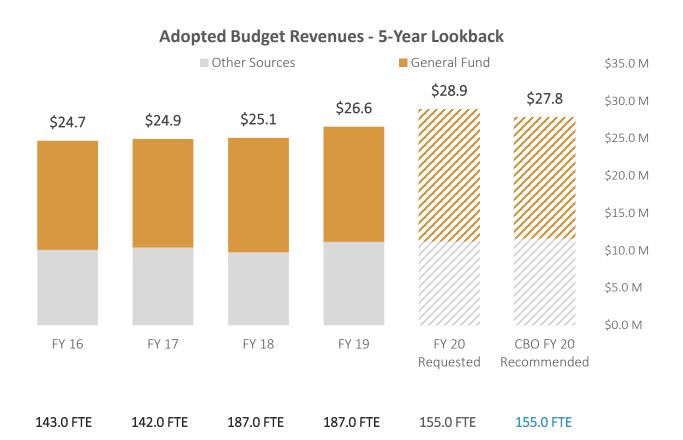


Emergency Communications

Analysis by Robert Cheney



INTRODUCTION

The Bureau of Emergency Communications' (BOEC) FY 2019-20 Requested Base Budget is 3.3% larger than the Fiscal Year 2018-19 Revised Budget. The main driver of this growth is PERS costs, which increased expected Personnel Services expenses 5.6% or \$942,485. BOEC's base budget also reflects a 1% reduction in current appropriation level General Fund resources. BOEC is asking for increased funding to expand their call taking and dispatching staff, as well as funding for a Nurse Triage pilot project. BOEC's Requested Budget plans for them to carry over funding for two capital projects, totaling \$1.6 million, for an Integrated Priority Dispatch Software and a new 911 call recording system. These projects were given funding in FY 2018-19 with a mix of Public Safety Project reserve funding (\$1.2m), partner jurisdiction contributions (\$330,080), and a draw on bureau contingency (\$70,149).

BASE BUDGET KEY ISSUES

Bob Cozzie was appointed as the permanent BOEC director in March 2018. Since then the bureau has been developing a strategic plan that emphasizes meeting National Emergency Number Association's (NENA) target of answering 90% of emergency 911 calls within 10 seconds during the busy hour (the hour each day with the greatest call volume) and 95% of *all* calls within 20 seconds. This plan includes increasing staffing and other initiatives related to quality assurance, including the impending roll-out of a new Integrated Priority Dispatch system to help triage lowand high-acuity calls, an initiative with Multnomah County and Portland Fire & Rescue. The bureau received \$950,000 for this system in FY 2018-19.

Staffing of 911 Call Takers and Dispatchers

2018 was the first full calendar year that BOEC has collected and disseminated valid data on its call taking performance while simultaneously making concerted efforts to increase its staffing.³

When BOEC submitted its requested budget one year ago, they had 96 certified staff on the operations floor. This year, the bureau has added 10 more staff and currently have 12 individuals working on call taker certifications (see Table 1). While the bureau must still account for planned retirements and general attrition rates, it remains on track to reach its full authorized staffing level of 118 by the end of Fiscal Year 2018-19.

Table 1. BOEC Staffing as of December 2018

Authorized Budgeted Positions	
Call Takers	10
Senior Dispatchers	108
Total	118
Actual Staff	
Senior Dispatchers (9-1-1, Police, and Fire Dispatch Certified)	73
Police Dispatch Trainees (9-1-1 Certified)	13
Fire Dispatch Trainees (9-1-1 and Police Dispatch Certified)	10
Call Takers (9-1-1 Certified Only)	4
9-1-1 and Police Dispatch only	3
Part-time Working Retirees	3
Total	106
In Pipeline	
Trainees working on call taker certification	12
Trainees in Basic Academy	-
Total	12

The 118 authorized staff (108 senior dispatchers with 911, police, and fire dispatch certifications and 10 call takers) is a number determined to be the optimized number of staff per a consultant report published in April 2017.⁴ This staffing level was deemed sufficient to meet the current

¹ NENA Call Answering Standard/Model Recommendations. Revised 8/31/2017. https://cdn.ymaws.com/www.nena.org/resource/resmgr/standards/NENA_56-005.1_Call_Answering.pdf

² "Multnomah County Services Contract Agreement for Exclusive Ambulance Contract." Appoints the Emergency Medical Services Provider Medical Director to work with the Public Safety Answering Point (BOEC) to determine triage dispatch protocols. http://multnomah.granicus.com/MetaViewer.php?view_id=3&clip_id=1795&meta_id=125998

³ BOEC Call taking metrics were historically mis-reported, as documented by the City Ombudsman. See report here: "911 Hold Times Longer Than Reported." Sollinger, Margie; Hull Caballero, Mary. Portland, Ore. June 2017. https://www.portlandoregon.gov/ombudsman/article/642095

⁴ From the Matrix Consulting Group. "Staffing Study and Plan for the Bureau of Emergency Communications." April 2017. P. 62

NENA standard for call taking. However, the bureau's own analysis indicates that to meet this standard, they would require an additional 24 dispatchers, though it notes that this number could be reduced if alternate staffing models are incorporated into the BOEC labor contract.

In a constrained budget environment, there are few resources to increase staffing for call taking, dispatching, or first responder staff. In addition, the bureau currently does not have sufficient space to accommodate an increase in staff sizes and adding personnel would require a significant investment in new or expanded facilities and equipment. This set of circumstances require that the public safety bureaus attempt to sustain their current service levels within existing resources, bureaus must accomplish their core mission by managing and strategically deploying the resources within their base budgets.

BOEC Performance and the Emergency Response Continuum

Due to inaccuracies in prior year data and fluctuations in staffing, assessing historical trends and establishing current service levels is challenging. Calendar year 2018 offers the best representation of what current service levels would be with BOEC's existing resources.

Table 2 offers an annual snapshot of what BOEC has accomplished with its existing resources. However, the bureau increased its staffing throughout the year and call taker experience grew throughout the year, which we can assume has begun and will continue improving call taking performance – although the quantifiable impact of this increase is currently unknown.

Table 2. BOEC 9-1-1 Workload and performance metrics for calendar year 2018.

9-1-1 Call Volume			ime	Performa	nce Metrics	Variance from NENA Standard		
Month	Landline	Cell Phone	Total	Answered within 20 Seconds	Answered within 10 Seconds in the busy hour	Difference from 95% Target	Difference From 90% busy hour Target	
January	8,405	23,988	32,393	68.72%	14.84%	26.28%	75.16%	
February	7,313	22,263	29,576	69.67%	16.54%	25.33%	73.46%	
March	8,151	25,593	33,744	68.37%	16.75%	26.63%	73.25%	
April	7,925	25,127	33,052	65.56%	15.58%	29.44%	74.42%	
May	8,335	28,732	37,067	58.25%	9.39%	36.75%	80.61%	
June	8,343	28,542	36,885	55.88%	8.50%	39.12%	81.50%	
July	8,698	32,543	41,241	55.47%	16.41%	39.53%	73.59%	
August	8,315	34,205	42,520	58.13%	25.06%	36.87%	64.94%	
September	7,907	30,680	38,587	68.57%	36.69%	26.43%	53.31%	
October	8,022	31,624	39,646	74.26%	45.54%	20.74%	44.46%	
November	7,564	28,209	35,773	75.26%	38.37%	19.74%	51.63%	
December	7,940	28,767	36,707	80.60%	46.30%	14.40%	43.70%	
2018 Average	8,077	28,356	36,433	66.56%	24.16%	28.44%	65.84%	

The NENA Standard for answering 9-1-1 Calls. Ninety percent (90%) of all 9-1-1 calls arriving at the Public Safety Answering Point (PSAP) shall be answered within ten (10) seconds during the busy hour (the hour each day with the greatest call volume, as defined in the NENA Master Glossary). Ninety-five (95%) of all 9-1-1 calls should be answered within twenty (20) seconds.

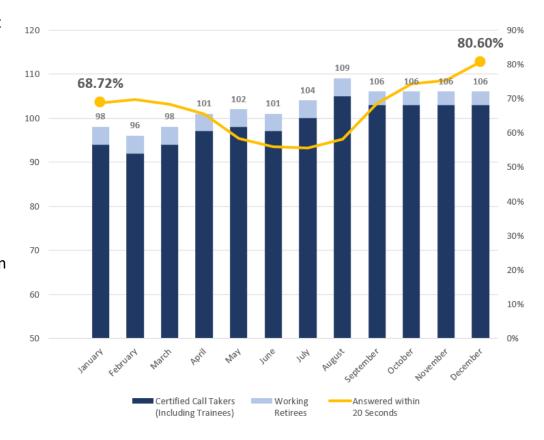
Graph 1 displays the BOEC staffing data for calendar year 2018. BOEC increased its staffing levels by nearly 6% during that time, adding 8 certified staff in the process. This increase in percentage

 $\underline{\text{https://www.portlandoregon.gov/cbo/article/653859}}$

staffed correlates with an increase in call taking performance throughout the year, however it is difficult to determine how much of the increase in performance is attributable to increased staff and experience and how much is due to seasonal decreases in call taking workload.

In addition to increases in staffing and staff experience, BOEC took other measures to improve call taking performance, including adjusting staff deployments and at times turning off the cell

Graph 1. BOEC Increased its total emergency communications call taking performance nearly 12% over the last 13 months while adding a net 8 certified staff.



phone "call filter" which historically added an average of 7-12 seconds to call taking performance for cell phones. As these calls comprised 77% of total calls for calendar year 2018, any efforts to expedite cell phone call taking will have an outsize impact on overall call taking performance.

Based on calendar year 2018 data, it can be reasonably expected that BOEC will with current resources answer 66% of all calls within 20 seconds, a 28% gap from its strategic target and NENA national standard. This performance level should increase as BOEC fills authorized positions and new call takers gain experience, as evidenced by comparing January 2018 to January 2019 data in Table 4. While fielding 3,764 more calls, the bureau improved call taking within 20 seconds by 18% and busy hour performance by 53%.

Table 4. Analysis of BOEC call taking performance for January 2018 versus January 2019

	9-1-1 Call Volume			Performa	nce Metrics	Variance from NENA Standard	
Month	Landline	Cell Phone	Total	Answered within 20 Seconds	Answered within 10 Seconds in the busy hour	Difference from 95% Target	Difference From 90% busy hour Target
January (2018)	8,405	23,988	32,393	68.72%	14.84%	26.28%	75.16%
January (2019)	7,693	28,464	36,157	86.87%	67.53%	8.13%	22.47%

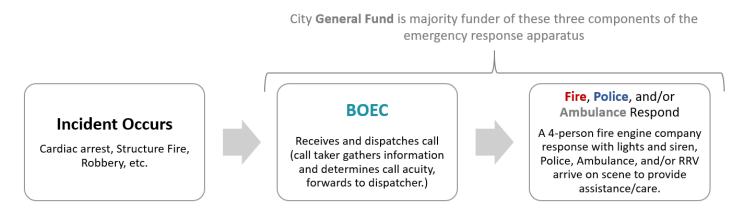
It's important to note that solely managing to the NENA standard does not guarantee optimal emergency response timelines. While it is logical to infer that answering emergency calls quickly leads to more expeditious dispatching of first responders and better patient outcomes, response

time of emergency responders is based on other factors including traffic, geography, and the availability of fire, police, and ambulance units. If the overarching Citywide goal in this budget and policy arena is to ensure that Portlanders are as safe as they can possibly be given limited available resources, then the City must consider bottlenecks, opportunities, and investment impacts across the entire emergency response continuum to maximize desired outcomes.

It is worth noting that for Fiscal Year 2017-18, BOEC reported that the average time to answer emergency 911 calls was 25 seconds. This additional context of performance proximity to the NENA standard is important as City policymakers determine possible service levels and investment tradeoffs along the continuum. It is also worth noting that the current NENA standard is in the process of being revised. The new proposed language, currently in the comment resolution phase of public review, states that

- 95% of all 911 calls shall be answered within 15 seconds, and;
- 99% of all calls should be answered with 40 seconds.

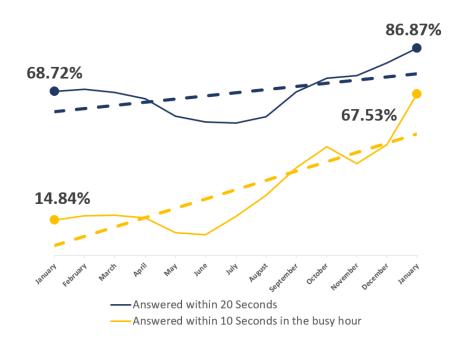
It is unclear at this time how BOEC would perform by these metrics, but CBO recommends the bureau preemptively adopt the pending NENA standards as their own performance metrics to be able to measure their performance against peer jurisdictions. Furthermore, while the new proposed standard has not yet been ratified, it represents a pivot away from the "busy hour" component for measuring 911 call taking. BOEC may still want to measure busy hour workload and call taking performance to manage staff deployment in this regard.



Sustaining Emergency Response Service Levels with Constrained Budgets

BOEC has demonstrated its ability to manage and deploy its resources effectively to reach a measurable level of service. It is worth noting that, as Graph 2 indicates, performance is trending upward despite seasonal fluctuations in call workload.

Historically, all 911 calls were met with an emergency response to avoid undertriage. However, as the population of Portland has grown, so have the number of 911 calls and required emergency responses. BOEC is in the process of switching from manual "flip cards" to an integrated priority dispatch software that will allow for emergency dispatchers to triage call acuity and dispatch resources accordingly. (This protocol will be established by the Multnomah **County Emergency Medical Services** Director in concert with Portland Fire & Rescue and BOEC).5 It is expected, and research supports,



that the use of this integrated medical priority dispatch software will lead to fewer 4-person fire company responses.⁶ A pilot project has already indicated that triaging certain back and abdomen pain calls reduced the Fire Bureau's 4-person company response by 2,700 calls from May through December 2018.

Triaging low acuity calls is critical across the emergency response continuum to sustaining service levels in the face of increasing incident workload. Proactively diverting calls is the strategy being deployed by the Fire Bureau through multiple programs including adjustments in triage protocol and the creation of the Community Health Assessment Team (CHAT).⁷

BOEC has taken a similar strategic approach. The bureau is making efforts to divert calls that are tied to non-emergent situations (such as alarms and non-emergency calls) to reduce call taker workload. Below are several related strategies that the bureau is currently considering:

- BOEC is developing a public outreach strategy with goal of educating visitors and citizens on the appropriate use of 911 and disseminating alternate contact information for nonemergencies.
- The bureau is working with the 311 work group with the goal of providing a single contact number for non-emergencies.

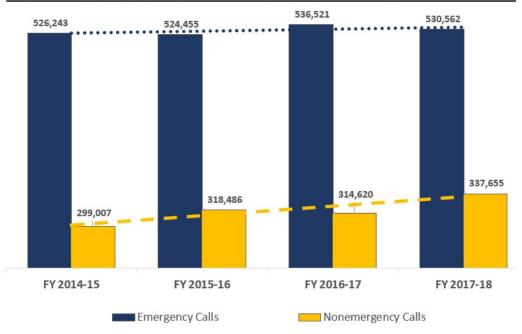
⁵ "Multnomah County Services Contract Agreement for Exclusive Ambulance Contract." Appoints the Emergency Medical Services Provider Medical Director to work with the Public Safety Answering Point (BOEC) to determine triage dispatch protocols. http://multnomah.granicus.com/MetaViewer.php?view_id=3&clip_id=1795&meta_id=125998

⁶ Hinchey, Paul. Myers, Brent. Zalkin, Joseph. Lewis, Ryan. Garner, Jr., Donald. "Low Acuity EMS Dispatch Criteria Can Reliably Identify Patients without High-Acuity Illness or Injury." Prehospital Emergency Care. Volume 11, Number 1. January/March 2007. P 42–48. https://www.ncbi.nlm.nih.gov/pubmed/17169875

⁷ Information on the CHAT program can be found here: https://www.portlandoregon.gov/fire/article/685590.

- The "ASAP to PSAP" (Public Safety Answering Point) program, which is pending implementation, will provide a direct interface for alarm companies to reducing alarm call workload by 8,700 telephone calls.
- Work with the City's "Information and Referral" (I&R) staff to gauge the feasibility of: 1) reconfiguring the phone tree to re-

Graph 3. Non-emergency calls have increased at an annualized rate of 3.09% since FY 2014-15.



Note: Overall emergency and non-emergency call volume has grown at a 1.52% annualized rate.

route Portlanders making non-emergency calls earlier in the process, and; 2) adding a direct connect transfer interface from BOEC call takers to I&R to divert calls.

It is unclear at this moment how much this will reduce call workload but considering that nonemergency calls are increasing faster than emergency calls (see Graph 3), any efforts by BOEC to divert calls now will lead to increased capacity for its staff later.

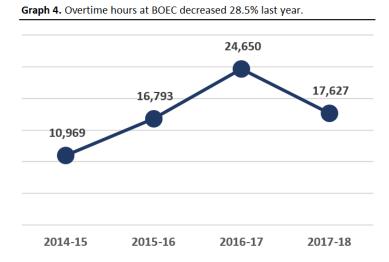
NOTABLE CHANGES

As noted in the introduction of this review, BOEC's overall budget increased 3.6% due to increased PERS costs.

FTE

BOEC will begin FY 2019-20 with 32.5 fewer limited-term call taker positions that expire at the end of FY 2018-19. These positions were funded in the FY 2018-19 budget with vacancy savings. However, as the bureau approaches full staffing there are fewer vacancy savings to fund limited term positions. It is unlikely the bureau will be able to retain all 32 limited term employees going forward. However, the bureau may be able to retain a portion of its Emergency Communications Dispatcher Trainee positions to keep staff in the pipeline to account for planned retirements and general attrition by managing staff levels and adjusting recruitment accordingly. There is a correlation between increased staffing and decreased overtime usage, so the bureau may be able to bank overtime savings to fund limited-term positions. The bureau should be able to determine at the end of the current Fiscal Year how

much funding it has available to sustain limited term positions needed for recruitment. The increase in limited-term call takers allowed the bureau to expedite its recruitment efforts, which enabled them to close its staffing gap sooner than anticipated. Having fewer limited-term positions to sustain recruitment efforts may impact the bureau's ability to remain at 100% staffing indefinitely.



Revenues & Expenditures

BOEC plans to carry over funding appropriated in FY 2018-19 for two capital projects related to Integrated Priority Dispatch and 911 call logging during the FY 2018-19 Spring BMP.

Performance Metrics & Targets

The bureau created four new measures related to certification of trainees and attrition. The new measures display total staff across the discrete certification types (call taking, Police dispatch, Fire and Emergency Medical Services dispatch).

Strategic Organization, Goals, & Direction

The bureau remains strategically focused on increasing its staffing to meet the NENA 911 call taking standards.

Five-year Forecast

Current legislation drafted in at the State level could lead to changes in State revenue, which BOEC has budgeted \$3.0 million per year in previous years. The drafted legislation would double the current cell phone tax collected and disbursed by the Oregon Office of Emergency Management from \$0.75 to \$1.50. However, the bill also diverts this funding by increasing money sent to counties with a population lower than 40,000. Should the bill go through with the language currently drafted, BOEC's State revenue may be decreased in outyears. This would limit their ability to adapt to next-generation 911 technologies.

Additionally, BOEC is currently in bargaining for a new labor contract. The bureau's five-year forecast does not assume any additional costs related to a new labor contract.

DIRECTIONS TO DEVELOP

Mental Health and Nurse Triage Program

\$182,727, 0.00 FTE

Direction Language

By creating a mental health and nurse triage program, BOEC will be able to build upon the success of the Community Health Assessment Team (CHAT) program at the Fire Bureau. The program would have trained medical staff on hand who can take their time with callers experiencing low to moderate acuity needs, including mental health crises, and ensure that the right service is dispatched to address their needs. It is anticipated that this will reduce overall call volumes to both Police and Fire, which allows them to be more available for high acuity calls.

To ensure that individuals in crisis are receiving the most appropriate care and service when calling 911 for help, Commissioner Jo Ann Hardesty directs the Bureau of Emergency Communications to develop a Mental Health and Nurse Triage Program.

CBO Analysis

This direction to develop addresses a clear need for the City: public safety incident workload reduction. This program would add another mechanism in the public safety response apparatus that would divert low and medium acuity calls away from 4-person engine companies and toward more precise methods of healthcare response. This increases the Fire Bureau's capacity to respond to high-acuity calls and improve patient outcomes, as nurses will be able to perform holistic evaluations of patient symptoms to determine if there are greater underlying issues. ^{8,9} It should be noted that this program would require an additional prioritization software that would integrate with the priority dispatch software currently being implemented. If funded, the bureau will want to analyze the possible efficiencies of implementing and training emergency communications staff on two new software programs concurrently as opposed to serially.

The past practices of sending a Fire and EMS response to low and medium acuity calls are untenable as population and incident workload grow. In 2018, the Fire Bureau were dispatched and responded to over 6,100 calls that were classified as "sick" under dispatch protocol. Some of those calls were elevated to high-acuity calls, indicating that dispatch protocol will need to be more refined to determine appropriate response. Nevertheless, the overall number highlights that the City may be over-deploying scarce resources.

This initiative dovetails with the strategic direction of City public safety bureaus to reduce incident workload for first responders and would lead to greater patient outcomes for Portlanders if implemented successfully. It is based on established practices and could leverage outside resources if the appropriate partners are engaged. Conceptually, it could lead to cost and/or operational efficiencies across the emergency response arena as the City would dispatch fewer resources, increasing operational capacity for high-acuity responses. However, the extent to which savings will be realized and captured is currently unknown. Due to limited available resources, CBO has only recommended allocating funding to those proposals which will result in a direct and significant financial or legal cost if not funded and which cannot be absorbed within existing resources. As a result, CBO does not recommend funding for this package at this time.

⁸ For example, an individual with a bladder or skin infection might be screened for undiagnosed diabetes. "D.C. implements 'Right Care, Right Now' line to free up emergency rooms and better patient outcomes." Richter, Olivia. Street Sense Media. May 2, 2018. https://www.streetsensemedia.org/article/d-c-implements-right-care-right-now-line-to-free-up-emergency-rooms-and-better-patient-outcomes/#.XG2GqlxKjcs

⁹ BOEC estimates that 30% of incoming medical calls could be sent to a triage nurse.

CBO Recommendation: \$0 | 0.00 FTE

Increase Staffing to Meet NENA Performance Standards

\$2,885,431, 10.00 Permanent FTE, 15 Limited-Term FTE

Direction Language

Currently the Bureau of Emergency Communication is not able to meet National Emergency Number Association (NENA) performance standards, largely due to staffing issues. Of its total staff, 30% is made up of trainees, and 33 FTE are limited term positions which will expire at the end of June 2019.

To better serve the City of Portland, and our partner jurisdictions and agencies, Commissioner Hardesty directs BOEC to develop a decision package requesting additional permanent, ongoing positions that will help improve its service and NENA reporting outcomes.

CBO Analysis

BOEC is requesting 8 permanent Senior Dispatcher positions, 2 Emergency Communications Supervisor positions, and 15 limited-term emergency communications dispatcher trainee positions to proactively recruit, hire, and train employees to ensuring attrition is addressed with fully-trained staff. BOEC states in this decision package that without additional FTE, it will not meet national performance standards. As more fully discussed in the service level analysis in the Key Issue section of this review, BOEC currently answers over 66% of calls within 20 seconds against a standard of 95%. ¹⁰ However, those performance metrics are trending upwards as the bureau nears full staffing with currently authorized 118 FTE. ¹¹

BOEC reported that the average time to answer emergency 911 calls in FY 2017-18 was 25 seconds. This additional context of performance proximity to the NENA standard is important as City policymakers determine possible service levels and investment tradeoffs along the emergency response continuum. It also raises the question: If the bureau only answers 66% of emergency calls within 20 seconds, but its average time to answer emergency calls is 25 seconds, what are the patient outcomes of investing more to bring those numbers to 95% and <25 seconds, and what are the opportunity costs of investing those funds there and not on other core City services?

It is logical to assume that answering emergency phone calls quickly will lead to better patient outcomes. However, that is only one component of the public safety response apparatus at the City of Portland. The City also requires Fire and Police units to be dispatched to these calls, which also require investment at an opportunity cost to other core City services. In a constrained budget environment, the City Council will want to determine what acceptable service levels look like for each public safety bureau and how those bureaus can coordinate and manage their

¹⁰ For Calendar Year 2018

¹¹ It is worth noting that the Fire Bureau has a similar performance standard gap in one of its national standard performance measures: "Percentage of Responses to Code 3 Incidents within 5 minutes and 20 seconds" the NFPA 1710 Standard (and Fire Strategic Target) is 90%, and the Fire Bureau performed at 61% in FY 2017-18—a 29% gap. Their average time to respond to these incidents was 7 minutes and 19 seconds in FY 2017-18, two minutes longer than the national standard. This also represents a current service level.

available resources to sustain and maximize service levels.

This package supports an essential City service and the data shows that increased staffing correlates with increased performance. It also meaningfully advances progress on goals and strategies put forward by the Mayor in Government Accountability, Transparency, and Result (GATR) sessions. However, it is unclear at this time if investing this level of funding in this segment of the emergency response continuum will maximize improvements in emergency response timelines. Additionally, CBO notes that the bureau does not currently have sufficient space in the 911 call center to house these additional employees; should this level of staffing be approved, CBO would recommend that Council also consider and plan for the ongoing facilities needs and costs associated with the larger staffing level.

CBO Recommendation: \$0 | 0.00 FTE

SUMMARY OF REQUESTS AND RECOMMENDATIONS

Below is a summary of Portland Fire & Rescue's total budget.

	Adopted FY 2018-19	Request Base (A)	Bureau Decision Packages (B)	CBO Recommended Adjustments (C)	
Resources					
Budgeted Beginning Fund Balance	\$ 1,251,301	\$ 2,413,973	\$ -	\$ -	\$ 2,413,973
Charges for Services	496,000	407,000	-	-	407,000
Intergovernmental Revenues	8,185,110	8,397,401	384,197	(384,197)	8,397,401
Interagency Revenue	-	-	1,448,530	(1,448,530)	-
Fund Transfers - Revenue	16,611,355	16,214,803	-	-	16,214,803
Miscellaneous	20,000	20,000	-	-	20,000
Total Resources	\$26,563,766	\$27,453,177	\$1,832,727		\$27,453,177
Requirements					
Requirements Personnel Services	\$ 16,725,891	\$ 17,668,376	\$ 97,727	\$ (97,727)	\$ 17,668,376
•	\$ 16,725,891 2,632,654		\$ 97,727 85,000		\$ 17,668,376 2,715,075
Personnel Services		2,715,075			
Personnel Services External Materials and Services	2,632,654	2,715,075 4,911,845			2,715,075
Personnel Services External Materials and Services Internal Materials and Services	2,632,654 4,740,412	2,715,075 4,911,845 287,549			2,715,075 4,911,845
Personnel Services External Materials and Services Internal Materials and Services Debt Service	2,632,654 4,740,412 271,083	2,715,075 4,911,845 287,549 918,640		(85,000) - - -	2,715,075 4,911,845 287,549

Above is a summary of the Bureau of Emergency Communication's total budget. BOEC receives nearly 80% of its funding (\$17.6 million) from the General Fund. They are planning to carry over \$2.4 million in Capital Projects funding and contingency, which is reflected in their base budget. Intergovernmental revenues make up 30.5% (\$8.4 million) of their funding with \$3 million coming from State 9-1-1 revenue and the remaining \$5.4 million transferred from partner jurisdictions (rated on population size). 12

Personnel costs make up 64% of BOEC expenses with a value of \$17.6 million. \$7.6 million (27%) are spent on materials and services including recruitment, training, office supplies and CAD maintenance.

Partner Jurisdictions currently contribute approximately 21% of BOEC operating revenues, while the City of Portland contributes the remaining 79%. As stated earlier, CBO recommend that partner jurisdictions contribute to the costs of large-scale investments as the performance outcomes they beget are realized by all parties.

¹² Partner jurisdictions are unincorporated Multnomah County (3.5%) and the cities of Gresham (13.75%), Troutdale (2.06%), Fairview (1.15%), Wood Village (0.50%) and Maywood Park (0.10%)