please provide comments on staffing and operations.

There were 17 responses to this prompt. Themes that appeared in multiple responses are outlined below:

- Lack of staffing/increase man power (18 responses)
- Improve training for new and existing personnel (10 responses)
- Policies are not adequate or sufficient (5 responses)
- Improve or dismantle PCF position (4 responses)
- Apprentice rank/program is greatly flawed (4 responses)
- Outdated equipment (3 responses)
- Prevention is at the top of the deficiency list (2 responses)
- Perform at the highest level of efficiency we can with the resources we have (1 response)
- Floor personnel are close and work well together (1 response)
- Want more support from the Department (1 response)
- Rely too heavily on technology (1 response)
- Poor dispatch information (1 response)
- Apprentices receive good training (1 response)

The responses for this prompt are strong support to the multiple-choice statements regarding the Staffing and Operations section. Virtually every response had a comment regarding the staffing levels within the Department.

(4) Please provide comments about facilities and equipment.

There were 16 responses to this prompt. Themes that appeared in multiple responses are outlined below:

- Outdated fleet (12 responses)
- No reserve/lack of updated reserve apparatus (11 responses)
- Hard to maintain equipment (6 responses)
- Outdated equipment (6 responses)
- Stations need repairs/updates (3 responses)
- Ladders on trucks too short (2 responses)
- Need additional stations (2 responses)
- Snow/ice fall from stations roofs are a safety hazard (1 response)
- FD facilities are fine for the public (1 response)
- Stations are well maintained, but need to get rid of clutter (1 response)

As expected the responses to this prompt continue the theme of staffing issues and the conditions of the stations. These responses further support the responses to the multiple-choice statements from the Equipment and Facilities section.

(5) Please provide any additional comments or information you wish to provide to the project team.

There were 9 responses to this prompt. Below is a synopsis of the responses:

- Very motivated as a department
- Need more personnel available to the community
- Staffing and equipment issues are ruining moral and jeopardizing service to the community
- Currently down staff, this leads to a large amount of vacancies and force hires
- Lack of personnel leaves work force sleep deprived and overworked (2 responses).
- Poor, old, outdated, and insufficient rigs and tools
- Lack of standards and standardized training (3 responses)
- Interfacility transfers pose a significant risk to crews, especially during late hours (2 responses)
- Need 3 man engines in the master plan
- Department should be completely merged and in one system
- PCF position is not what it used to be
- Lack policies and procedures
- Administration has no plan on vehicle replacement funding

There were many comments that addressed the concern of personnel being sleep deprived and being in danger on the road because of this.

9. RESULTS OF THE COMMUNITY SURVEY

The Matrix Consulting Group conducted an online survey of the community of the Big Bear Fire District in order the gauge the sentiments of the residents on a variety of issues. There were 63 responses to the survey and all results are confidential. It is important to note that this is a low response rate and does not qualify as a statistically valid survey, but does allow the Department to receive community feedback.

1. SURVEY OVERVIEW

The survey was designed to measure the community's view of services, satisfaction of the services provided, the value of those services and the quality of the services provided by the department. The respondents were also asked if they were a resident or business owner and in what service area of the district they were located.

The survey outlined 14 services and 5 value statements to be rated. The responses for the services section included "extremely important", "very important", 'somewhat important", and "not important". For the value statements the responses included "excellent", "good", "fair", "poor", and "n/a".

Each of the sections allowed the respondent to comment regarding the particular area being addressed. At the end of the survey the respondents were provided space to provide any additional comments or information they wished to share.

2. DEMOGRAPHIC IDENTIFIERS

While the responses are confidential, respondents were asked to provide information about their service area and their status in the community. The tables below

outline the breakdown by status and service area. A review of the status shows that 98% of the respondents were citizens or residents.

Demographics

Status	Number	Percent
Citizen / Resident	57	98.3%
Business Owner / Manager	1	1.7%
Service Area	**Number**	**Percent**
Baldwin Lake	1	1.7%
Big Bear City	26	44.8%
Big Bear Lake	13	22.4%
Boulder Bay	2	3.4%
Erwin Lake	3	5.2%
Lake Williams	0	0.0%
Moonridge	9	15.5%
Sugarloaf	4	6.9%

The survey was an online system and available to all the residents and business owners of the Big Bear service areas. A total of 63 responses were received.

The next section describes the responses related to the services provided by the Big Bear Fire Department.

3. SERVICES PROVIDED

The following sections describe the responses to the services provided by the fire department. The first section illustrates the responses to rating the importance of the service provided while the second section identifies the community's satisfaction with these same services.

(1) Importance of Services

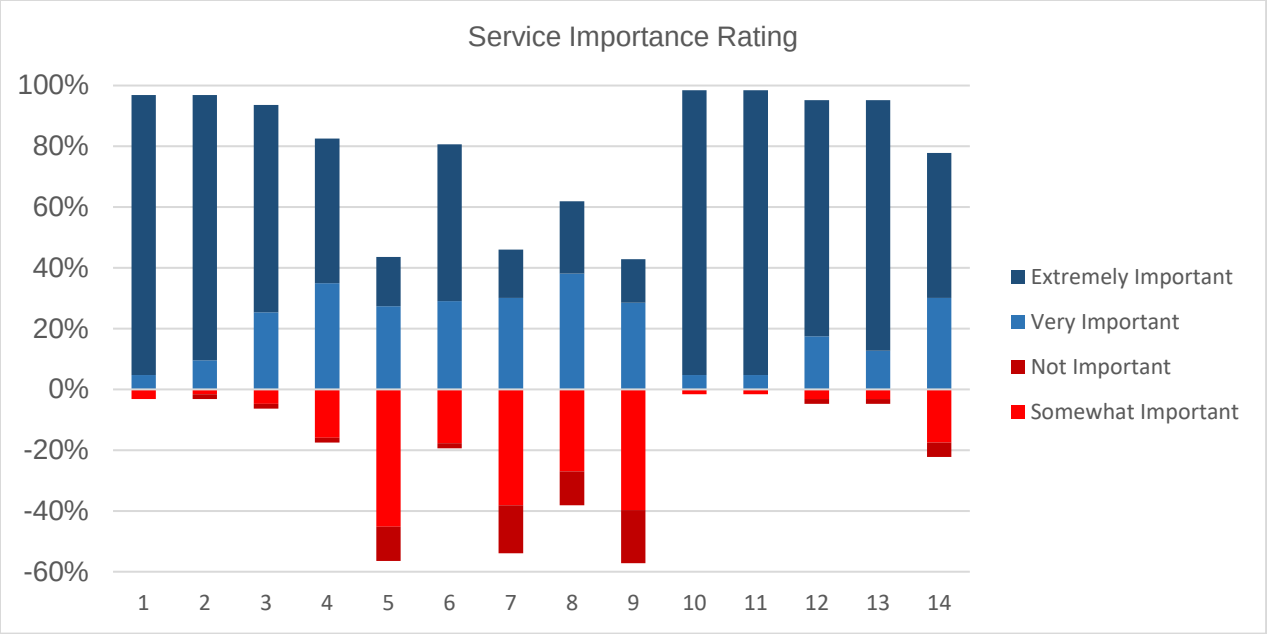
The following chart outlines the responses regarding the services provided to the community by the fire department. The statement, "For each of the service areas listed

below, please select a response indicating whether the service is extremely important to you, very important, somewhat important, or not at all important."

Service Importance Rating

Service	Extremely Important	Very Important	Somewhat Important	Not Important
1. Structural Firefighting	92.1%	4.8%	3.2%	0.0%
2. Rescue Calls	87.3%	9.5%	1.6%	1.6%
3. Vehicle Accidents	68.3%	25.4%	4.8%	1.6%
4. Hazardous Materials Response to Chemical Spills	47.6%	34.9%	15.9%	1.6%
5. Curbside Chipping Program	16.1%	27.4%	45.2%	11.3%
6. Emergency/Storm Preparedness	51.6%	29.0%	17.7%	1.6%
7. Attendance by the Fire Department at Public and Community Events	15.9%	30.2%	38.1%	15.9%
8. Business Fire Safety Inspections	23.8%	38.1%	27.0%	11.1%
9. Home Fire Safety Inspections	14.3%	28.6%	39.7%	17.5%
10. Response times to Emergency Fire Calls	93.7%	4.8%	1.6%	0.0%
11. Response times to Emergency Medical Calls	93.7%	4.8%	1.6%	0.0%
12. Response times to Vehicle Accidents	77.8%	17.5%	3.2%	1.6%
13. Response times to Rescue Calls	82.5%	12.7%	3.2%	1.6%
14. Response times to Hazardous Materials Chemical Spills	47.6%	30.2%	17.5%	4.8%

The following graph provides a visual representation of the number of respondents that perceive the services as extremely or very important (blue) and those that are somewhat or not important (red) to each service.



Please note the following points:

- **Statement #1:** *"Structural Firefighting."* This service received an overwhelming majority of extremely important responses.

- **Statement #2:** *"Rescue Calls."* Respondents were overwhelmingly supportive of this service as well.

- **Statement #4:** *"Hazardous Materials Response to Chemical Spills."* The respondents found this service to be important but there were a fair number that found it to less important.

- **Statement #5:** *"Curbside Chipping Program."* More respondents found this service to be less important than other services being provided.

- **Statement #6:** *"Emergency/Storm Preparedness."* Of the non-emergency services surveyed this service received the highest marks in terms of importance.

- **Statement #7:** *"Attendance by the Fire Department at Public and Community Events."* This service was evenly split between being important and not as important.

- **Statement #9:** *"Home Fire Safety Inspections"* More respondents identified this service as being less important than important.

- **Statements #10, #11, #12 and #13:** *"Response Times to Various Emergency Calls"* These statements all dealt with the response time to emergency calls for

service. The respondents overwhelmingly identified these as a more important service versus not so important.

The respondents clearly identified the emergency response and response times as important programs for the department. For non-emergency programs the respondents found the preparedness programs more important than home inspections and attendance at public events.

(2) Service Satisfaction

The following chart outlines the responses about service satisfaction of the services provided by the fire department. The statement, "For each of the service areas listed below, please select a response indicating how satisfied you are with the service provided by the Big Bear Fire Department in your community. If you do not know or have no opinion, please select N/A."

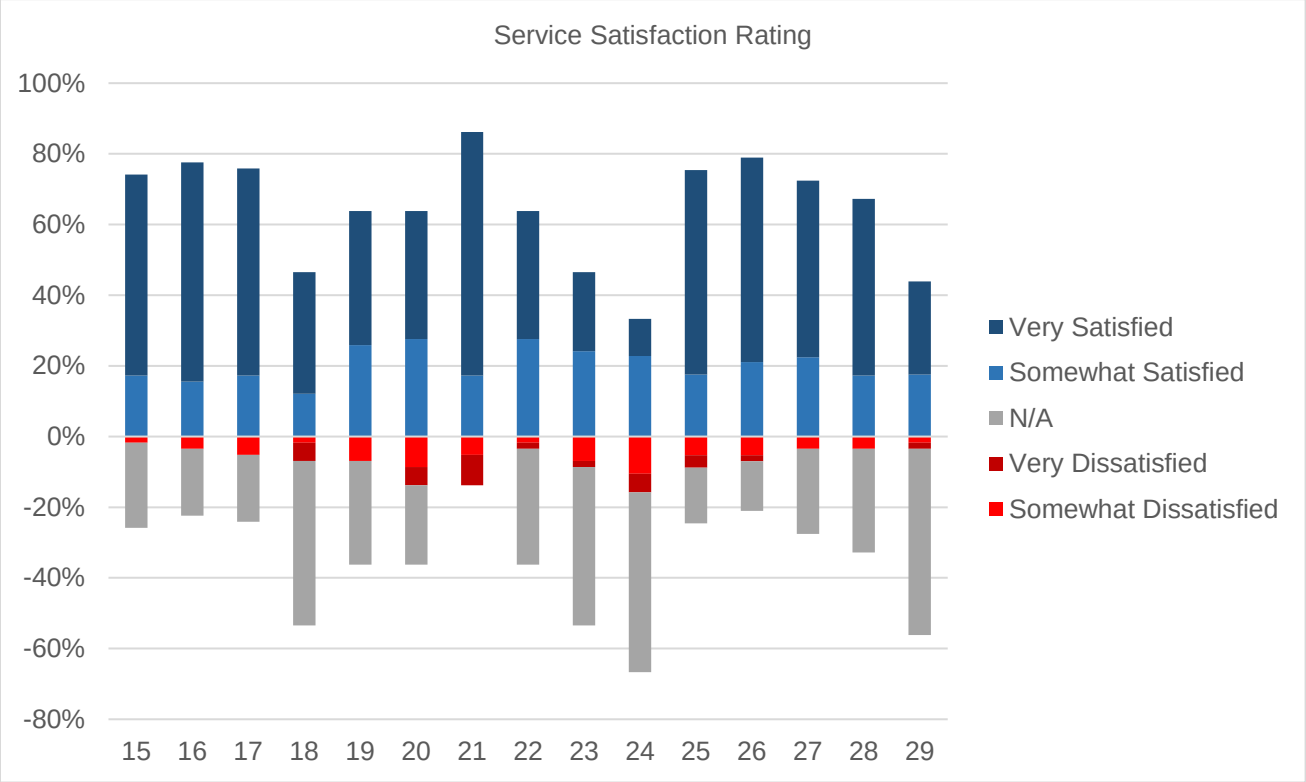
Service Satisfaction Rating

Service	Very Satisfied	Somewhat Satisfied	Somewhat Dissatisfied	Very Dissatisfied	N/A
15. Structural Firefighting Capabilities	56.9%	17.2%	1.7%	0.0%	24.1%
16. Rescue Call Capabilities	62.1%	15.5%	3.4%	0.0%	19.0%
17. Vehicle Accident Capabilities	58.6%	17.2%	5.2%	0.0%	19.0%
18. Hazardous Materials Response to Chemical Spills	34.5%	12.1%	1.7%	5.2%	46.6%
19. Curbside Chipping Program	37.9%	25.9%	6.9%	0.0%	29.3%
20. Emergency/Storm Preparedness	36.2%	27.6%	8.6%	5.2%	22.4%
21. Distance of the nearest fire station to your home or business	69.0%	17.2%	5.2%	8.6%	0.0%
22. Attendance by the Fire Department at Public and Community Events	36.2%	27.6%	1.7%	1.7%	32.8%
23. Business Fire Safety Inspections	22.4%	24.1%	6.9%	1.7%	44.8%
24. Home Fire Safety Inspections	10.5%	22.8%	10.5%	5.3%	50.9%
25. Response times to Emergency Fire Calls	57.9%	17.5%	5.3%	3.5%	15.8%
26. Response times to Emergency Medical Calls	57.9%	21.1%	5.3%	1.8%	14.0%

Service Satisfaction Rating

Service	Very Satisfied	Somewhat Satisfied	Somewhat Dissatisfied	Very Dissatisfied	N/A
27. Response times to Vehicle Accidents	50.0%	22.4%	3.4%	0.0%	24.1%
28. Response times to Rescue Calls	50.0%	17.2%	3.4%	0.0%	29.3%
29. Response times to Hazardous Materials Chemical Spills	26.3%	17.5%	1.8%	1.8%	52.6%

The following graph provides a visual representation of the number of respondents that are satisfied with the services as very or very somewhat (blue) and those that are somewhat or very dissatisfied (red) to each service. Additionally, there were a number of respondents that didn't know or had no opinion (gray) in order to rate the service.



Please note the following points:

- **Statement #15:** *"Structural Firefighting Capabilities."* The respondents were well satisfied with this service at 74% and another 24% that had no opinion or knowledge of the service.

- **Statement #16:** *"Rescue Call Capabilities."* 77% of the respondents were well satisfied with the capabilities of the department for this type of service with 19% that had no opinion or knowledge.

- **Statement #18:** *"Hazardous Materials Response to Chemical Spills."* With 46% of the respondents satisfied with the capabilities, 47% had no opinion or knowledge of the service. This may also be the reason the importance of the service was also low.

- **Statement #21:** *"Distance of the nearest fire station to your home or business."* Just over 86% of the respondents were satisfied with the location of the fire stations in the district. There were no responses in the N/A category for this statement.

- **Statement #24:** *"Home Fire Safety Inspections."* Over half of the respondents did not have an opinion or knowledge of this program while 33% were satisfied with the service.

Respondents, for the most part, are satisfied with the services provided by the department. There were a significant number of responses where the respondent did not have an opinion or knowledge of the service. There appears to a correlation between the importance of the service and the satisfaction of that same service. This type of response and correlation could be because the service has not been used or the community did not know the service was available from the department.

3. VALUE AND QUALITY OF SERVICE

The following sections describe the responses to the services provided by the fire department. The first section illustrates the responses to rating the value of the services and the second section discusses the quality of the services provided by the department.

(1) Value of Services

The community was asked about the value of services from the Big Bear Fire Department. They were presented with the following overview: "The City of Big Bear Lake and Big Bear City have formed a Joint Powers Authority to provide fire protection and emergency medical services. Services are provided by a professional Fire Department. The current operating budget of the Fire Department is $11.27 million. Current staffing of the Fire Department consists of 77 personnel (48 full time positions and 29 part-time fire personnel). All but nine (9) of the positions are uniformed personnel with the remaining providing support services for the Department (clerical, human resources, finance, IT, etc.) There are currently 4 fire stations providing services to the area on a 24 hour / 7-day basis:

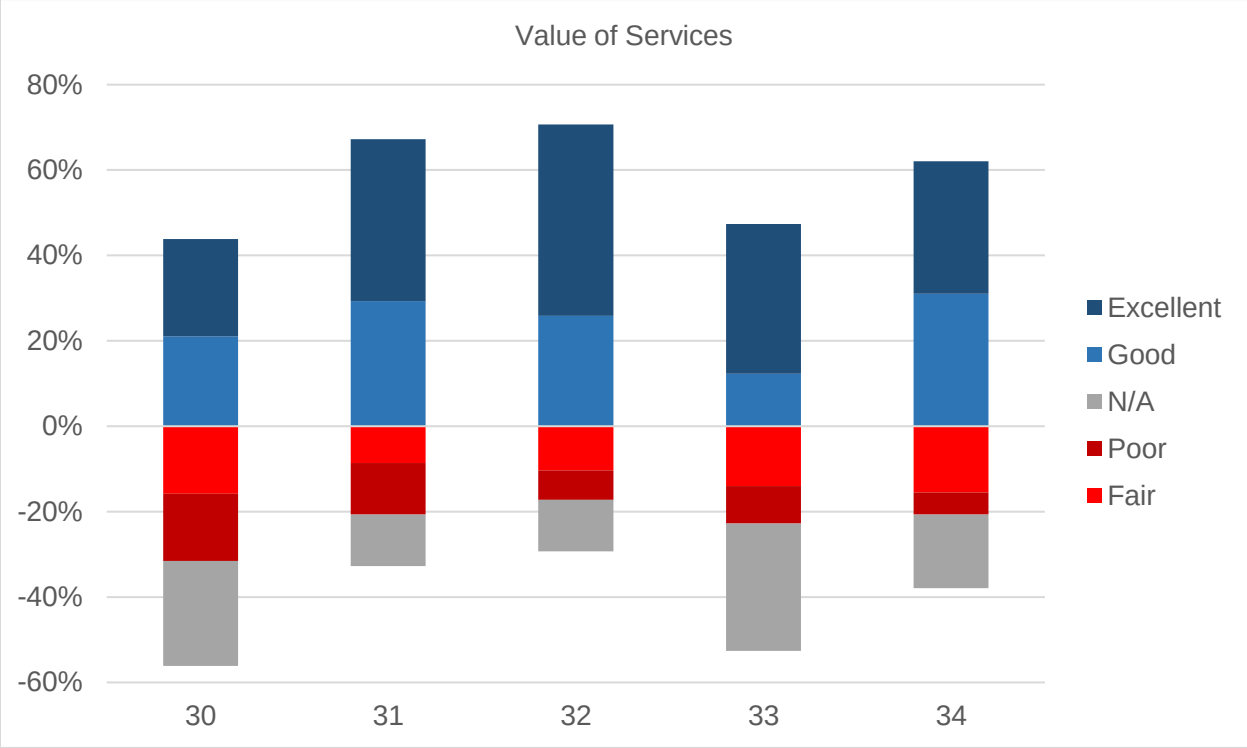
- Station 281 (Headquarters) - 41090 Big Bear Blvd. (Big Bear Lake)
- Station 282 - 301 W. Big Bear Blvd. (Big Bear City)
- Station 283 - 550 North Maple Lane (Sugarloaf)
- Station 284 - 45360 Lucky Baldwin Ranch Road (Baldwin Lake)"

The following chart outlines the community's responses to statements regarding the value of services of the fire department.

Value of Services Rating

Statement	Excellent	Good	Fair	Poor	N/A
30. How would you rate how effectively money is being used for fire and emergency medical services?	22.8%	21.1%	15.8%	15.8%	24.6%
31. The value of fire protection and prevention services for the taxes paid	37.9%	29.3%	8.6%	12.1%	12.1%
32. The overall direction the Big Bear Fire Department is taking to provide services	44.8%	25.9%	10.3%	6.9%	12.1%
33. The value of the Ambulance Membership Program	35.1%	12.3%	14.0%	8.8%	29.8%
34. The openness of the Fire Department to community input	31.0%	31.0%	15.5%	5.2%	17.2%

The following graph provides a visual representation of the number of respondents that value the services of the fire department as excellent or good (blue) and those that are poor or fair (red) for each area. Additionally, there were a number of respondents that didn't know or had no opinion (gray) in order to rate the service.



Please note the following points:

- **Statement #30:** *"How would you rate how effectively money is being used for fire and emergency medical services?"* The respondents perceive the value as good or excellent by a margin of about 12% with 24% not knowledgeable or have no opinion about the question.

- **Statement #31:** ***"****The value of fire protection and prevention services for the taxes paid."* This statement has a 67% favorable rating with 20% of the respondents perceiving it as not a good value. Only 12% did not have an opinion about the statement.

- **Statement #32:** *"The overall direction the Big Bear Fire Department is taking to provide services."* Over 70% of the respondents feel the fire department is heading in the right direction. Approximately 17% feel the department is not heading in the right direction with 12% having no opinion.

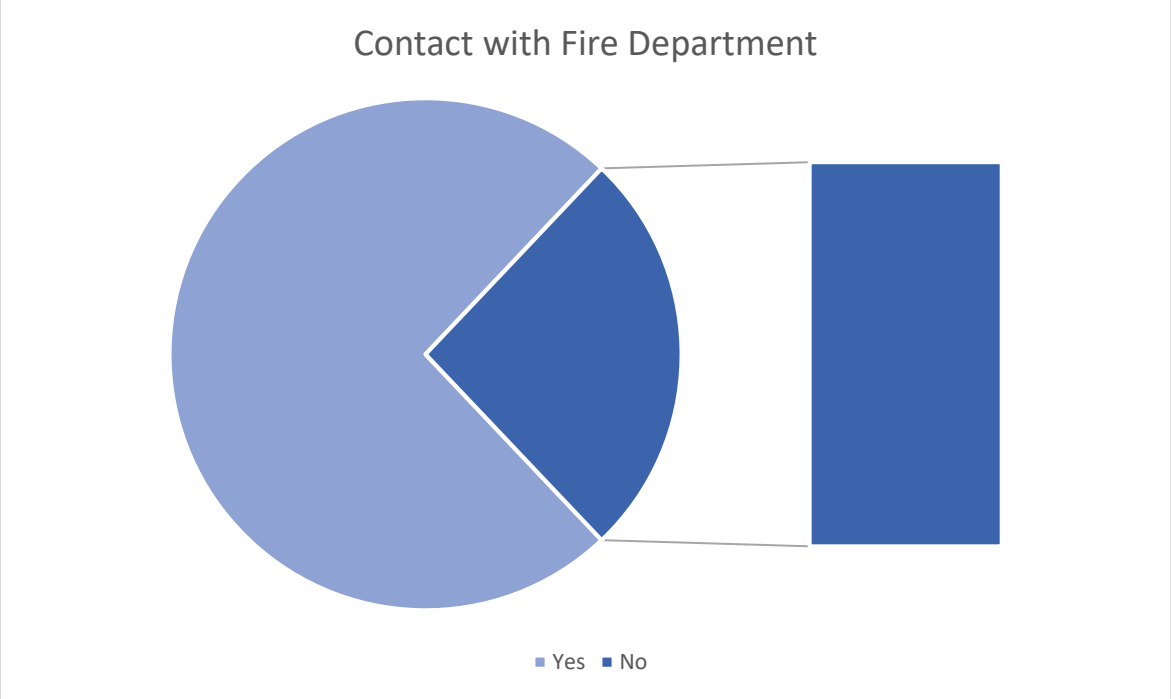
- **Statement #33:** *"The value of the Ambulance Membership Program."* Only 47% of the respondents feel this is a good value with 29% having no opinion.

Overall 58% respondents found the value of the service was excellent or good. Approximately 20% of the respondents had no opinion or were not knowledgeable enough to render an opinion. This could present an opportunity to improve the communications with the community about the services of the fire department.

(2) Quality of Service

The community was asked about the quality of services from the Big Bear Fire Department. The staff and overall quality of services were addressed in the questions and the following charts illustrate the responses from the community.

The first question is "Within the last three (3) years have you interacted with an employee or member of the Big Bear Fire Department?"



Approximately 74% of the respondents have had some contact or have interacted with a member of the Big Bear Fire Department.

The chart below provides the results of the next question "What was your impression of the Fire Department employee in your most recent contact: If poor, please explain in the comments section."

Impression of the Fire Department Employees

	Excellent	Good	Fair	Poor	N/A
Knowledge	63.8%	10.3%	3.4%	1.7%	20.7%
Responsiveness	65.5%	8.6%	3.4%	3.4%	19.0%
Courtesy	67.2%	6.9%	0.0%	6.9%	19.0%
Overall Impression	66.7%	10.5%	3.5%	1.8%	17.5%

Respondents had a favorable impression of the employees in all categories addressed in the survey.

The final statement for this section was for the overall quality of the interaction experience for the fire department. “How would you rate the overall quality of the services provided?” The following chart illustrates this response.

Overall Quality

	Excellent	Good	Fair	Poor	N/A
How would you rate the overall quality of the services provided?	57.1%	16.1%	3.6%	1.8%	21.4%

4. OPEN-ENDED PROMPTS

Each section allowed for the respondent to provide comments as well as the final section prompted the respondent to provide any additional information for the survey. There were some comments that attacked individuals or other groups within the department. These comments were not considered in this section. The following sections summarize those comments found at the end of the survey.

(1) Service Importance Rating

There were 21 comments for this this section. Themes that appeared in multiple responses are outlined below:

- Excellent service (6 responses)
- Concerns about hiring practices and salaries (4 responses)
- Call volume especially on the weekends (2 responses)
- Response times (3 responses)

These responses align with the results of the service importance ratings above. The overall opinion of the community places high importance on emergency services and response times.

(2) Service Satisfaction Rating

There were 12 comments for this section. The principal theme that appeared in three responses is response times.

(3) Value of Services

There were 11 comments for this section. Themes that appeared in multiple responses are pension costs and overhead costs (4 responses)

(4) Quality of Service

There were 13 comments for this section. Themes that appeared in multiple responses are outlined below:

- Well trained, quality personnel (3 responses)
- Good customer service (3 responses)

The theme for this section continues with the previous sections as the personnel and quality of service is well perceived.

(5) Open Ended Comments

There were 22 comments for this section. Themes that appeared in multiple responses are outlined below:

- Well trained, professional personnel (7 responses)
- Cost issues (4 responses)
- Clearing of trees and brush (3 responses)

The overall themes for the survey illustrates that personnel provide a professional service to the community and are well trained. The community also has an expectation of prompt service when called.

APPENDIX – REFERENCES

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7. National Fire Protection Association, NFPA 1901: Standard for Automotive Fire Apparatus, 2009 edition.

8. National Fire Protection Association, "Fire Loss in the United States During 2009", August 2010, by Karter, Michael.

9. Commission on Fire Accreditation International (CFAI), "Standards of Cover", 5th Edition, 2008.

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