ORDINANCE NO. 13-2018

AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF COVINGTON, KING COUNTY, WASHINGTON, ADOPTING THE PUGET SOUND REGIONAL FIRE AUTHORITY SIX-YEAR CAPITAL IMPROVEMENT PLAN FOR 2018-2023, MITIGATION & LEVEL OF SERVICE POLICY AND AMENDING THE CAPITAL FACILITIES AND UTILITIES ELEMENT, APPENDIX, AND EXISTING CONDITIONS REPORT OF THE COVINGTON COMPREHENSIVE PLAN TO INCLUDE THE SAME; PROVIDING FOR SEVERABILITY; AND ESTABLISHING AN EFFECTIVE DATE

WHEREAS, the Puget Sound Regional Fire Authority ("RFA") has prepared a capital facilities improvement update in compliance with the Growth Management Act; and

WHEREAS, Chapter 19.50 of the Covington Municipal Code ("CMC") authorizes the City to adopt a district's capital facilities plan by reference as part of the Capital Facilities and Utilities Element of the City's Comprehensive Plan; and

WHEREAS, Chapter 82.02 RCW authorizes the City to adopt a district's capital facilities plan by reference in the City's Comprehensive Plan; and

WHEREAS, the Plan contains the elements required by Chapter 19.50 CMC; and

WHEREAS, RCW 36.70A.130 (2)(a)(iv) allows amendment of the capital facilities and utilities element of a comprehensive plan, if done concurrently with the adoption or amendment of a city's budget;

WHEREAS, upon providing appropriate public notice, the Covington City Council conducted a public hearing on December 11, 2018, to receive testimony regarding the proposed amendment to the Capital Facilities and Utilities Element of the City's Comprehensive Plan, and the proposed 2019 fire impact fees.

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF COVINGTON, KING COUNTY, WASHINGTON, DOES ORDAIN AS FOLLOWS:

Section 1. Adoption. The City hereby adopts, by reference, the Puget Sound Regional Fire Authority Six-Year Capital Improvement Update for 2018-2023 and Mitigation & Level of Service Policy as set forth in Exhibits A and B, attached and incorporated by reference.

Section 2. Amendment. The City hereby amends the Capital Facilities and Utilities Element, Appendix, and Existing Conditions Report of the City's Comprehensive Plan 2015-2035 to include the updated Puget Sound Regional Fire Authority Six-Year Capital Improvement Update

for 2018-2023 and Mitigation & Level of Service Policy replacing the RFA's previously adopted capital facilities plan.

Section 3. Savings. The enactment of this ordinance shall not affect any application, case, proceeding, appeal, or other matter currently pending administratively or judicially in any court or in any way modify any right or liability, civil or criminal, which may be in existence on the effective day of this ordinance.

Section 4. Severability. Should any section, paragraph, sentence, clause, or phrase of this ordinance, or its application to any person or circumstance, be declared unconstitutional or otherwise invalid for any reason, or should any portion of this ordinance be pre-empted by state or federal law or regulation, such decision or preemption shall not affect the validity of the remaining portions of this ordinance or its application to other persons or circumstances.

Section 5. Corrections. Upon approval of the city attorney, the city clerk and/or code reviser are authorized to make necessary corrections to this ordinance, including the correction of clerical errors; references to other local, state, or federal laws, codes, rules, or regulations; or ordinance numbering and section/subsection numbering.

Section 6. Effective Date. This ordinance shall be in full force and effect on December 31, 2018. A summary of this ordinance may be published in lieu of publishing the ordinance in its entirety.

PASSED by the City Council of the City of Covington on the 11th day of December 2018.

Mayor Jeff Wagner

ATTESTED:

Sharon Scott, City Clerk

PUBLISHED: 12-14-2018
EFFECTIVE: 12-31-2018

APPROVED AS TO FORM:

Kathy Hardy, City Attorney

ORDINANCE NO. 13-2018
EXHIBIT A

Puget Sound Regional Fire Authority Capital Improvement Plan Update

2018 - 2023

Six-Year Capital Facilities & Equipment Plan
2018-2023
Puget Sound Regional Fire Authority

This Plan was prepared and implemented through the collaboration and work of the following and their associates:

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Finance Manager
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Deputy Chief
Eric Tomlinson

Deputy Chief
Brian Wiwel

Division Chief
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District Chief
Kevin Garling, Jeff Richardson, Roger Kacmarcik, Kraig Peiguss

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1 Executive Summary

This Six-Year Capital Facilities Plan (the "Plan") is an update and extension of the Puget Sound Regional Fire Authority (PSF) 2014 – 2033 Master Capital Facilities and Equipment Plan (CFEP) in compliance with the requirements of Washington's Growth Management Act (GMA) Chapter 36.70A RCW, City of Kent Code 12.15.060, and Covington City Code Chapter 19.50 "Fire Impact Fees".

This Plan update uses data available through the first quarter of 2017 to evaluate level of service performance, and the progress toward implementation of the 2014 - 2033 CFEP. The goal of this Plan is to identify the next six years of community growth, determine the need for additional facilities and their cost and prioritize those resource into a 6-year funding plan (2018 – 2023) to ensure adequate service delivery prior to, or concurrently with the impacts of development within the service area.

The underlying premise of this document is that as the community continues to grow, additional resources will be required to adequately serve the growing demand for fire & life safety services. It is assumed that a direct relationship exists between populations within a community and demand for service, which, directly links to a need to maintain and expand resources.

Since adoption and publication of the Master CFEP in 2014, the post-recession economy continues its recovery with community growth and cost of construction returned to or exceeding pre-recession rates. The City of Kent published a 2015 updated Comprehensive Plan that continues a similar land use and community growth pattern. The City of Covington also completed a Comprehensive Plan update in 2015 and has increased projected growth targets to more closely reflect past market rates but, the combined rate of growth for Covington, Kent, and unincorporated areas of PSF's response area remain consistent with the projections of the 2014 CFEP. As a result, baseline impact fees in Table 2, have increased based upon the updated costs associated with funding the capital resources required to maintain fire service concurrency.

A new property type, "Regional Commercial" has been added to the impact fee schedule. Regional commercial is defined as a commercial use intended to serve a regional largely non-resident population. These property types are likely to occur near regional transportation, shopping and entertainment centers and produce much higher fire service impacts than similar properties serving local resident populations. Because of the service demand of these properties, the impact fee formula places a higher cost share on the developer (80% to 98%) to help offset the higher impact of these properties.

Increasing service demand of assisted care facilities continues to rise as operators of these facilities rely more and more on PSF staff for support. As a result, the developer cost share of impact and level of service fees has been increased from 80% to 95%.

Compliance with the GMA requires a six-year funding plan, the funding plan in Table 2 has been balanced through 2023 with a $235,000 surplus using increased projected revenue from both

taxes and impact fees to cover the $4.16 million in increased costs over the 6-year projection. However, the timing of some resources funded in this plan have been pushed back in time from the Master 2014 CFEP because of these increasing costs and limits on available capital funding.

Table 1 2018 Fire Impact Fees

LOS Formula Calculation							
Land Use Type	System wide C&E	Res/Com Split	Usage Factor	ERF Factor	New Dev Share	Projected New Units 2014 - 2035	Impact & LOS Contribution Fee
Residential							
Single Family	$95,468,923	65%	56%	1.13	80%	16,884 living units	$1,860.61
Multi Family	$95,468,923	65%	44%	1.37	80%	16,884 living units	$1,772.41
Commercial							
COMM/IND	$95,468,923	35%	32%	2.75	80%	12,500,000 sq ft	$1.88
HOSP/MED/CIV/SCH/CHUR	$95,468,923	35%	30%	2	80%	12,500,000 sq ft	$1.28
ASSISTED CARE	$95,468,923	35%	38%	3	95%	12,500,000 sq ft	$2.89
Regional Commercial							
COMM/IND	$95,468,923	35%	32%	2.75	98%	12,500,000 sq ft	$2.31
HOSP/MED/CIV/SCH/CHUR	$95,468,923	35%	30%	2	98%	12,500,000 sq ft	$1.57

Table 2 Six-Year Funding Plan

6 - Year Cost/Funding Sources for Capital Needs							
Costs in thousands based on 2017 dollars							
Cost/Funding Source	2018	2019	2020	2021	2022	2023	Totals
Expense Sources							
Station Construction & Land Purchase	$40	$919	$923	$1,286	$4,540	$843	$8,552
Apparatus	$1,283	$1,321	$1,872	$1,462	$1,017	$1,737	$8,692
Equipment	$1,858	$642	$730	$470	$356	$378	$4,434
Asset Preservation	$351	$363	$205	$195	$242	$100	$1,455
I.T. Capital	$672	$86	$144	$146	$15	$15	$1,078
I.T Independence Capital	$425	$40	$125	$218	$22	$2	$832
72nd Ave S Extension	$120	$120	$120	$120	$120	$120	$720
Station debt expense	$13	$13	$12	$11	$10	$9	$68
Revenue Sources							
Annual Revenue to Capital	$1,890	$1,947	$1,986	$2,050	$2,100	$2,130	$12,103
Taxpayer Bond Funds	$0	$0	$0	$0	$0	$0	$0
Sale of Surplus Property/Equipment	$253	$32	$98	$50	$284	$50	$767
Covington Impact/LOS Fees	$600	$315	$515	$600	$750	$250	$3,030
Kent Impact Fees	$850	$600	$850	$952	$960	$313	$4,525
Councilmatic Bonds	$0	$0	$0	$0	$0	$0	$0
King County Radio Program	$0	$0	$767	$0	$0	$0	$767
Apparatus Shop Overhead Fees	$8	$8	$8	$8	$9	$9	$50
Decrease in Kent ILA for IT	$0	$25	$75	$130	$130	$130	$490
SCBA Grant	$0	$0	$0	$0	$0	$0	$0
Apparatus Grant	$0	$0	$0	$0	$0	$0	$0
Burn Prop Grant	$0	$0	$0	$0	$0	$0	$0
City of Kent - Land Swap-Partnership	$0	$100	$100	$100	$200	$0	$500
SeaTac ILA Capital	$1,168	$510	$522	$533	$544	$557	$3,834
Summary of revenue less expenses							
Expense	$4,761	$3,504	$4,131	$3,908	$6,322	$3,204	$25,830
Revenue	$4,769	$3,537	$4,921	$4,423	$4,977	$3,438	$26,065
Balance	$8	$40	$831	$1,346	$1	$235	$235

2 Background and Demographics

PSF is an independent special purpose district legally formed under Chapter 52 of the Revised Code of Washington providing fire and rescue services to more than 60 square miles of urban, suburban and rural area. Services provided are delivered 24 hours per day, 365 days per year through career firefighters and support staff. Services delivered by the PSF include; fire suppression, fire prevention and code enforcement, fire investigations, emergency medical services (EMS), non-emergent medical services, hazardous materials response, specialized rescue services, emergency management services, and public education in fire prevention and life safety.

The current service area includes all of the cities of Covington, Kent, and SeaTac, as well as unincorporated areas of King County within King County Fire District 37. Generally, PSF's service area borders Renton and Tukwila to the north, Maple Valley to the east, Auburn to the south and Burien, Des Moines and Federal Way to the west. Current 2017 population of PSF service area is 182,145.[1]

For purposes of this plan, capital improvements are defined as real estate, structures or collective equipment purchases anticipated to have a cost of $5,000 or more and an expected useful life of at least 3 years.

This update re-establishes the service level standards adopted by the PSF in its 2014 Standard of Cover (SOC) and evaluates existing and future service capacity. Fire service capacity is evaluated upon the ability of current deployed resources to meet established levels of service. Fire stations and their apparatus are evaluated to determine capacity. A fire station with three apparatus bays and the infrastructure required to support three or more emergency response units, has reserve capacity when only one unit and crew is deployed from that station. Also, a fire resource that meets its level of service objectives and is reliably available for service at least as often as it is expected to meet its level of service objective, has reserve capacity. The PSF's goal is to deliver service at the adopted level of service (LOS) 9 times out of 10 or a service expectation that meets adopted standards 90% of the time.

Fire service capacity is also measured with consideration of future growth and the fire service capacity that future growth will erode when built. This Plan identifies:

- The current demographics of the PSF
- The inventory of existing capital resources
- The capital needs that have been implemented since adoption of the CFEP in 2014
- The recent historical performance to the adopted standards
- The need for additional resources over the next six years
- The funding plan to implement the needed resources through 2023.

[1] Washington State Office of Financial Management April 2017 with estimates of fire district 37's unincorporated area based upon housing counts and 3 persons per dwelling

2.1 SeaTac Service Area

PSF provides fire based services to the City of SeaTac through a contract for service that began January 1, 2014. SeaTac's area covers approximately 10 square miles surrounding the Port of Seattle Airport and has a 2017 population of 28,850.

Three fire stations (two in 2018) owned by SeaTac are leased and operated by the PSF under the service contract. All other capital resources previously owned by SeaTac prior to 2014 have been transferred to the ownership of the PSF. As a condition of the service contract, SeaTac provides an annual capital payment to the PSF for funding the equipment that was transferred but has retained responsibility for the capital costs of fire stations. Consequently, this plan does not address capital fire station needs in the SeaTac service area.

3 Community Growth and Impacts of Growth 2018 – 2023

In the post-Great Recession years from 2010 to 2016, PSF's population grew at its slowest 6-year rate in more than 30 years. Growth from new development during 2010 through 2015 averaged less than ¾ of 1 percent per year. Now in 2017, the Office of Financial Management reports the greatest year over year population growth since 2007 in Washington State resulting in a 2.62% population increase within the PSF service area.

While growth seemed to be limited during the post-Great Recession years, the rate of emergency service demand over the same 6-year period grew from 15,626 service requests in 2010 to 19,765 (not including the City of SeaTac) in 2015. This is an annual incident growth rate of 3.5%. Incident growth with SeaTac; 2014 through 2016 was more than 15%. The total 7-year increase in service demand from formation of the RFA in 2010 through August 2017 is more than 72% with overall population growth of just 24%.

Table 3 Population and Housing Growth Projections without SeaTac[2]

Service Area	2000 Actuals		2014 Actuals		2017 Actuals		2023 Estimates		2035 Estimates	
	Housing Units	Population	Housing Units	Population	Housing Units	Population	Housing Units	Population	Housing Units	Population
Covington	4,203	**13,783**	6,368	**18,480**	6,964	**19,850**	8,074	**21,679**	10,294	**29,342**
Kent	32,488	**79,524**	46,417	**121,400**	47,294	**127,100**	50,551	**135,853**	57,275	**153,923**
King Co	9,950	**27,362**	2,015	**5,542**	2,203	**6,345**	2,406	**6,414**	2,711	**7,226**
Sub-Total	46,641	120,669	54,800	145,422	56,461	153,295	61,031	163,946	70,280	190,491
SeaTac	10,176	**25,496**	10,404	**27,110**	10,505	**28,850**	10,884	**28,298**	11,808	**30,112**
Total	56,817	146,165	65,204	172,532	66,966	182,145	71,915	192,244	82,088	220,603

The Puget Sound Regional Council's regional plan "Vision 2040," identifies Kent as both a residential and commercial/industrial growth center, making it likely that growth rates will continue at approximately 3% per year for the next 20 years.

The table below provides both a low and high range estimate of commercial growth. Continued growth at the 2013 to 2017 rate is the "Low" estimate for 2023 and 2035, and the "High" estimate

[2] Figures for 2000 to 2016 are actual counts from the Office of Financial Management, 2021 and 2035 are based upon OFM and Comprehensive Plan estimates of Covington and Kent

more closely relates to market growth prior to the Great Recession and better represents current 2017 growth rates. Both of these estimates are dependent upon buildable lands and future market rates.

Table 4 Commercial Growth Rates 2013 & 2016 with estimates for 2021 & 2035

Year	2013	2016	2021	2035
Low / High Commercial Growth in Square Feet	64,415,115	64,995,002	66,734,918 / 72,794,723	70,793,856 / 77,344,052

3.1 Impacts of Future Growth

Two methods of growth projections have been used in Table 4 to determine the impacts of projected growth through 2035, the first utilizes the projected new units of the Covington and Kent Comprehensive Plans and the second utilizes the incident growth rates from 2010 through 2015 of 3.5% per year. The average of these two methods has been used to predict the future service demand as a result of growth. This method predicts service demand from the 2016 total incident count (excluding the SeaTac area) of 19,226, to an estimated growth of 22% or 23,464 incidents in 2021 and a 64% incident growth rate to 31,532 by 2035.

3.1.1 Growth Remains Consistent with the 2014 – 2033 Master CFEP

The pattern of growth and estimates of future impacts on service demand are consistent with the 2014 Master plan and the resource needs projected in that plan.

Table 5 Incident Growth Projections

Type	2,015	2015 Total Incidents	2015 Incident Rate Per Unit	2021 Low Housing Commercial Unit Count	2021 High Housing Commercial Unit Count	Average Projected Incident Count 2021	2035 Low Housing Commercial Unit Count	2035 High Housing Commercial Unit Count	Average Projected Incident Count 2035
Housing Units	55,579	14,420	0.259	58,440	58,440	15,136	72,686	72,686	18,826
Commercial Space	64,995,002	4,807	0.074	66,734,918	72,794,724	5,159	70,793,856	90,993,003	5,982
Total Incidents 2015 Rates		19,227				20,295			24,808
Total Incidents -3.5% Growth Factor		19,277				26,633			38,256
Average of Both Methods		19,277				23,464			31,532

4 Current Capital Resources

Capital resources for PSF consist of fire stations, fire apparatus (vehicles used for fire and rescue work), staff vehicles and the related equipment, tools and personal protection equipment needed to safely and legally provide fire and rescue services.

4.1 Influence of Public Protection Class Rating (PPC)

In the early 1900s, major U.S. cities suffered disastrous fires that destroyed billions of dollars' worth of property. In the aftermath, insurance companies realized that they needed advance information on the fire-loss characteristics of individual communities.

Since 1909, the Municipal Inspection and Grading System and its successors have been an important part of the underwriting and rating process for insurers writing personal and commercial fire policies. Washington State's Survey and Rating Bureau (WSRB) service is a direct descendent of the earlier grading systems and is derived from the Insurance Services Office (ISO) rating system. The PPC program gives insurers credible data to help them develop premiums that fairly reflect the risk of loss in a particular location.

In each Washington community, WSRB analyzes relevant data and then assigns a Public Protection Classification from 1 to 10. Class 1 represents exemplary public protection, and Class 10 indicates an area without fire protection. Insurance companies use PPC information to help establish fair premiums for fire insurance, generally offering lower premiums in communities with better protection. It is estimated that property owners in the PSF service area, save more than $30 million each year in reduced premiums compared to not meeting the ISO/WSRB's minimum criteria.

A community's PPC rating depends on:

- **Emergency Communications Systems:**
  A review of the fire alarm/911 system accounts for 9% of the total classification. The review focuses on the community's facilities and support for handling and dispatching fire alarms.
- **Fire operations & deployment:**
  A review of the fire department accounts for 40% of the total classification. The focus is on a fire agencies first-alarm response and initial attack to minimize potential loss. Here, WSRB reviews the adequacies of such items as engine companies, ladder or service companies, distribution of fire stations and fire companies, equipment carried on apparatus, pumping capacity, reserve apparatus, department personnel, and training.
- **Fire Safety Control:**
  A review of the community having jurisdiction's (Covington, Kent, King County SeaTac) ability to adopt and enforce effective building codes makes up 16% of the total PPC scoring. This is based upon the jurisdictions practices to adopt codes, train and staff personnel to enforce these codes and public awareness programs to their adopted building codes. Further evaluation looks at the process in place to review plans of new buildings to ensure structures are code compliant and ongoing inspections of existing buildings for code compliance.
- **Jurisdictional water supply:**
  The jurisdictions water-supply system accounts for 35% of the total classification. WSRB reviews the water supply a community uses to determine the adequacy for fire-suppression purposes. They also consider hydrant size, type, and installation, as well as the inspection frequency and condition of fire hydrants.

4.1.1 Limitations of Deployed Resources to Preserve PPC

Because one of the PPC rating criteria is the deployment of resource for fire protection, PSF must maintain the fire protection equipment staffing and deployment that supports its current PPC rating. PSF recognizes the cost savings that could be realized by deploying lighter, cheaper, more maneuverable response vehicles to respond to EMS emergencies but must first maintain the fire

equipment that supports the PPC rating which provides more than $30 million annually in decreased insurance costs to the service area. To deploy both types of vehicles, additional staffing is required and currently, PSF does not have the funding to accomplish this type of deployment and will continue to maintain its firefighting resources first, to preserve or improve PPC ratings.

4.2 Fixed Facilities

4.2.1 Fire Stations

Emergency services originate from eight fire stations located throughout the service area (not including SeaTac) as identified in the Table and map shown below. The average fire station is 28 years old with ages ranging from 9 to 53 years old with the capacity for three emergency response apparatus and is 14,675 square feet in size. Individual stations range in size from just under 8,000 to more than 26,000 square feet where training facilities are included. Currently only stations 71, and 74, maintain more than one front line response apparatus with minimum staffing levels. Seven of eight stations have some reserve capacity in the form of apparatus bays and dorm rooms. However, to utilize this capacity, additional climate controlled space is required to house reserve apparatus, alternative response vehicles, and equipment that is currently stored in existing apparatus bays now.

4.2.2 Support Facilities

Support facilities include space and equipment for emergency management functions, fire-training, apparatus & vehicle maintenance, facilities maintenance, planning, information technology, CARES, logistics, and a roadway. An inventory of these facilities is found in Table 4 below.

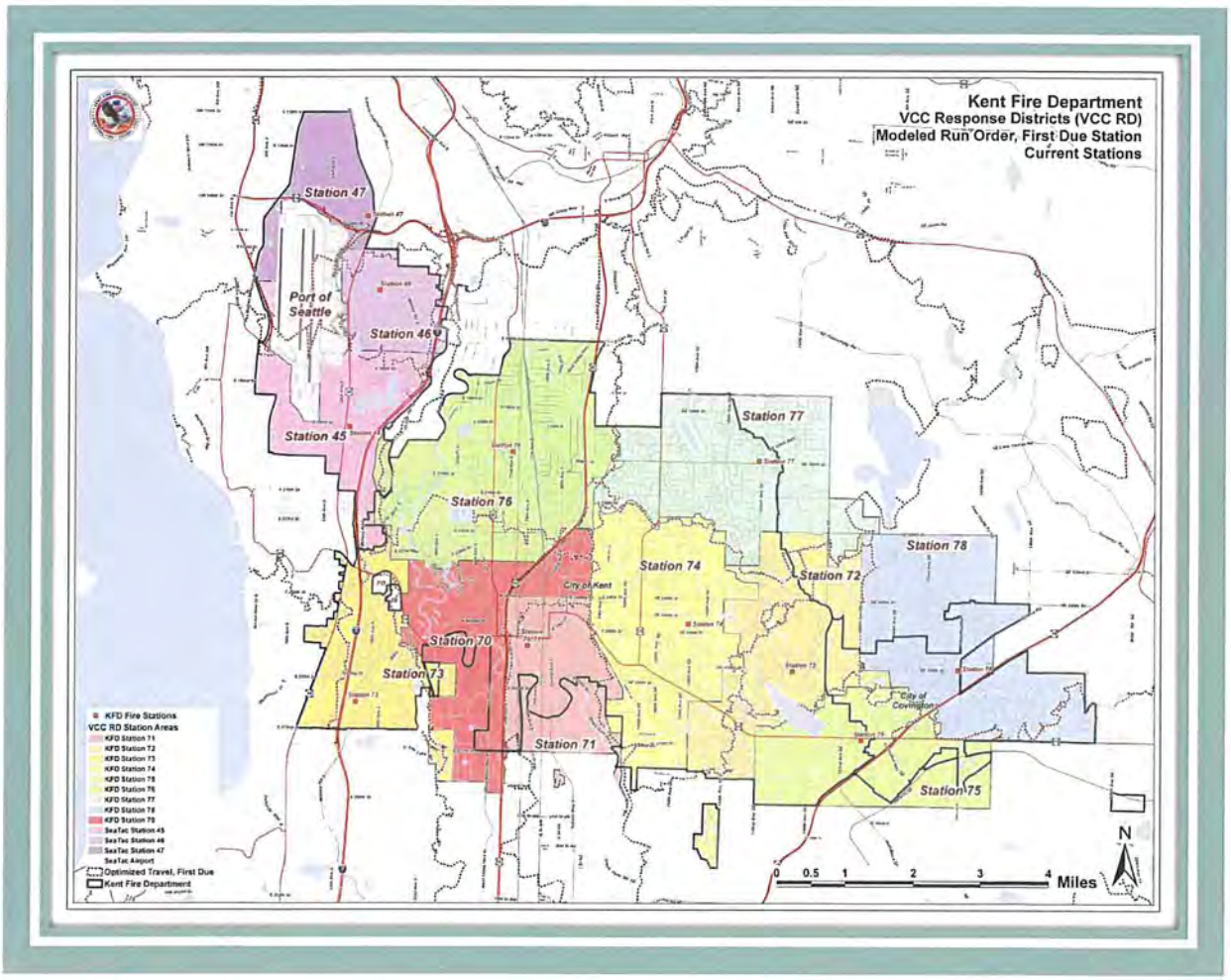
4.2.3 Roadways - 72nd Ave South

An unfinished segment of 72nd Ave S in the Kent valley was completed on June 28, 2017 and is a support facility to the PSF because previous analysis determined funding and building the roadway was more cost effective than building and staffing a fire station. This new route, avoids chronic response delays caused by traffic congestion associated with S 212th Street and SR 167 traffic at the East Valley Highway. PSF's part in completing this section of roadway is funding $1.2 million of the project's cost through a partnership with the City of Kent. PSF's total cost is less than a single year's cost of wages and benefits for personnel to staff a new fire station.

Table 6: Fire Station & Support Facility Inventory

Fire Station/Facility	Location	Size	Built	Yrs in Srvc	Acquired	Capacity	Cond	Acres	Dorm Beds
Station 71	504 West Crow Street	10,858	1964	53	2010	3.5 bays	Fair	1.05	10
Station 72	25620 140th Ave SE	7,772	1982	35	2010	3 bays	Fair	0.91	6
Station 73	26512 Military Road South	13,000	1990	27	2010	3 bays	Good	4.69	9
Station 74	24611 116th Ave SE	26,653	1990	27	Lease 2010	3 Bays	Good	8.66	17
Station 75	15635 SE 272nd Street	12,425	1990	27	Lease 2010	3 bays	Good	4.18	14
Station 76	20676 72nd Ave S	13,104	1989	28	2010	3 bays	Good	2.80	9
Station 77	20717 132nd Ave SE	15,900	2001	16	2010	3 bays	Good	1.98	8
Station 78	17820 SE 256th Street	17,685	2009	8	2010	4 bays	Good	3.10	10
	Totals	117,397		221				27.37	83
Future Fire Station Sites Owned by KFDRFA									
Benson Station	21599 108th Ave SE	0	0		2010	0	Land	0.29	
Valley Station	407 Washington Ave S	0	0		2008	0	Land	1.23	
	Totals							0.29	
Accesory Structures Owned, Maintained or Funded by KFDRFA									
EM	24425 116th Ave SE	2,860	1963	54	2010		Good	0.23	
Training Tower	24523 116th Ave SE	4,652	1990	27	Lease 2010		Good	N/A	
Training Annex	24524 116th Ave SE	1,152	2005	12	2005		Poor	N/A	
Apparatus Shop	20678 72nd Ave S	10,865	1989	28	2010	4 Bays	Good	N/A	
Logistics Center	8320 S 208th Street	20,000	1979	6	2013		Good	N/A	
Sub-Total	Totals	39,529		127				0.23	
Total		**156,926**						**27.89**	**83**

Exhibit 1: PSF Service Area Map



4.3 Mobile Resources

Specific inventories of mobile resources are found in the Appendices of this Plan.

4.3.1 Apparatus Life Cycle Policy

Agencies with workload similar to the PSF utilize a life cycle for heavy apparatus of 10 years front line and 5 or 10 years in reserve status for a total in-service life of 15 or 20 years. Recent studies have shown that the maintenance cost and decreased residual value of 20 year old fire engines is less cost effective than shorter life cycles of 15 years. Because of this, PSF's long-term policy will be to continue with a 10 year front line life cycle but shorten the reserve life cycle from 10 to 5 years. This shorter time in service, allows for significantly higher surplus values when apparatus are sold following their time in service. Studies show this also reduces overall maintenance costs, downtime, and provides greater savings than longer life cycles.

4.3.2 Fire Engines

PSF fire engines are specialized apparatus equipped with pumps capable of up to 2,000 gallons per minute or more of fire flow when connected to a hydrant. They carry onboard water supplies of 500 gallons or more and a compliment of hoses, nozzles and firefighting equipment necessary to the extinguishment of fires. The **current inventory of 8 front line fire engines has an average age of 12 years and average miles of 84,340. The six reserve engines have an average age of 20 years with average miles of 141,709.** According to the National Fire Protection Association's 2016 US fire needs assessment, only 43% of the nation's fire engines are 15 years of age or older.

4.3.3 Quints

A Quint is a multi-purpose apparatus or cross between a fire engine and a ladder truck. They are capable of pumping fire flows like a fire engine and are equipped with shorter ladders of 50 to 70 feet in length compared to the typical ladder trucks reach of 100 feet or greater. Ladder trucks do not carry or pump water. PSF has two Quint units with 65 foot ladders, one located at Station 76 in the industrial north end of the Kent Valley, and one at Station 75 near Covington. These two units are capable of delivering elevated master streams of water like a ladder truck and cost effectively augment PSF's ladder trucks located at Stations 46 and 74.

4.3.4 Ladder Trucks

Both front line ladder trucks are tillered, meaning they are built on a tractor-trailer platform. The trailer portion has steerable rear wheels that allow these units to maneuver into very tight locations with their more than 100 foot ladders. One is located at Station 74 and the other at Station 46. Apparatus 713, (Ladder 74) is 10 years old with over 68,000 miles, and 800 ladder hours. Apparatus 768 (Ladder 46) is two years old with 18,000 miles, making the average age of the two front line ladders 6 years old with average mileage of 43,000. Reserve apparatus 715 is 20 years old with over 93,000 miles and 1,214 ladder hours.

4.3.5 Aid Cars

Aid Cars are licensed ambulances with extra equipment necessary to support their two-person staffing with basic firefighting tools and protective equipment.. These vehicles primarily respond to medical emergencies and augment fire staffing required to maintain the PSF's Public Protection Class ratings.

4.3.6 Command and Staff Vehicles

Command and staff vehicles are utilized to support both emergency and non-emergency operations of PSF. Command and staff vehicles are specially outfitted with equipment and communications equipment necessary to support the mission they are assigned to.

4.4 Equipment

A full complement of special equipment is necessary for the delivery of fire and rescue services. Special equipment includes all of the equipment within fire stations or carried on fire engines and other apparatus that allow firefighters to safely and effectively deliver services. Table 9.1 provides a listing of the equipment maintained by PSF.

5 Standards of Service

5.1 Time and Origin of Standards

Time to arrival at the scene of an emergency is critical in the survival of a non-breathing patient and the control of fire growth. The longer it takes trained fire personnel to arrive at the scene of an emergency, the greater the chance of poor outcomes regarding fire and life loss[3]. As a result, the standards identified herein adopted by PSF and are based upon industry best practices. Industry standards have been established by the National Fire Protection Association (NFPA) and the Center for Public Safety Excellence (CPSE). PSF's level of service standards exceed the expectations established by these groups largely because of limited funding to deliver service. Compared to the NFPA, PSF's level of service standards exceeds those of the NFPA in some cases by 1 minute and 40 seconds.

5.2 Emergency response

Achievement of drive time standards are influenced by the location of fire service resources. If a service area is located too far from a fire station (poor distribution), it is unlikely that travel time objectives will be met. If distributed resources are over-used because of high demand, their capacity becomes "unreliable" to meet additional demand at adopted levels of service. Because of units becoming unreliable, units from farther away must respond in place of the busy home area unit, causing increases in arrival times. If too few resources exist, and fire resources from other fire departments are needed to backfill for busy units, the consequence is extended drive times, resulting in increased total response times and higher levels of risk for life and property loss.

[3] See section 5 and of the Puget Sound Regional Fire Authority Mitigation and Level of Service Policy for additional detail and consequences of long response times.

5.3 Benchmark / Baseline Gap Performance and Relation to Staffing

PSF uses adopted Benchmark performance levels as those levels of service to be achieved as capital facilities and resources are funded, deployed, and staffed. Baseline levels of service represent the actual performance achieved over the previous 5-years. PSF's goal of capital planning is to close the gap between baseline and benchmark performance. The CPSE annually reviews PSF's baseline performance to assure progress toward achieving benchmark expectations. Failure to progressively improve toward benchmark expectations can lead to loss of accredited agency status.

The gap between the two performance standards (benchmark and baseline) should close as funding becomes available to implement the capital needs identified in the 2014 – 2033 PSF Master Capital Plan and this 2018 – 2023 six-year update of that Plan. Operational funding of additional staff is also required to close the resource gap. Where additional response stations and apparatus are required, PSF must also fund the annual operational cost of additional firefighters and support staff.

5.4 Components of Response Performance

There are three measured components of "Total Response Time" and one currently unmeasured component as described below:

5.4.1 Alarm Handling Time

Alarm handling is completed at Valley Communications Center, the public safety answering point (PSAP) agency available to PSF. Alarm handling is the total time elapsed from the pick-up of a 911 call until enough information is collected to dispatch appropriate resources.

5.4.2 Turnout Time

Turnout refers to the total time it takes firefighters to discontinue their current task, assess dispatch information, don appropriate personal protective gear, and become safely seat-belted in the response apparatus and ready to begin their response. Turnout time ends and drive time begins when the response vehicle begins to move.

5.4.3 Drive Time

Drive time begins when the response vehicle's wheels begin to roll and ends once the response vehicle arrives at the curbside address of the dispatched incident. When added together, alarm handling plus turnout plus drive time equals total response time.

5.4.4 At Patient Side or Water on Fire

Currently, the time it takes to move from curbside address to the location of the patient requiring assistance, or the time it takes to setup for firefighting operations until first water is applied to a fire is not tracked. Technology to track this critical time is just now becoming available.

5.5 Deployment and Measures of Response Resources

The performance measure directly in PSF's control is the "Dispatch to Arrival Interval" and consists of turnout + drive time. This measure assesses response time performance against two deployment practices, distribution and concentration.

5.5.1 Distribution

Distribution refers to how fire stations and resources are distributed around a service area to achieve defined levels of service goals for first units to arrive. Distribution can be referred to as the "speed of attack" or the first unit to arrive. Achievements of first unit arrival time objectives indicate that fire stations are properly distributed throughout the service area.

5.5.1.1 Distribution / First unit to arrive - Service Capabilities:

The first unit arriving at the scene of an emergency staffed with a minimum of 2 firefighters on an Aid Car, or 3 firefighters on an Engine, shall be capable of; establishing command; calling for additional resources; extending appropriate hose line(s); and/or beginning delivery of basic life support and/or rescue services. These operations are done in accordance with Department standard operating procedures while providing for the safety of the general public and responders.

5.5.2 Concentration

Concentration refers to the number of resources that can be assembled or "concentrated" at the scene of an emergency. Concentration can be referred to as the "force of attack" or full first alarm assignment. Concentration resources need to provide the quantity of resources necessary to stop the escalation of an emergency. If an agency cannot distribute and concentrate adequate resources, fire and life loss will be higher when compared to the timely arrival of adequate resources.

5.5.2.1 Concentration / Minimum Effective Response Force

The minimum effective response force (MERF) consists of the arrival of at least 3 apparatus with a minimum of 8 firefighters. The MERF is capable of: establishing command; providing an uninterrupted water supply; advancing an attack line and a backup line for fire control; complying with the Occupational Safety and Health Administration (OSHA) requirements of two-in and two-out; completing forcible entry; and searching and rescuing at-risk victims. These operations shall be done in accordance with the Department's standard operating procedures while providing for the safety of responders and the general public.

5.5.2.2 Concentration / Full first alarm – Service Capabilities:

The full first alarm resources arriving at the scene of an emergency staffed with between 5 to 28 firefighters depending upon the incident type. These resources shall be capable of; establishing command, providing an uninterrupted water supply, deploying hose lines for fire control and suppression, complying with the two in-two out law for firefighter rescue, completing forcible entry, ventilating smoke, controlling utilities, and/or rescuing and treating sick, injured, or at-risk victims. These operations are done in accordance

with departmental standard operating procedures while providing for the safety of the general public and responders.

5.6 Benchmark and Baseline Level of Service Objectives:

Table 7 establishes the service level objectives for; Alarm Handling, Firefighter Turnout, and drive times expectations of distribution (first unit) and concentration (MERF and ERF) performance. Benchmark levels of service are targeted for achievement as additional resources identified in this Plan and the Master CFEP are funded, implemented and staffed. Baseline performance objectives are the minimum levels of service PSF is currently capable of achieving and must be maintained or improved to retain status as an "Accredited Agency" through the Center for Public Safety Excellence.

5.6.1 Community Risk Types

Performance expectations have been established for three community risk types, urban, suburban, and rural,[4] with both benchmark and baseline objectives as shown in Table 5.

5.6.2 Performance Measured

Washington State's Chapter 52.33 RCW requires performance measures meaningful to flashover and brain death to be established, performed, and reported at the 90th percentile. If response times of 100 incidents were stacked from quickest to slowest, the time of the 90th incident is the time used to measure service delivery at 90%.

5.6.3 Performance Expectations

The following two tables outline the standards adopted by the PSF for the two main categories of emergency incidents; those requiring donning of full firefighting "personal protective equipment" (PPE) shown in Table 7 below, and those emergency medical incidents that do not require full firefighting gear shown in Table 8 below. Donning firefighting gear is time consuming, and consequently longer turnout times are applied to Table 7.

[4] See section 4.2.1.7 of the 2014-2033 PSF Capital Facilities and Equipment Plan.

Table 7: Benchmark & Baseline Level of Service Objectives – Non-Medical Related

Response Standards - PPE Required					
Urban-an incorporated or un-incorporated area with a population of over 30,000 people and/or a population density of 2,000 people per square mile					
	1st Unit	2nd Unit	3rd Unit MERF	Balance of 1st Alarm	Performance
Benchmark Call Processing	1 min 10 sec	1 min 10 sec	1 min 10 sec	1 min 10 sec	90%
Base Call Processing	1 min 25 sec	1 min 25 sec	1 min 25 sec	1 min 25 sec	90%
Overall Benchmark Turnout	1 min 55 sec	1 min 55 sec	1 min 55 sec	1 min 55 sec	90%
Base Turnout	2 min 30 sec	2 min 30 sec	2 min 30 sec	2 min 30 sec	90%
Benchmark drive time	4 min 15 sec	5 min 55 sec	6 min 30 sec	8 min 55 sec	90%
Base Drive Time	6 min 08 sec	6 min 54 sec	7 min 44 sec	16 min 21 sec	90%
Total Benchmark Reflex	7 min 20 sec	9 min 00 sec	9 min 35 sec	12 min 00 sec	90%
Total Baseline Reflex	9 min 03 sec	9 min 49 sec	11 min 39 sec	20 min 16 sec	90%
Suburban-an incorporated or un-incorporated area with a population of 10,000-29,999 and/or any area with a					
	1st Unit	2nd Unit	3rd Unit MERF	Balance of 1st Alarm	Performance
Benchmark Call Processing	1 min 10 sec	1 min 10 sec	1 min 10 sec	1 min 10 sec	90%
Base Call Processing	1 min 25 sec	1 min 25 sec	1 min 25 sec	1 min 25 sec	90%
Benchmark Turnout	1 min 55 sec	1 min 55 sec	1 min 55 sec	1 min 55 sec	90%
Base Turnout	2 min 30 sec	2 min 30 sec	2 min 30 sec	2 min 30 sec	90%
Benchmark Drive Time	4 min 35 sec	6 min 10 sec	6 min 45 sec	8 min 55 sec	90%
Base Drive Time	4 min 40 sec	5 min 32 sec	7 min 00 sec	10 min 22 sec	90%
Total Benchmark Reflex	7 min 40 sec	9 min 15 sec	9 min 50 sec	12 min 00 sec	90%
Total Baseline Reflex	8 min 35 sec	9 min 27 sec	10 min 55 sec	14 min 17 sec	90%
Rural –an incorporated or un-incorporated area with a population less than 10,000 people, or with a population					
	1st Unit	2nd Unit	3rd Unit MERF	Balance of 1st Alarm	Performance
Benchmark Call Processing	1 min 10 sec	1 min 10 sec	1 min 10 sec	1 min 10 sec	90%
Base Call Processing	1 min 25 sec	1 min 25 sec	1 min 25 sec	1 min 25 sec	90%
Benchmark Turnout	1 min 55 sec	1 min 55 sec	1 min 55 sec	1 min 55 sec	90%
Base Turnout	2 min 30 sec	2 min 30 sec	2 min 30 sec	2 min 30 sec	90%
Benchmark Drive Time	5 min 30 sec	6 min 10 sec	7 min 00 sec	9 min 55 sec	90%
Base Drive Time	5 min 04 sec	No Data	No Data	No Data	90%
Total Benchmark Reflex	8 min 35 sec	9 min 15 sec	10 min 05 sec	13 min 00 sec	90%
Total Baseline Reflex	8 min 59 sec	No Data	No Data	No Data	90%
Includes all priority 100, 200, 400, 600, and 700 Incident types					

Table 8 Benchmark & Baseline Level of Service Objectives – Emergency Medical Service (EMS) Related

Response Standards - No PPE Required			
Urban-an incorporated or un-incorporated area with a population of over 30,000			
	1st Unit	Balance of 1st Alarm	Performance
Benchmark Call Processing	1 min 10 sec	1 min 10 sec	90%
Base Call Processing	1 min 25 sec	1 min 25 sec	90%
Overall Benchmark Turnout	1 min 45 sec	1 min 45 sec	90%
Base Turnout	2 min 00 sec	2 min 00 sec	90%
Benchmark drive time	4 min 15 sec	4 min 35 sec	90%
Base Drive Time	5 min 02 sec	3 min 56 sec	90%
Total Benchmark Reflex	7 min 10 sec	7 min 30 sec	90%
Total Baseline Reflex	8 min 27 sec	7 min 21 sec	90%
Suburban-an incorporated or un-incorporated area with a population of 10,000-			
	1st Unit	Balance of 1st Alarm	Performance
Benchmark Call Processing	1 min 10 sec	1 min 10 sec	90%
Base Call Processing	1 min 25 sec	1 min 25 sec	90%
Benchmark Turnout	1 min 45 sec	1 min 45 sec	90%
Base Turnout	2 min 00 sec	2 min 00 sec	90%
Benchmark Drive Time	4 min 35 sec	4 min 55 sec	90%
Base Drive Time	4 min 50 sec	4 min 14 sec	90%
Total Benchmark Reflex	7 min 30 sec	7 min 50 sec	90%
Total Baseline Reflex	8 min 15 sec	7 min 39 sec	90%
Rural –an incorporated or un-incorporated area with a population less than 10,000			
	1st Unit	Balance of 1st Alarm	Performance
Benchmark Call Processing	1 min 10 sec	1 min 10 sec	90%
Base Call Processing	1 min 25 sec	1 min 25 sec	90%
Benchmark Turnout	1 min 45 sec	1 min 45 sec	90%
Base Turnout	2 min 00 sec	2 min 00 sec	90%
Benchmark Drive Time	5 min 30 sec	5 min 55 sec	90%
Base Drive Time	6 min 38 sec	4 min 23 sec	90%
Total Benchmark Reflex	8 min 30 sec	8 min 50 sec	90%
Total Baseline Reflex	10 min 03 sec	7 min 48 sec	90%

5.6.4 Resource Capacity

Finally, resource capacity is evaluated. The fire service refers to this measure as "reliability" and is measured through "unit hour utilization" and the reserve availability of specific response units. If an emergency response unit was in its assigned location 24 hours a day and never called upon for service, it would have a unit hour utilization of 0.00% and reliability of 100%. But, if an emergency response unit is expected to provide a level of service performance at 90% or 9 times out of every ten requests, that unit must be available or "reliable" for providing service when called upon at least 90% of the time or it will likely fail in its performance expectation. Unit reliability is the best predictor of service capacity of deployed units. As workload or unit hour utilization increases, reliability decreases.

Table 9: Response Unit Reliability Objectives

Minimum RELIABILITY Objectives			
Performance Type	Urban	Suburban	Rural
Minimum Peak Hour Unit Reliability	90%	90%	90%

6 PSF Service Level Performance

6.1 Response Performance Findings

Analysis of PSF's historical response data reveals sub-standard performance compared to benchmark expectations. See Tables 7 & 8 Baseline Drive Time compared to Benchmark Drive Time. Several factors contribute to this current sub-standard performance. First, performance cannot be met during peak hours where workload and unit hour utilization is high and unit reliability is low. Second, some areas of PSF simply cannot be reached within the adopted time standards because of excess distance from a fire station or increasing traffic congestion. Finally, latencies in current communications and alerting systems extend firefighter turnout times beyond benchmark standards.

6.1.1 Reliability Measure

Reliability is typically used as an indicator to monitor the need for additional resources. Reliability at or above 95% is considered to be reliable with reserve capacity. This is shown in Table 10 below as "Green." As reliability falls below 95% (displayed as yellow) it is time to begin planning for the deployment of additional resources to handle the increasing workload. Reliability below 90% (displayed as red) often prevents reliable achievement of response standards. Those units with reliability displayed in red have high unit hour utilization and are considered in resource exhaustion and begin to impact surrounding fire station reliability by drawing in surrounding resources to cover for high unit hour utilization or resource exhaustion occurring during peak demand hours. This ripple effect of deficient reliability spreads outward with the consequence of longer response times because units must travel out of their home area to cover the deficient area. This ripple continues to spread during peak demand hours moving out to other fire stations and often to other jurisdictions.

6.1.2 Reliability & Mutual Aid

The measure to which reliability impacts other jurisdictions is seen in automatic mutual aid balances. Currently PSF maintains a deficit in mutual aid with all but one of its surrounding neighbors because of the need to use more outside resources than can be repaid through services given back to these mutual aid neighbors.

Table 10 Hourly Unit Reliability for the Year 2016[5]

2016 Reliability of Existing Stations & Resources with Minimum Staffing															
	St 45	St 46	St 47	Station 71			St 72	St 73	St 74			St 75	St 76	St 77	St 78
Hour	E-45	L-46	E-47	A-70	A-71	E-71	E-72	E-73	A-74	E-74	L-74	Q-75	Q-76	E-77	E-78
0:00	92.33%	93.65%	97.82%	99.53%	89.19%	95.73%	95.63%	91.65%	97.80%	87.87%	98.64%	96.76%	95.29%	94.21%	96.91%
1:00	92.89%	93.47%	98.51%	99.81%	87.85%	94.49%	96.77%	91.99%	97.57%	89.01%	98.82%	96.83%	95.41%	95.45%	96.66%
2:00	91.22%	94.41%	98.88%	99.65%	88.19%	95.47%	98.09%	93.93%	96.92%	90.36%	97.95%	95.81%	95.85%	95.23%	96.77%
3:00	91.25%	95.03%	99.16%	99.59%	89.30%	96.49%	97.04%	92.59%	98.39%	91.15%	99.01%	96.96%	95.04%	94.04%	98.25%
4:00	92.96%	94.29%	98.27%	99.25%	91.37%	96.72%	96.63%	94.28%	97.93%	90.78%	98.90%	96.48%	95.50%	94.82%	97.81%
5:00	93.07%	94.88%	98.40%	99.83%	92.63%	96.12%	97.07%	94.84%	98.07%	89.48%	98.66%	96.00%	95.22%	93.83%	96.94%
6:00	92.19%	94.96%	98.93%	99.15%	90.26%	96.16%	96.86%	94.51%	98.10%	88.02%	98.08%	95.62%	92.15%	94.34%	97.72%
7:00	89.77%	95.01%	98.90%	99.38%	86.81%	93.14%	96.05%	92.26%	97.55%	87.18%	96.94%	95.55%	92.25%	92.62%	97.17%
8:00	90.20%	94.88%	98.92%	100.00%	85.92%	91.53%	94.20%	93.71%	98.03%	85.47%	97.04%	93.36%	92.06%	90.94%	94.81%
9:00	89.62%	94.33%	97.77%	99.76%	86.32%	89.82%	95.72%	92.93%	96.91%	85.68%	96.30%	94.17%	91.62%	91.22%	94.79%
10:00	89.89%	95.30%	97.55%	99.80%	83.83%	89.95%	94.91%	91.84%	96.49%	83.86%	96.29%	93.13%	90.49%	91.96%	96.11%
11:00	90.81%	93.42%	97.77%	99.88%	83.90%	91.18%	95.53%	91.28%	96.94%	82.97%	94.86%	93.68%	92.15%	92.47%	95.14%
12:00	89.49%	94.09%	96.96%	99.90%	83.13%	91.02%	95.07%	90.49%	97.35%	80.72%	94.62%	92.07%	91.04%	88.33%	94.00%
13:00	90.15%	94.56%	96.55%	99.25%	83.63%	91.23%	94.87%	91.34%	96.16%	80.07%	93.64%	91.53%	90.77%	91.69%	94.87%
14:00	89.77%	93.84%	97.57%	99.54%	81.34%	89.95%	93.33%	91.04%	97.66%	84.06%	93.53%	92.01%	90.02%	90.57%	96.10%
15:00	89.26%	94.23%	97.14%	99.76%	82.51%	88.70%	93.81%	89.53%	97.71%	81.92%	93.46%	92.41%	92.99%	90.75%	95.02%
16:00	88.57%	92.38%	97.14%	99.86%	82.87%	89.62%	91.94%	89.87%	97.30%	80.73%	94.61%	91.08%	92.08%	90.12%	95.18%
17:00	87.64%	92.70%	97.14%	99.54%	82.79%	91.15%	92.89%	88.65%	97.40%	81.12%	94.55%	89.56%	91.83%	88.18%	95.78%
18:00	88.31%	92.34%	95.77%	99.92%	81.66%	89.85%	93.21%	90.78%	96.47%	80.90%	93.08%	91.78%	92.71%	90.13%	93.54%
19:00	88.76%	92.24%	96.28%	99.60%	83.69%	90.89%	94.30%	89.96%	95.38%	81.84%	94.03%	92.12%	91.59%	89.28%	95.42%
20:00	87.62%	92.70%	96.86%	99.06%	83.87%	92.76%	92.56%	90.45%	95.42%	82.07%	95.46%	90.72%	93.02%	91.83%	96.71%
21:00	88.81%	91.28%	95.61%	99.03%	84.03%	92.61%	93.20%	89.30%	95.13%	82.97%	95.50%	94.25%	94.16%	90.74%	95.69%
22:00	89.29%	92.39%	96.25%	99.10%	84.00%	92.66%	94.69%	89.60%	96.48%	85.42%	97.60%	94.34%	94.53%	91.25%	95.82%
23:00	92.29%	95.74%	97.59%	99.38%	88.95%	96.24%	96.46%	94.10%	97.89%	89.78%	97.53%	96.03%	95.72%	94.33%	97.92%
Total	90.26%	93.84%	97.57%	92.65%			95.03%	91.70%	92.83%			93.84%	93.06%	92.01%	96.05%

7 Conclusion of Need for Capital Resources 2018 – 2023

The most concerning evidence of the need for capital resources is the overall reliability of all emergency response units displayed in Table 11 above. The only hour where PSF has unit reliability above 95% occurs at 5:00 am. All other hours of the day are yellow and red. From noon until 9:00 pm each day, resource exhaustion occurs with reliability below 90 percent. It is expected that in the current year 2017, reliability will further erode increasing resource exhaustion three additional hours each day with units unable to meet level of service expectations from 10:00 am until 10:00 pm, all of the peak demand hours for emergency response.

[5] A reliability update will be provided in June of 2017 with the annual performance report.

Nearly 1,000 new apartment units and 300 single family homes are currently permitted and under construction in 2017. Growth within the PSF service area is expected to continue at or close to the rates experienced prior to the Great Recession resulting in further declines in unit reliability and erosion of service capacity. This in turn, will lead to steady increasing total response times unless additional resources and the staffing they require can be funded and deployed.

7.1 Planned Capital Funding 2014 – 2033

The 2014 – 2033 PSF Capital Facilities and Equipment Master Plan identified the need for more than $87 million in capital investments to maintain fire service concurrency through 2033. The 2016 6 year plan explored two options to reduce the near term cost of capital. First, less expensive alternatives to some resources identified in the Master Plan have been chosen, next, modified life cycles of fire apparatus are expected to provide additional value to surplussed equipment that can assist in funding new capital. In total, this reduced the cost of some resources needed in the next 6 years but escalating construction costs and inflation have increased the total need for capital funding.

The additional cost associated with PSF's portion of funding construction of 72nd Ave South, and the cost of maintaining the apparatus and equipment transferred from SeaTac has been added into the total capital costs established in the Master Plan. Combined with the cost saving measures associated with the new apparatus life cycle plan the current cost of the total 2014 Master Plan has increased from $87.14 million to $95.47 million.

7.1.1 Planned Capital Purchases 2018 – 2023

The table below identifies the capital expenses to be incurred between 2018 and 2023 based upon the current known priorities and levels of service. Each year this table will be updated to reflect current known priorities and levels of service.

Table 11: Six Year (2018-2023) Capital Costing

6 - Year Cost/Funding Sources for Capital Needs							
Costs in thousands based on 2017 dollars							
Cost/Funding Source	2018	2019	2020	2021	2022	2023	Totals
Expense Sources							
Station Construction & Land Purchase	$40	$919	$923	$1,286	$4,540	$843	$8,552
Apparatus	$1,283	$1,321	$1,872	$1,462	$1,017	$1,737	$8,692
Equipment	$1,858	$642	$730	$470	$356	$378	$4,434
Asset Preservation	$351	$363	$205	$195	$242	$100	$1,455
I.T. Capital	$672	$86	$144	$146	$15	$15	$1,078
I.T Independence Capital	$425	$40	$125	$218	$22	$2	$832
72nd Ave S Extension	$120	$120	$120	$120	$120	$120	$720
Station debt expense	$13	$13	$12	$11	$10	$9	$68
Revenue Sources							
Annual Revenue to Capital	$1,890	$1,947	$1,986	$2,050	$2,100	$2,130	$12,103
Taxpayer Bond Funds	$0	$0	$0	$0	$0	$0	$0
Sale of Surplus Property/Equipment	$253	$32	$98	$50	$284	$50	$767
Covington Impact/LOS Fees	$600	$315	$515	$600	$750	$250	$3,030
Kent Impact Fees	$850	$600	$850	$952	$960	$313	$4,525
Councilmatic Bonds	$0	$0	$0	$0	$0	$0	$0
King County Radio Program	$0	$0	$767	$0	$0	$0	$767
Apparatus Shop Overhead Fees	$8	$8	$8	$8	$9	$9	$50
Decrease in Kent ILA for IT	$0	$25	$75	$130	$130	$130	$490
SCBA Grant	$0	$0	$0	$0	$0	$0	$0
Apparatus Grant	$0	$0	$0	$0	$0	$0	$0
Burn Prop Grant	$0	$0	$0	$0	$0	$0	$0
City of Kent - Land Swap-Partnership	$0	$100	$100	$100	$200	$0	$500
SeaTac ILA Capital	$1,168	$510	$522	$533	$544	$557	$3,834
Summary of revenue less expenses							
Expense	$4,761	$3,504	$4,131	$3,908	$6,322	$3,204	$25,830
Revenue	$4,769	$3,537	$4,921	$4,423	$4,977	$3,438	$26,065
Balance	$8	$40	$831	$1,346	$1	$235	$235

7.2 Progress toward Planned Capital Purchases[6]

As a result of the Great Recession and the uncertainty of the economy during that time, PSF delayed some planned equipment purchases between 2014 and 2016 and placed funding toward the new Valley and Benson stations on hold. The Valley Station is now predicted to be completed in 2023 and the Benson station scheduled for opening in 2028. All asset preservation projects, equipment needs, and apparatus are now scheduled for funding and replacement through 2023.

The 2014 – 2033 Master Capital Plan is funded through 2033 with the following assumptions:

- Annual tax revenue to capital between 2023 – 2033 averages $2.46 million per year
- Impact fee revenue between 2033 – 2033 averages $1.9 million per year

8 2018 – 2023 Capital Plan Effects on Impact Fees

Impact fees are established in the PSF Mitigation and Level of Service Policy in Appendix A, using a formula based upon the cost of capital needs and service demand by property type. The policy requires updating along with the costs of annual capital plan updates. Total funding needs have increased because of this update, resulting in an increase in impact fees displayed in Table 12 below.

Table 12: 2015 Impact Fees[7]

LOS Formula Calculation

Land Use Type	System wide C&E	Res/Com Split	Usage Factor	ERF Factor	New Dev Share	Projected New Units 2011 - 2035	Impact & LOS Contribution Fee
Residential							
Single Family	$95,468,923	73%	58%	1	90%	19,068 living units	$1,907.88
Multi Family	$95,468,923	73%	42%	1.3	90%	19,068 living units	$1,796.04
Commercial							
COMM/IND	$95,468,923	27%	30%	3	80%	12,000,000 sq ft	$1.55
HOSP/MED/CIV/SCH/CHUR	$95,468,923	27%	30%	2	80%	12,000,000 sq ft	$1.03
ASSISTED CARE	$95,468,923	27%	40%	3	80%	12,000,000 sq ft	$2.06

[6] This plan will be supplemented with a capital summary including impact fee reports for both Covington and Kent, August 2018

[7] C&E costs adjusted down in 2015 reflecting reduced size of proposed Station 80

9 Capital Cost Summaries

9.1 Equipment Inventory, Life Cycle and Cost

6 - Year (2018 - 2023) Special Equipment Costs										
										Total
Equipment Type	Quantity	Avg Cost	LifeCycle	2018	2019	2020	2021	2022	2023	
Fire Hose	1249	$208	20-Yrs	$10,831	$5,213	$19,348	$43,751	$3,093	$1,186	$83,422
Fire Hose Nozzles	160	$1,150	15-Yrs	$13,400	$13,400	$13,400	$0	$0	$0	$40,200
Self-Contained Breathing Apparatus (SCBA)	137	$3,895	10-Yrs	$586,977	$0	$0	$0			$586,977
SCBA Air Bottles	292	$870	10-Yrs	$249,523	$0	$0	$0	$0	$0	$249,523
SCBA Misc -Masks, SABA Fill Stations	NA	NA	10-Yrs	$310,392	$0	$0	$0			$310,392
Ballistic Vests	160	$525	5-Yrs	$50,000	$13,125	$13,125	$5,250	$0	$5,250	$86,750
Ops Mobile Radios	55	$5,200	10-Yrs	$0	$0	$5,200	$5,200	$5,200	$5,200	$20,800
Ops Portable Radios	168	$3,900	10-Yrs	$23,400	$7,800	$7,800	$7,800	$7,800	$7,800	$62,400
Personal Protective Gear - Fire	350	$3,100	10-Yrs	$244,420	$211,633	$249,076	$125,721	$149,938	$201,471	$1,182,259
Personal Protective Gear - Haz-Mat	20	$3,400	8-Yrs	$20,000	$0	$20,000	$0	$20,000	$0	$60,000
Haz-Mat Equipment	76	$5,808	3+Yrs	$97,350	$101,200	$100,430	$63,470	$46,640	$32,340	$441,430
Small Equipment	188	NA	3+Yrs	$71,753	$96,843	$106,043	$91,343	$100,353	$59,990	$526,325
Defibrillators	20	$11,000	10-Yrs	$0	$0	$60,000	$60,000	$0	$0	$120,000
Fuel Pumps	8	$25,000	25-Yrs	$0	$25,000	$25,000	$25,000	$0	$25,000	$100,000
Above Ground Fuel Tanks	4	$15,000	25-Yrs	$0	$0	$0	$0	$0	$0	$0
Steri Lifts	2	$17,000	20-Yrs	$17,000	$0	$0	$0	$0	$17,000	$34,000
Forklifts	3	$35,200	15-Yrs	$0	$35,200	$0	$0	$0	$0	$35,200
Steam Cleaner	1	$17,325	20-Yrs	$0	$17,325	$0	$0	$0	$0	$17,325
Whole Shop Compressor	1	$14,053	20-Yrs	$14,053	$0	$0	$0	$0	$0	$14,053
Thermal Imaging Cameras	12	$9,837	10-Yrs	$20,000	$30,000	$30,000	$20,000	$10,000	$10,000	$120,000
Fire Training Burn Props	2	NA	10-Yrs	$48,000	$0	$0	$0	$0	$0	$48,000
Ground Ladders										$0
Water Rescue Equipment										$0
Emergency Mgt/ECC Coms & Computer Equip	38	NA	5+	$13,200	$18,480	$13,200	$13,200	$13,200	$13,200	$84,480
Technical Rescue Equipment										$0
Hydrant Retrofit (storz connections)	5000	$235	40-yrs	$67,253	$67,253	$67,253	$8,772	$0	$0	$210,531
				$1,857,552	$642,472	$729,875	$469,507	$356,224	$378,437	$4,434,067
									6 - Year Total	$4,434,067

9.2 Asset Preservation Costs

Capital Improvements Neccesary to Maintain Existing Assets							
Station	2018	2019	2020	2021	2022	2023	Total
71	$12	$15	$54	$40	$40	$15	$176
72	$0	$94	$33	$0	$15	$0	$142
73	$40	$80	$40	$63	$40	$15	$278
74	$15	$12	$0	$0	$0	$0	$27
75	$53	$73	$40	$40	$40	$15	$261
76	$80	$33	$12	$40	$40	$40	$245
77	$50	$31	$8	$12	$67	$15	$183
78	$101	$25	$18	$0	$0	$0	$144
Emer Mgmt	$0	$0	$0	$0	$0	$0	$0
App Shop	$0	$0	$0	$0	$0	$0	$0
Training	$0	$0	$0	$0	$0	$0	$0
Admin	$0	$0	$0	$0	$0	$0	$0
Total	$351	$363	$205	$195	$242	$100	$1,455

9.3 IT Capital Costs

6 - Year (2016 - 2021) Special Equipment Costs in Thousands of 2016 Dollars										
Fire Equipment	Quantity	Avg Cost	LifeCycle	2016	2017	2018	2019	2020	2021	Totals
Mobile Data Computers	40	$3,000	5-Yrs	$28	$45	$45	$30	$30	$30	$208
Desktop PC's	200	$1,000	5-Yrs	$40	$40	$40	$40	$40	$40	$240
Laptops/Tablets	60	$1,400	4-Yrs	$21	$21	$21	$21	$21	$21	$126
ESO Field Tablets	25	$2,500	4-Yrs	$63	$0	$0	$0	$63	$0	$125
iPads for Tablet Command	20	$1,200	3-Yrs	$1	$1	$1	$24	$1	$1	$30
Wensoft-Sales Pad	1			$0	$75	$0	$0	$0	$0	$75
Command Unit Mods	2			$0	$15	$0	$0	$0	$0	$15
IT Life Cycle Capital				$153	$197	$107	$115	$155	$92	$819
IT Independence Project	NA		Variable	$0	$595	$100	$0	$40	$110	$845
		6 Year Total		$153	$792	$207	$115	$195	$202	$1,664

6 - Year (2018 - 2023) Special Equipment Costs in Thousands of 2017 Dollars										
Equipment Description	Quantity	Avg Cost	LifeCycle	2018	2019	2020	2021	2022	2023 Totals	
Mobile Data Computers	50	$6,000	5-Yrs	$50	$0	$0	$0	$0	$0	$50
Desktop PC's	200	$1,000	5-Yrs	$40	$40	$40	$40	$0	$0	$160
Laptops/Tablets	60	$1,400	4-Yrs	$15	$21	$21	$21	$0	$0	$78
ESO Field Tablets	25	$1,500	4-Yrs	$15	$0	$62	$0	$63	$0	$140
iPads for Tablet Command	30	$1,200	3-Yrs	$36	$0	$0	$40	$0	$0	$76
ESO Enhancements	System		4-Yrs	$0	$5	$5	$5	$5	$5	$25
ValleyCom SQL Project for Tablet Command			7-Yrs	$0	$70	$0	$0	$0	$0	$70
Dedicated wifi for SKCFTC			5-Yrs	$0	$5	$0	$0	$0	$0	$5
Mobile Device Management			5-Yrs	$0	$15	$0	$0	$0	$0	$15
Telestaff upgrade to SQL Server			5-Yrs	$0	$11	$0	$0	$0	$0	$11
Regionalization Support			5-Yrs	$0	$30	$20	$15	$10	$10	$85
FDCARES-Planning data management and analysis			5-Yrs	$0	$350	$0	$0	$0	$0	$350
IT Independence Project	NA		Variable	$425	$40	$125	$218	$22	$2	$832
6 Year Total				$581	$587	$273	$339	$100	$17	$1,897

9.4 Fixed Facility Construction Projects

6-Year Contstruction Cost Summary and Timline in Thousands of Dollars							
Station Project	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**Totals**
64th Ave	$0	$43	$1,088	$86	$1,473	$2,876	$5,566
Benson	$50	$12	$12	$12	$12	$227	$325
Riverview	$0	$0	$0	$0	$0	$0	$0
Covington	$0	$0	$0	$0	$0	$0	$0
75 Move	$0	$0	$0	$0	$0	$0	$0
Yearly Totals	**$50**	**$55**	**$1,100**	**$98**	**$1,485**	**$3,103**	**$5,891**

6-Year Contstruction Cost Summary and Timline in Thousands of Dollars							
Station Project	2018	2019	2020	2021	2022	2023 Totals	
64th Ave	$0	$875	$838	$1,072	$3,638	$699	$7,122
Benson	$40	$44	$44	$44	$344	$44	$561
Riverview	$0	$0	$0	$0	$0	$0	$0
Covington	$0	$0	$0	$0	$0	$0	$0
75 Move	$0	$0	$0	$0	$0	$0	$0
Yearly Totals	$40	$919	$882	$1,116	$3,983	$744	$7,683

9.5 Apparatus Funding Schedule

6 Year (2016 - 2021) Apparatus Costs							
Unit Type	2016	2017	2018	2019	2020	2021	Totals
Aid Car/Ambulances	$0	$123	$261	$0	$123	$0	$507
Fire Engines	$672	$868	$838	$996	$824	$1,030	$5,228
Has-Mat Vehicles	$0	$0	$0	$0	$0	$0	$0
Flood / Water Rescue	$42	$0	$0	$0	$3	$0	$45
Ladder Trucks	$0	$0	$0	$319	$319	$319	$957
Light Trucks	$0	$52	$0	$0	$181	$0	$233
Pump Test/Generator	$0	$0	$0	$0	$0	$0	$0
Command/Staff Cars	$0	$171	$47	$165	$47	$146	$576
Staff Support Cars	$0	$117	$28	$38	$148	$114	$445
Utility Trailers	$0	$0	$0	$0	$0	$0	$0
Ops Support Units	$0	$0	$0	$0	$0	$0	$0
Tender	$0	$0	$0	$0	$0	$0	$0
Skyboom - Quint	$0	$0	$0	$0	$0	$0	$0
	$714	$1,331	$1,174	$1,518	$1,645	$1,609	$7,991

6 Year (2018 - 2023) Apparatus Costs							
Unit Type	2018	2019	2020	2021	2022	2023	Totals
Aid Car/Ambulances	$134	$402	$268	$0	$0	$268	$1,072
Fire Engines	$1,010	$756	$840	$840	$665	$944	$5,055
Has-Mat Vehicles	$0	$0	$0	$0	$0	$0	$0
Flood / Water Rescue	$43	$0	$3	$0	$0	$3	$49
Ladder Trucks	$0	$0	$352	$352	$352	$352	$1,408
Light Trucks	$0	$0	$192	$41	$0	$104	$337
Pump Test/Generator	$0	$0	$0	$0	$0	$0	$0
Command/Staff Cars	$0	$75	$0	$72	$0	$0	$147
Staff Support Cars	$96	$88	$217	$157	$0	$66	$624
Utility Trailers	$0	$0	$0	$0	$0	$0	$0
Ops Support Units	$0	$0	$0	$0	$0	$0	$0
Tender	$0	$0	$0	$0	$0	$0	$0
Skyboom - Quint	$0	$0	$0	$0	$0	$0	$0
	$1,283	$1,321	$1,872	$1,462	$1,017	$1,737	$8,692

10 Inventories

10.1 Apparatus Inventory & Funding Schedule

6 Year Replacement Schedule									
Unit #	Year	Unit Type	2018	2019	2020	2021	2022	2023	Totals
21	2000	SUV	$0	$0	$48	$0	$0	$0	$48
22	2003	SUV	$0	$75	$0	$0	$0	$0	$75
24	2006	SUV	$0	$0	$0	$0	$0	$33	$33
115	1997	Engine	$227	$227	$227	$227	$0	$0	$908
116	1998	Aid	$134	$134	$0	$0	$0	$0	$268
117	2000	Engine	$227	$227	$227	$227	$0	$0	$908
702	2003	Aid	$0	$268	$0	$0	$0	$0	$268
703	2003	Aid	$0	$0	$268	$0	$0	$0	$268
704	2005	Aid	$0	$0	$0	$0	$0	$268	$268
705	2007	Aid	$0	$0	$0	$0	$0	$0	$0
706	2001	Engine	$0	$0	$0	$0	$0	$279	$279
707	2003	PU	$0	$0	$0	$0	$0	$59	$59
708	2001	Engine	$0	$0	$0	$0	$279	$279	$558
715	1996	Ladder	$0	$0	$352	$352	$352	$352	$1,408
738	2011	PU	$0	$0	$0	$0	$0	$45	$45
763	1994	Utility Tr	$0	$0	$0	$0	$0	$3	$3
764	1995	PU	$0	$0	$40	$0	$0	$0	$40
765	2000	Boat Tr	$0	$0	$3	$0	$0	$0	$3
766	2001	Engine	$0	$0	$193	$193	$193	$193	$772
767	2001	Engine	$0	$0	$193	$193	$193	$193	$772
768	2014	Ladder	$0	$0	$0	$0	$0	$0	$0
769	2016	Engine	$127	$0	$0	$0	$0	$0	$127
770	2016	Engine	$127	$0	$0	$0	$0	$0	$127
771	2016	Engine	$172	$172	$0	$0	$0	$0	$344
777		Rescue Boat	$43	$0	$0	$0	$0	$0	$43
778	2017	SUV Bat	$0	$0	$0	$0	$0	$0	$0
7100	2008	PU	$0	$0	$44	$0	$0	$0	$44
7101	2007	Shelter Tr	$0	$0	$0	$0	$0	$0	$0
7102	2006	SUV	$48	$0	$0	$0	$0	$0	$48
7104	2006	SUV	$0	$0	$0	$72	$0	$0	$72
7106	2007	SUV	$0	$0	$0	$33	$0	$0	$33
7107	2012	Cross	$0	$0	$0	$0	$0	$33	$33
7122	2006	SUV	$48	$0	$0	$0	$0	$0	$48
7202	2008	Cross	$0	$0	$33	$0	$0	$0	$33
7204	2008	PU	$0	$0	$0	$41	$0	$0	$41
7205	2008	PU	$0	$0	$44	$0	$0	$0	$44
7206	2008	Cross	$0	$0	$0	$32	$0	$0	$32
7608	1998	Cross	$0	$40	$0	$0	$0	$0	$40
7610	2000	Car	$0	$0	$32	$0	$0	$0	$32
7619	2001	Mini Van	$0	$0	$0	$30	$0	$0	$30
7620	2001	Car	$0	$0	$0	$32	$0	$0	$32
7625	2000	Mini Van	$0	$0	$0	$30	$0	$0	$30
7628	1997	Mini Van	$0	$0	$33	$0	$0	$0	$33
7630	1999	Cross	$0	$0	$41	$0	$0	$0	$41
7633	2000	PU	$0	$0	$32	$0	$0	$0	$32
7634	2000	PU	$0	$0	$32	$0	$0	$0	$32
7636	2000	Mini Van	$0	$0	$30	$0	$0	$0	$30
9904	2006	SUV	$0	$48	$0	$0	$0	$0	$48
TBD	2018	Brush Truck	$130	$130	$0	$0	$0	$0	$260
Total Annual Cost			$1,283	$1,321	$1,872	$1,462	$1,017	$1,737	$8,692

ORDINANCE NO. 13-2018
EXHIBIT B

Mitigation & Level of Service Policy

PUGET SOUND REGIONAL FIRE AUTHORITY

Mitigation & Level of Service Policy

for Fire Service Concurrency

Updated October 18, 2017

Puget Sound Regional Fire Authority
Mitigation and Level of Service Policy

Prepared By:
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Puget Sound Regional Fire Authority

With Assistance From:
Eric Tomlinson, Deputy Chief
Sameer Ahmed, Senior Business Analyst
Kirsti Weaver, Administrative Support
Puget Sound Regional Fire Authority
Deployment Dynamics Group LLC

Fire Chief
Matthew Morris

October 2017

This policy has been designed with two distinct purposes in mind, first to inform the lay reader regarding issues critical to maintaining fire service concurrency and second, to provide guidance to Puget Sound Regional Fire Authority's staff in implementing mitigations necessary for maintaining fire service concurrency within the Puget Sound Regional Fire Authority service area. The basis for impact and level of service contribution fees is derived from the revenues needed to maintain fire service concurrency and are identified in Puget Sound Regional Fire Authority's 2014–2033 Capital Improvement Plan.

RESOLUTION NO. 130
ADOPTING THE PUGET SOUND REGIONAL FIRE AUTHORITY MITIGATION & LEVEL OF SERVICE POLICY

Background:

1. Puget Sound Regional Fire Authority "Puget Sound Fire" has determined, consistent with the State Growth Management Act, that uncoordinated and unplanned growth poses a threat to the health, safety, and high quality of life enjoyed by residents of Puget Sound Fire; and

2. Puget Sound Fire is committed to ensuring that Puget Sound Fire facilities and equipment necessary to support development and growth within Puget Sound Fire are adequate to serve development at the time development occurs without decreasing current service levels; and

3. Puget Sound Fire is committed to a "concurrency" philosophy to service delivery; meaning Fire and emergency service capacity must grow concurrently with development; and

4. Puget Sound Fire has adopted level of service policies and response standards; and

5. Puget Sound Fire cannot meet the current level of service standard in Puget Sound Fire; and

6. New development is eliminating the capacity of Puget Sound Fire's response resources even further; and

7. Placement of additional Fire stations and/or additional staffed units is the most effective way to reduce response times and achieve concurrency; and

8. Puget Sound Fire cannot fund the needed facilities and equipment and also provide for the costs of the operation and maintenance of Puget Sound Fire; and

9. Puget Sound Fire has determined that it is not in the public interest of the residents and property owners of Puget Sound Fire that developments be permitted to occur unless adequate Fire and life safety facilities, equipment and personnel are provided; and

10. Puget Sound Fire is opposed to additional residential, commercial or industrial development within Puget Sound Fire boundaries until Puget Sound Fire can satisfy the need for equipment, station facilities and personnel to support the required level of service; and

11. Puget Sound Fire is not opposed to development and desires to work with developers to assure Fire and life safety facilities, equipment and personnel remain concurrent with development; and

12. Puget Sound Fire desires to provide developers with methods and options to satisfy the environmental impacts of proposed developments on public safety.

13. Puget Sound Fire Initially adopted its Mitigation & Level of Service Contribution Policy to address the above concerns in 2014.

Resolution: NOW, THEREFORE BE IT RESOLVED by the Governance Board of Puget Sound Regional Fire Authority as follows:

1. The above recitals are found to be true and correct.
2. The updated 2018 Mitigation & Level of Service Contribution Policy, which is attached hereto, is adopted as a policy of Puget Sound Fire.
3. The 2018 Mitigation & Level of Service Contribution Policy shall serve as a State Environmental Policy Act "SEPA" policy and as a Growth Management Act 'GMA Policy.
4. Staff and administration shall use the Mitigation & Level of Service Policy for guidance in resolving SEPA and land use/GMA impacts to Fire and life safety. However, should staff reviewing a project determine that there are specific attributes of a project that make this policy inadequate or unworkable, staff is also authorized to require additional studies and/or environmental review and to offer additional options to developers that may fall outside the scope of this policy.

Adoption: ADOPTED by the Governance Board of PUGET SOUND REGIONAL FIRE AUTHORITY at an open public meeting of such Board on the 6th day of December 2017, the following Board Members being present and voting:

Board Member

Board Member

Board Member

Board Member

Board Member

Board Member

NEW DEVELOPMENT IN COVINGTON, SEATAC, AND KENT

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Acronyms

ALS:	Advanced Life Support
BLS:	Basic Life Support
C&E:	Capital and Equipment
CFAI:	Commission on Fire Accreditation International
CPSE:	Center for Public Safety Excellence
EMS:	Emergency Medical Services
ERF:	Effective Response Force
GPM:	Gallons Per Minute (relates to fire flow)
IAFC:	International Association of Fire Chiefs
ICMA:	International City/County Management Association
ISO:	Insurance Services Office
PSF:	Puget Sound Fire Authority
LOS:	Level of Service
MERF:	Minimum Effective Response Force
NFPA:	National Fire Protection Association
PSAP:	Public Safety Answering Point
RCW:	Revised Code of Washington
SEPA:	State Environmental Protection Act
SOC:	Standard of Cover

1. Definitions

1.1. **Accreditation:** Refers to the process or program of study established by the Center for Public Safety Excellence in determining if fire agencies are capable of meeting specific standards or qualifications.

1.2. **Accredited Agency:** Refers to a fire agency that has self-evaluated its ability to meet the standards established by the Center for Public Safety Excellence, documented that ability and, undergone an independent peer assessment to verify compliance with those standards.

1.3. **Adopted:** Refers to the formal action taken by a governing body to accept and put into effect an idea, method or course of action.

1.4. **Alarm:** A signal or message from a person or system indicating the existence of an emergency or other situation requiring an action by an emergency response agency.

1.5. **Authority Having Jurisdiction:** Refers to the municipal entity having jurisdiction for the enforcement of land-use and related building codes.

1.6. **Apparatus:** Refers to various specialized vehicles such as fire engines, fire trucks, ambulances, etc. that firefighters utilize during emergency responses.

1.7. **Call Stacking/Cascading Failure:** Refers to the occurrence of simultaneous emergency calls. Call stacking occurs when more than one request for emergency assistance occurs within the same fire station service area. When this occurs, the primary response unit cannot answer the second emergency and a second fire unit from the same station must respond or, a fire unit from a fire station farther away responds. See 1.27 – Reliability

1.8. **Concentration:** Refers to the deployment or spacing of multiple fire and rescue resources from within a fire service jurisdiction so that the proper number of resources needed for an effective response force for all types of emergency incidents can arrive at the scene of an emergency within the defined level of service time.

1.9. **Concurrency:** Concurrency refers to the twelfth goal of the Washington State Growth Management Act[1] which requires public facilities and services necessary

[1] Found in RCW 36.70A.020

for public safety to be adequate to serve new development without decreasing current service levels below locally established minimum standards.

1.10. **Deployment:** The strategic assignment and placement of fire agency resources such as fire and EMS companies, fire stations and specific staffing levels for those companies to mitigate community emergency events.

1.11. **Distribution:** The deployment or "distribution" of fire stations and resources across a fire service jurisdiction so that the adopted first-in drive time standard for fire and rescue resources can be achieved.

1.12. **Drive Time:** The elapsed time needed for an emergency vehicle to travel to a dispatched address. Drive time begins when the wheels of a fire apparatus begin to roll in response to a dispatch and ends when the apparatus is parked at the scene of the dispatched address.

1.13. **Effective Response Force:** Refers to the number of resources and personnel needed to effectively provide fire or emergency medical services capable of mitigating the known risk(s) in the community. The number of resources making up an effective response force varies by type of emergency and level of risk.

1.14. **F-Box or Fire Box:** A geographic area usually a quarter section of land (1/4 - mile square) that is used to define the types, numbers and locations of fire and rescue resources to be dispatched to an emergency. See 1.30 – Response District.

1.15. **Fire Flow:** The quantity of water available for fire protection purposes in excess of that required for other purposes.

1.16. **Fire Impact Fee:** A fee authorized under Chapter 82.02 RCW that is assessed on new development to pay a proportionate share of the costs associated with maintaining fire service concurrency. Fire Impact fees must be adopted and authorized by the local land use authority.

1.17. **Fire Level of Service Fee:** A fee that is used to mitigate the direct impacts new development has upon fire services inside of a jurisdiction that has not adopted fire impact fees. Fire level of service fees are consistent with the Growth Management Act and applied through the SEPA process or in cooperation with the authority having permitting jurisdiction under RCW 54.18.110.

1.18. **Fire Service Concurrency:** See 1.9 – Concurrency.

1.19. **First Due:** See First-in (1.22)

1.20. **First Due Area:** The response area of a jurisdiction that has been assigned to a specific fire station and its emergency response units because of its ability to arrive at the scene of an emergency first compared to other areas of the jurisdiction.

1.21. **First-in:** Refers to the first fire and rescue apparatus to arrive at the scene of an emergency. Distribution performance is a measure of first-in drive time.

1.22. **Fractal Performance:** Refers to the percentile of time a specified performance expectation is achieved. If an emergency response drive time of 5 minutes is achieved on 82 of 100 responses, the fractal or percentile performance would be 82%.

1.23. **First Full Alarm:** Refers to the number of fire resources and personnel assigned to a specific alarm type that is capable of assembling a large enough response force to be effective in mitigating the specific alarm type.

1.24. **Impact:** Refers to the drain effect on the capacity of emergency response resources and their ability to maintain levels of service standards.

1.25. **Level of Service:** Level of service (LOS) refers to PSF's adopted response time and performance expectations. Level of service expectations are established in the PSF's Standard of Cover.

1.26. **NFPA Standards:** Codes, standards, recommended practices, and guides developed by the National Fire Protection Association through a consensus development process of the American National Standards Institute for fire protection agencies.

1.27. **Reliability:** Refers to the use of fire resource capacity. For a resource to be reliable, it must be available to answer emergency calls as least as often as the service expectation placed upon that resource. For instance, if a fire resource is expected to deliver service at the adopted standard 90% of the time, then that resource should be available to respond to an emergency incident from its assigned fire station at least 90% of the time. Reliability levels below the adopted performance expectation indicate resource exhaustion.

1.28. **Resource Exhaustion:** Resource exhaustion occurs when the demand for service placed upon a fire service resource is so great, that its fractal reliability begins to fall below the adopted level of service for that resource resulting in the need for resources from fire stations farther away to respond in place of the resource experiencing exhaustion. Resource exhaustion results in longer and longer response times unless additional resources are added to the fire station serving that area to create more capacity.

1.29. **Response**: Response refers to the movement of firefighters and fire apparatus to the scene of an emergency request for fire or emergency medical services. The request for response is generally issued through Valley Communications Center, the 9-1-1 answering point for PSF.

1.30. **Response District:** Refers to the defined geographic area, generally a quarter mile square, used to determine the closest response resources to be assigned to an emergency within that response district. See 1.14 F-Box or Fire Box.

1.31. **Risk:** Refers to the exposure or probability of injury or loss.

1.31.1. **Low Risk:** A risk category where a low level and consequence of injury or loss is probable to occur.

1.31.2. **Moderate Risk:** A risk category where a moderate level and consequence of injury or loss is probable to occur.

1.31.3. **High Risk:** A risk category where a high level and consequence of injury or loss is probable

1.32. **Standard of Cover:** Refers to the in-depth process developed by the Center for Public Safety Excellence for the strategic planning of fire station and fire resource deployment. Standard of Cover is the "Standard" to which the fire department will deliver service based upon community descriptions and the risks within those community types. See Section 7.2.

1.33. **Total Response Time**: The time interval from the receipt of a 911 call at a public safety answering point to when response unit(s) arrive at the scene of an emergency.

2. Policy Statement

2.1. It is the policy of Puget Sound Regional Fire Authority (PSF) to participate in the orderly growth of the community and to maintain concurrency of fire and life safety services as the community grows. Concurrency describes the ideal that service capacity of PSF shall grow with or stay concurrent with the impacts of development occurring within the service area. PSF recognizes that regional economic vitality depends upon orderly growth and supports community growth through development and is not opposed to new development.

2.2. However, new development and the population increase that comes with new development has a direct impact on the ability of PSF to maintain adopted levels of service and adequate public safety concurrently with development. Consequently, *PSF opposes the negative impacts development imposes upon fire service capacity and level of service performance* and directs the Fire Chief to utilize the mitigation strategies found within this document to mitigate any and all negative impacts of development that threaten concurrency by reducing service capacity below the benchmark level of service standards adopted herein.

2.3. The Fire Chief shall cause the evaluation of each development proposed to occur within the service area. The Chief's evaluation shall identify any adverse impacts that may affect PSF's ability to maintain adopted benchmark levels of service and the mitigation strategies necessary to maintain concurrency with development. It is the intent of PSF to recognize when adequate service capacity exists and to only impose mitigations that are rational and relational to the impacts of new development upon service capacity.

3. Purpose Statement

3.1. The purpose of this policy is to establish guidelines for the implementation of monetary and non-monetary mitigations appropriate to maintaining fire service concurrency within PSF's emergency response area. It is the intent to utilize the guidelines herein to mitigate the direct impacts of new development upon PSF's ability to deliver fire and life safety services in accordance with its adopted level of service standards. Further, this policy as prepared shall constitute Growth Management, Impact Fee, State Environmental Protection Act (S.E.P.A.), land subdivision and building permit policy as adopted by the Governance Board of Puget Sound Regional Fire Authority.

4. Consistency with other Plans and Policies

4.1. To ensure that Puget Sound Regional Fire Authority (PSF) will be able to meet the increasing demand for fire protection services resulting from future development and population growth, this policy utilizes the findings and conclusions of a number of plans and policies including but not limited to; Kent, Covington, SeaTac, and King County Comprehensive Plans, PSF's; Capital Facilities Plan, Station Location Analysis, Standard of Cover and annual reports required by Chapter 52.33 RCW.

5. Introduction

5.1. The primary responsibility of PSF is the delivery of emergency fire and rescue services. The delivery of these services ideally originates from fire stations located throughout the service area. To provide effective emergency service, firefighters must respond in a minimum amount of time after the incident has been reported and with sufficient resources to initiate meaningful fire, rescue, or emergency medical services.

6. The Importance of Time and Fire Service Performance Measures

6.1. Time and Fire Loss

6.1.1 Time is the critical issue when an emergency is reported. Fire can expand at a rate many times its volume per minute and as a result, quick response is critical for the rescue of occupants and the application of extinguishing agents to minimize loss prior to flashover. The time segment between fire ignition and the start of fire suppression activities has a direct relationship to fire loss.

6.1.2 Time and Patient Survival

The delivery of emergency medical services is also time critical. Survival rates for some types of medical emergencies are dependent upon rapid intervention by trained emergency medical personnel. In most cases, the sooner trained fire or emergency medical rescue personnel arrive, the greater the chance for survival and conservation of property. The importance of time and the critical factors affected by time are discussed in section 6.3.

6.2. Measured Components of Emergency Response

6.2.1. **Alarm processing time**: Amount of time that it takes to receive and process an emergency call. This includes (1) receiving the call, (2) determining what the emergency is, (3) verifying where the emergency is located, (4) determining what resources and fire department units are required to handle the call, and (5) notifying the fire department units that are to respond.

6.2.2. **Turnout time**: The time from when fire department units are first notified of an emergency to the beginning point of response time. This includes discontinuing and securing the activity firefighters were involved in at time of dispatch, traveling by foot to their apparatus, donning appropriate personal protective equipment and taking a seat-belted position on the apparatus to respond.

6.2.3. **Response/Drive time**: The time that begins when the wheels of a response apparatus/vehicle begin to roll in route to an emergency incident and ends when wheels of the response vehicle stop rolling upon arrival at the address of the emergency scene.

6.2.4. **Access time**: Amount of time required for the crew to move from where the apparatus stops at the address of an emergency incident, to where the actual emergency exists. This can include moving to the interior or upper stories of a large building and dealing with any barriers such as locked gates, stairways, elevators, doors or other restrictions that may slow access to the area of the emergency.

6.2.5. **Setup time**

6.2.5.1. Setup time Fire: The amount of time required for fire department units to set up, connect hose lines, position ladders, and prepare to extinguish the fire. Setup time includes disembarking the fire apparatus, pulling and placing hose lines, charging hose lines, donning self-contained breathing apparatus, making access or entry into the building, and applying water. The opportunity for saving time during setup is minimal, even for trained personnel.

6.2.5.2. Setup time EMS: Setup time also includes the time required for firefighters to deploy lifesaving equipment such as defibrillators, oxygen masks, and/or other rescue tools such as the jaws-of- life.

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6.4. Flashover

6.4.1. **The term flashover**: Refers to the most dangerous time in fire growth. As a fire grows within a room, its radiant heat is absorbed by the contents of the room heating up the combustible gases and furnishings to their ignition point until finally the entire room bursts into flame, spreading outside of the room involved.

Figure 1: Photo of a Witnessed Flashover

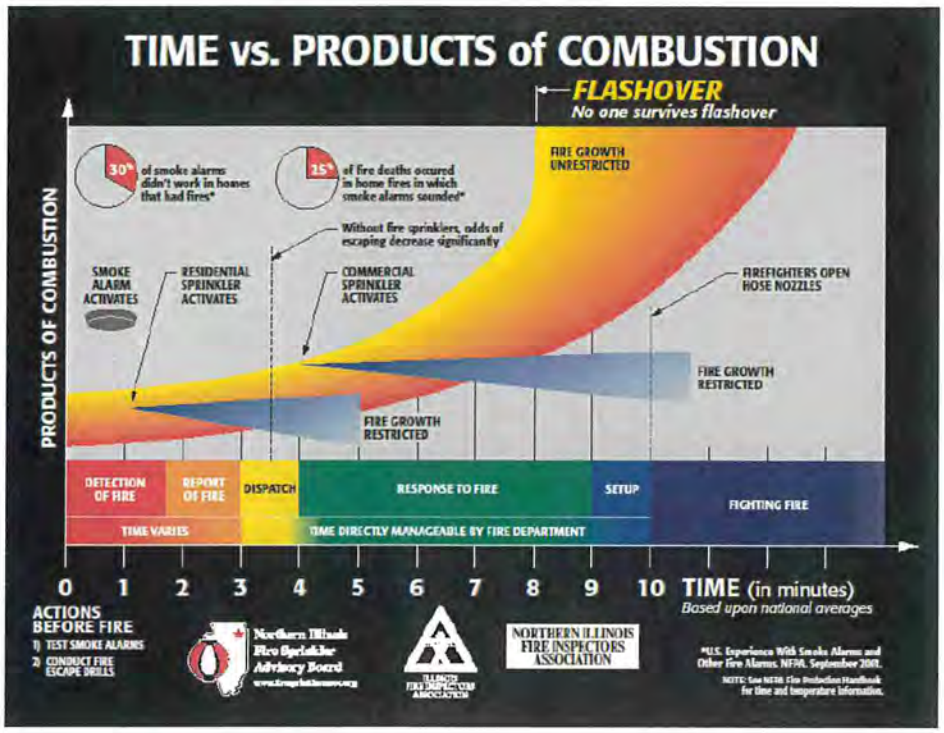
6.4.2. **Measuring the time to flashover**: A function of time and temperature. Fire growth occurs exponentially; that is, fire doubles itself every minute of free burn that is allowed.

6.4.3. **Factors that determine when flashover may occur:** These include the type of fuel, the arrangement of the fuels in the room, room size, and so on. Because these factors vary, the exact time to flashover cannot be predicted, making quick response and rapid-fire attack the best way to control fire, protect life and reduce fire loss.

6.4.4. **Flashover's modern living influence:** Over the past 50 years, fire engineers agree that the replacement of wood and other natural products with plastics and synthetic materials for interior furnishings has resulted in increased fuel loads, higher fire temperatures and decreasing time to flashover, making quick response more important than ever. Flashover can typically occur from less than four 4 to beyond 10 minutes after free burning starts depending upon the air or oxygen supply available to the fire.

6.4.5. **Flashover and fire spread can be mitigated.** Figure 2 shows the progression of fire and how some time-frames can be managed by the fire department and some cannot. The elapsed time from fire ignition to fire reporting varies but can be indirectly managed through the use of remotely monitored fire alarm and suppression systems to help mitigate the growth of fire. These systems can automatically report the presence of a fire to a public safety answering point (PSAP) or 9-1-1 center. In a perfect world, all structures would be equipped with a monitored fire alarm and automatic fire sprinkler system to help reduce dispatch time and speed the arrival of fire department resources allowing firefighters to arrive at the scene when fires are smaller and more controllable.

Figure 2: Time vs. Products of Combustion



This diagram illustrates fire growth over time and the sequence of events that may occur from ignition to suppression. Depending on the size of room, contents of the room and available oxygen, flashover can occur in less than 2 or more than 10 minutes. Flashover occurs most frequently between 4 and 10 minutes.

6.4.6. **Significance of automatic fire sprinklers:** As the above exhibit illustrates, properly maintained and functioning fire sprinkler systems in both residential, and commercial occupancies will activate to help control a fire long before the arrival of firefighting resources. Automatic fire sprinklers can control fire and buy firefighters significant time toward saving lives and minimizing loss from fire. In PSF's case, there are often too few resources available to supply a full first alarm and the effective response force resources required for a structure fire. As a result, it is typical for structure fire responses to be supplemented with mutual aid companies from other jurisdictions or volunteer resources that take much longer to arrive, limiting PSF's overall ability to control larger fires.

6.5. Consequences of Flashover

6.5.1. **Flashover is deadly:** Once flashover occurs, it is no longer possible for survival in the room of flashover. Not even firefighters in complete protective gear can survive the intense heat of flashover. A post-flashover fire burns hotter and moves faster, making search and rescue more difficult and riskier in the remainder of the structure. Once flashover occurs more

firefighters are needed to deal with the much larger and growing fire problem.

6.5.2. **Firefighting resources should arrive prior to flashover:** Because of the dramatic change in fire conditions post flashover (see Figure 1) all fire based performance standards attempt to place fire resources on scene of a fire prior to flashover.

6.6. Brain Death in a Non-Breathing Patient

6.6.1. **Timely treatment and a non-breathing patient is critical for survival:** The delivery of emergency medical services (EMS) by first responders is also time critical for many types of injuries and events. If a person has a heart attack and cardiopulmonary resuscitation (CPR) is started within four minutes, that person's chances of leaving the hospital alive are almost four times greater than if they did not receive CPR until after four minutes. Exhibit 3 shows the survival rate for heart attack victims when CPR is available.

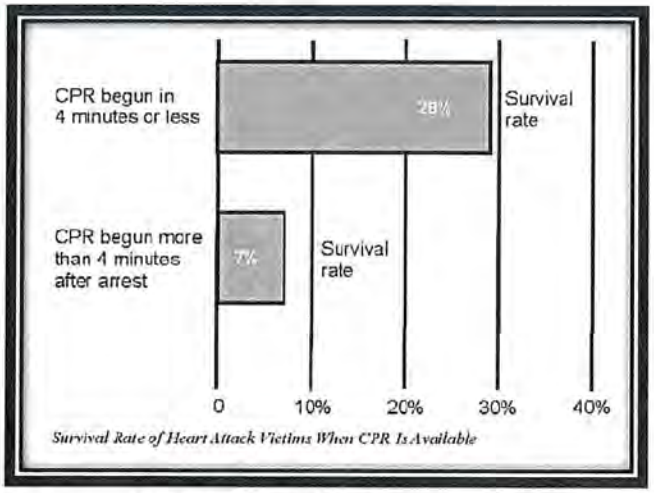


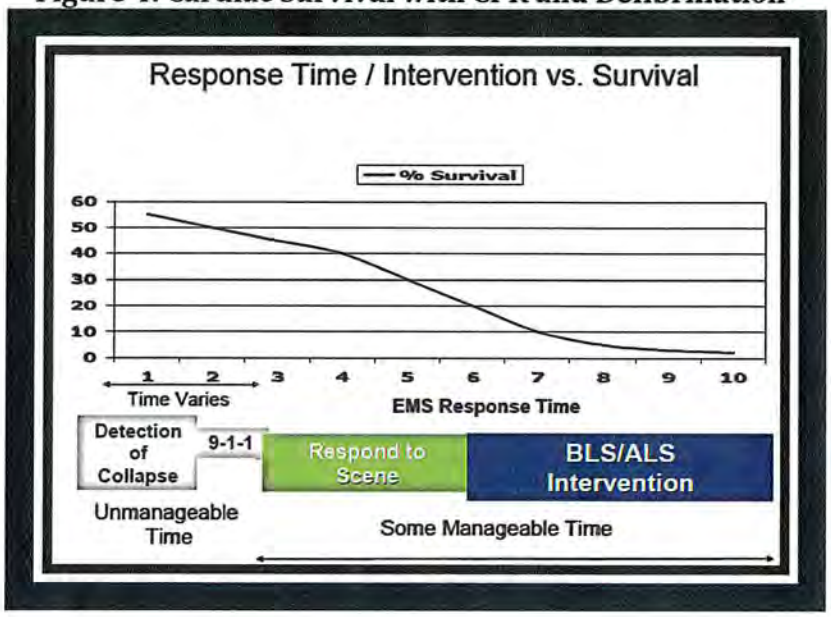
Figure 3: Cardiac Survival Rate[2]

6.6.2. **Automatic defibrillation increases survival further:** Chances of survival are increased with the intervention of a cardiac defibrillator. All PSF units carry defibrillators. Exhibit 4 shows the survival rate of a heart attack victim with CPR and defibrillation.

[2] Source: National Fire Protection Association Handbook Volume 19

6.6.3 **Puget Sound Fire's "Deadline:"** Since electronic records have been maintained by PSF, no patient has survived cardiac arrest where the total response time to arrival has exceeded 7 minutes and 34 seconds.

Figure 4: Cardiac Survival with CPR and Defibrillation[3]



7. Recognized Standards for Fire Service Response Performance:

7.1 National Fire Protection Association (NFPA) Standard 1710

7.1.1 **NFPA 1710**: establishes Standards for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments and contains the following time objectives to be performed 90% of the time:

7.1.1.1 Dispatch time: "All communications facilities, equipment, staffing, and operating procedures shall comply with NFPA 1221." NFPA 1221 sets the performance standard for dispatch time at 1-minute (60 seconds) 90 percent of the time.

7.1.1.2 Turnout time:

Fire based response:	1 minute 20 seconds (80 seconds)
Medical based response:	1 minute 00 seconds (60 seconds)

[3] Data Source: King County Emergency Medical Services

7.1.1.3. Fire response/drive time: Four minutes (240 seconds) or less for the arrival of the first arriving engine company at a fire suppression incident and/or eight minutes (480 seconds) or less for the deployment of a full first alarm assignment at a fire suppression incident.

7.1.1.4. Basic life support (BLS) response/drive time: Four minutes (240 seconds) or less for the arrival of a unit with first responder or higher-medical certification capability at an emergency medical incident.

7.1.1.5. Advanced life support (ALS) response/drive time: Eight minutes (480 seconds) or less for the arrival of an advanced life support unit at an emergency medical incident, where the service is provided by the fire department.

7.1.1.6. Total response time: Adding the three separate time segments together, the NFPA expects the following temporal benchmarks to be performed at least 9 out of every 10 times from receipt of a 9-1-1 call to the arrival of fire and EMS resources;

Figure 5: NFPA's Total Response Time Standard

Fire call

- First-in: Dispatch = 1:00 + Turnout = 1:20 + Drive = 4:00 = 6:20
- Full alarm: Dispatch = 1:00 + Turnout = 1:20 + Drive = 8:00 = 10:20

EMS – Basic Life Support (BLS)

- First-in: Dispatch = 1:00 + Turnout = 1:00 + Drive = 4:00 = 6:00
- Full Alarm: Dispatch = 1:00 + Turnout = 1:00 + Drive = 8:00 = 10:00

EMS – Advanced Life Support (ALS)

- First-in: Dispatch = 1:00 + Turnout = 1:00 + Drive = 4:00 = 6:00
- Full alarm: Dispatch = 1:00 + Turnout = 1:00 + Drive = 8:00 = 10:00

7.2 Center for Public Safety Excellence (CPSE) Standard of Cover

7.2.1. **The Center of Public Safety Excellence** is a consortium of the International Association of Fire Chiefs (IAFC), International Association of Fire Fighters (IAFF) the International City/County Management Association (ICMA), the International Code Council (ICC), the Insurance Services Office (ISO) the National Fire Protection Association (NFPA) and the U.S. Fire Administration (USFA). Together this group

maintains the Commission on Fire Accreditation International (CFAI) and the criteria for fire departments to achieve Accredited Agency Status. Critical to achieving Accredited Agency Status is an assessment of the fire department's ability to effectively deliver service. To make this assessment, the CFAI has established a methodology for; determining the fire and non-fire risks of a community, assessing the fire department's capability compared to that risk, measuring fire department resource capacity and guidelines for performance standards to assess overall performance of a fire department. The CFAI publishes this methodology in its Standards of Cover manual.

7.2.2 **The term standard of cover**: Refers to the "standard(s)" to which a fire department runs daily operations in order to "cover" the service area of the fire department. The CFAI process for establishing a Standard of Cover has nine parts that are described below with relevant information to PSF:

7.2.2.1. Existing deployment assessment: Identifies current inventory of fire stations, apparatus and staffing. PSF's stations apparatus and staffing are found in PSF's Capital Improvement and Equipment Plan.

7.2.2.2. Review of community expectations: Ultimately, level of service standards are driven by the community. PSF's standards have been adopted herein and by the Cities of Kent and Covington in their Comprehensive Plans, both have undergone a public review and hearing process.

7.2.2.3. Community risk assessment: The CFAI identifies the service area definitions, and benchmarks for response (drive–time) performance in Figure 6: CPSE Community Definitions and Performance Expectations on the next page. PSF provides fire and life safety services to approximately 182,000 people across 60 square miles and serves rural, suburban and urban communities.

7.2.2.4. Critical task analysis and staffing comparison: The CFAI requires staffing standards be created that are capable of responding and providing adequate personnel to address the risks identified in the community risk assessment.

7.2.2.4.1 PSF's current staffing and resources alone, are incapable of providing adequate staffing necessary to mitigate the potential response needs of high risk occupancies.

Figure 6: CPSE Community Definitions and Performance Expectations

Urban-an incorporated or un-incorporated area with a population of over 30,000 people and/or a population density of 2,000 people per square mile				
	1st Unit	2nd Unit	Balance of 1st Alarm	**Performance**
Benchmark	4 minutes	8 minutes	8 minutes	**90%**
Suburban-an incorporated or un-incorporated area with a population of 10,000-29,999 and/or any area with a population density of 1,000 to 2,000 people per square mile.				
	1st Unit	2nd Unit	Balance of 1st Alarm	**Performance**
Benchmark	5 minutes	8 minutes	10 minutes	**90%**
Rural -an incorporated or un-incorporated area with a population less than 10,000 people, or with a population density of less than 1,000 people per square mile.				
	1st Unit	2nd Unit	Balance of 1st Alarm	**Performance**
Benchmark	10 minutes	14 minutes	14 minutes	**90%**

7.2.2.5. Distribution of Resources: Fire stations should be distributed so that resources deployed from them can provide coverage to the response area within the level of service (LOS) standard established for first-in fire and rescue units. PSF's Standard of Cover has revealed service areas where current fire station deployment cannot meet adopted service levels.

7.2.2.6. Concentration of Resources: Fire resources should be concentrated near high demand areas and in large enough numbers of equipment and personnel to provide an effective response force with the full first alarm assignment. Because of a lack of resources, PSF often relies on resources from neighboring fire departments to assemble an effective response force.

Because of a lack of resources, PSF often relies on resources from neighboring fire departments to assemble an effective response force.

7.2.2.7. Capacity Analysis/Reliability: To achieve adopted performance standards, resources must be available or "reliable" at least as often as their adopted performance

expectation. Historic reliability below the adopted performance standard places the service area in "Resource Exhaustion" and creates call stacking and simultaneous calls within a specific service area.

PSF is currently experiencing resource exhaustion at Stations 45, 71, 73, 74, 75, 76 and 77 where reliability is below 90% during peak demand hours.

7.2.2.8. Historical response effectiveness studies: The percentage of compliance the existing response system delivers based on current LOS. *Section 4.5 of PSF 2014-2033 Capital Facilities and Equipment Plan, identifies historical sub-standard performance.*

7.2.3. **Prevention and mitigation:** CPSE recognizes that the cost of providing fire services need to be balanced to individual communities and therefore they emphasize the need for mitigation. Fire prevention education and code enforcement along with mitigation policies are encouraged. Prevention and mitigation directly impacts the level of safety for responding firefighters and the public. Using analysis of risk and looking at what strategic mitigations can be implemented may not only prevent the incident from occurring but may also minimize the severity when and if the incident occurs.

7.2.4. **CPSE Standard:** The CPSE requires both temporal and staffing capability standards to assure timely arrival with adequate capability to address existing risk. Following is an example of the CPSE standard requirement:

"For 90 percent of all low, medium and high-risk structure fires the departments total benchmark response time, from the receipt of the 911 call in the secondary public safety answering point (PSAP) to the arrival of the first-due unit, staffed with 2 firefighters on an aid car or 3 firefighters arriving on an engine or ladder truck shall be: 6 minutes 20 seconds in urban areas. The first-due unit for all risk levels shall be capable of providing incident size up, initiating command, and requesting additional resources. If arriving on a fire engine, the first-due unit shall be capable of providing 500 gallons of water and 1,500 gallons per minute (gpm) pumping capacity; establishing and advancing an attack hose-line flowing a minimum of 150 gpm; or rescuing at-risk victims. These operations are done in accordance with the Department's standard operating procedures while providing for the safety of responders and the public. (PSF is not currently capable of achieving this standard.)

8. State and Local Standards

8.1 Washington State Law

8.1.1. Chapter 52.33 RCW requires fire departments with paid staff to establish Level of Service (LOS) policies and performance objectives based on the arrival of first responders with defibrillation equipment prior to brain death and the arrival of adequate fire suppression resources prior to flashover. This law recognizes the NFPA's Standard 1710 and the Commission on Fire Accreditation International's (CFAI) Standard of Cover as bases for this statute and requires a 90% performance expectation of the established LOS.

8.2. King County Standards

8.2.1. The King County Comprehensive Plan and Countywide Planning Policies are based on the concept of concurrency and require that adequate facilities and services be available or be made available to serve development as it occurs. The County Comprehensive Plan recognizes the validity of using a response time analysis in determining appropriate service levels and recognizes the central role of fire protection districts and regional fire authorities in providing those services. However, King County has not adopted any fire service response standards.

8.3. City of Covington and Kent Response Standards

8.3.1. The Covington and Kent Comprehensive Plans have adopted the fire service response standards of the Puget Sound Regional Fire Authority as shown in Section 8.4.

8.4. City of SeaTac

8.4.1. The City of SeaTac has established their own standards through a contract for services with PSF. SeaTac response time service standards exceed those adopted by PSF.

8.5. PSF's Standard of Cover

8.5.1. PSF maintains a "Standard of Cover" document as part of their accreditation process through the Center for Public Safety. The Standard of Cover is the "Standard" or Level of Service (LOS) to which the fire department will deliver services to the community. Performance below benchmark standards can contribute to unnecessary property and life loss. The continuum of time of fire service performance to adopted

level of service standard includes three main components measured at the 90th percentile (9 out of 10 times) of performance:

- 8.5.1.1. Dispatch time: The time interval from when a 9-1-1 call is answered and appropriate resources dispatched through alerts to firefighters.

- 8.5.1.2. Turnout time: The time interval that begins when audible or visual notification is received by firefighters from the 9-1-1 center and ends when firefighters have donned appropriate protective equipment and safely seat-belted themselves in their response vehicle ready to drive.

- 8.5.1.3. Travel time: The time interval that begins when a response unit begins to move in route to the emergency incident location and ends when the unit arrives at the addressed location or, at the entryway to the addressed complex.

8.5.1.3.1. First unit arrival objectives: 90% performance expectation.

Figure 7: PSFA First Unit Arrival Service Standard

- Urban Service Area:
  Dispatch (1:10) + Turnout (1:55) + Drive Time (4:15) = 7: 20

- Suburban Service Area:
  Dispatch (1:10) + Turnout (1:55) + Drive Time (4:35) = 7:40

- Rural Service Area:
  Dispatch (1:10) + Turnout (1:55) + Drive Time (5:30) = 8:35

8.5.1.3.2. Minimum effective response force arrival objectives: (First three units) 90% performance expectation.

Figure 8: PSFA – Minimum Effective Response Force Standard

- Urban Service Area:
  Dispatch (1:10) + Turnout (1:55) + Drive Time (6:30) = 9:35

- Suburban Service Area:
  Dispatch (1:10) + Turnout (1:55) + Drive Time (6:45) = 9:50

- Rural Service Area:
  Dispatch (1:10) + Turnout (1:55) + Drive Time (7:00) = 10:05

8.5.1.3.3. Full first alarm arrival objectives: 90% performance

Figure 9: PSFA Full First Alarm Response Force Standard

- Urban Service Area:
  Dispatch (1:10) + Turnout (1:55) + Drive Time (8:55) = 12:00
- Suburban Service Area:
  Dispatch (1:10) + Turnout (1:55) + Drive Time (8:55) = 12:00
- Rural Service Area:
  Dispatch (1:10) + Turnout (1:55) + Drive Time (9:55) = 13:00

8.5.2 Reliability is a measure of resource capacity. For a resource to be reliable, it must be available to answer emergency calls as least as often as the service expectation placed upon that resource. For instance, if a fire resource is expected to deliver service at the adopted standard 90% of the time, then that resource should be available to respond to an emergency incident from its assigned fire station at least 90% of the time. Reliability levels below the adopted performance expectation indicate resource exhaustion.

Figure 10: PSF Reliability Objectives

Minimum Reliability Objectives			
Performance Type	Urban	Suburban	Rural
Minimum Peak Hour Unit Reliability	90%	90%	90%

9. Local Restriction on Level of Service

9.1. PSF has assessed its ability to deliver service in compliance with established national standards finding that current funded deployment will not allow the department to meet recognized standards. As a result of the level of service analysis, PSF has completed a fire station deployment study with a focus on determining the optimum station location and resource deployment necessary to achieve effective response times. This study has considered the National Fire Protection Association's Standard 1710, the Center for Public Safety Excellence's (CPSE) Standard of Coverage recommendations and Chapter 52.33 RCW in establishing standards for emergency response. Resources required to close the gap between current performance and

adopted benchmark levels of service are identified in the 2014-2033 Master Capital Facility and Equipment Plan and its subsequent annual 6-year updates.

9.2. Because of resource limitations and budget restrictions, PSF has adopted level of service standards that exceed the benchmark standards established by NFPA 1710, the CPSE and the guidelines of Chapter 52.33 by as much as 2 minutes.

10. Need for Mitigation of Development Impacts

10.1 Substandard performance: PSF's current fire system performance falls short of national standards and in many parts of the service area performance compared to the CFAI baseline standards would be considered in response failure. Any additional impacts posed by new development will further erode PSF's ability to deliver service at adopted standards.

10.1.1. Auto Aid: PSF must rely on resources from neighboring fire departments to assemble an effective response force.

10.1.2. Resource exhaustion: PSF is currently experiencing resource exhaustion at Stations 45, 71, 73, 74, 75, 76 and 77 where reliability is below 90% during peak demand hours.

10.1.3. Service Standards: PSF has had to adopt level of service standards that exceed benchmark standards established by NFPA 1710, the CPSE and the guidelines of Chapter 52.33 by as much as 2 minutes.

10.2. Revenue restrictions: Washington's limit on annual tax collections (101% of the previous year) has eroded PSF's ability to keep up with inflation. The annual levy rate which began at $1.00 per thousand dollars of assessed value in 2011, has been reduced to $0.76 in 2018. This declining levy rate and, greater than one percent inflation has compounded recovery from the lingering effects of the great recession. This has resulted in reductions in purchasing power; staff reductions or delays in hiring and delays in equipment replacements within PSF. Since 2011 funding of capital replacement programs was reduced in favor of meeting inflation costs and increasing operating expense due to new community growth and increased increases of inflation and, growing service demand leaving the capital plan under funded. Adopted in 2014, the Master Capital and Equipment plan was funded to approximately 55% from 2014 to 2016. With the implementation of impact fees in the City of Kent in October of 2015, funding has improved and the 2017 budget funded 85% of the needed capital.

10.3. Conclusion: Unless new development can mitigate their impacts to the PSF fire service system in accordance with this policy, PSF must oppose each and every development occurring within PSF service area.

11. Determining Development Impacts

11.1. Concepts of Fire Service Capacity and Cascading Failure:

11.1.1. The deployment of fire and life safety resources such as fire engines and emergency medical vehicles is geographically based through planned selection of fire station locations. Fire station locations must be carefully chosen to allow the resource(s) deployed from these locations to reach all portions of the assigned service area within a time frame capable of providing successful outcomes for critically injured or non-breathing patients and, to prevent flashover and minimize life and property loss during a structure fire.

11.1.2. This type of geographic deployment depends on the availability of the resources assigned to that fire station location. System failure begins to occur when the demand for these resources is increased to a point where simultaneous requests for a resource begins to commonly occur as a result of exceeding the capacity of that resource. When service demand exceeds a single resource fire station's capacity, a resource from a fire station further away must respond in its place. The result of this situation is often referred to as cascading failure. The failure of one resource to be available to answer emergency calls cascades to the next closest fire station resource, leaving two service areas unprotected when the covering resource vacates its assigned area to make up for lack of capacity of the failing resource area. This effect continues to cascade out with a ripple effect to yet other fire stations and jurisdictions.

11.1.3. Cascading failure causes longer drive times to reach emergency scenes and as a result, it is less likely that those resources can positively affect the negative outcomes of flashover and brain death.

11.1.4. The solution to cascading failure is the addition of service capacity to the area experiencing substandard reliability. The deployment of additional fire resources results in considerable expense to a community, therefore a delicate balance must be maintained to use but not exceed the service capacity of resources.

11.1.5. The Center for Public Safety Excellence refers to a fire resource's capacity in their Commission on Fire Accreditation Standards of Cover guidelines, in terms of level of

"reliability" of a fire resource. If a resource is available at least as often as the expected performance expectation, it is considered reliable.

11.1.6. PSF's ability to meet its response time standards is directly affected by resource reliability.

	E-45	L-46	E-47	A-70	A-71	E-71	E-72	E-73	A-74	E-74	L-74	Q-75	Q-76	E-77	E-78
2016	88.92%	91.70%	93.99%	91.64%	83.99%	91.54%	92.65%	89.59%	96.86%	83.50%	94.90%	92.45%	91.06%	90.87%	94.49%
2015	89.81%	92.27%	94.69%	99.19%	84.23%	92.01%	92.30%	90.31%	87.75%	94.08%	94.09%	93.14%	92.73%	90.80%	94.58%
Unit Change	-0.89%	-0.57%	-0.70%	-7.54%	-0.24%	-0.47%	0.35%	-0.72%	9.11%	-10.58%	0.81%	-0.68%	-1.67%	0.07%	-0.09%
Station Change	-0.89%	-0.57%	-0.70%	-8.26%			0.35%	-0.72%	-0.65%			-0.68%	-1.67%	0.07%	-0.09%

Figure 11 - Reliability Chart

2016 Reliability of Existing Stations & Resources with Minimum Staffing															
	St 45	St 46	St 47	Station 71			St 72	St 73	St 74			St 75	St 76	St 77	St 78
Hour	E-45	L-46	E-47	A-70	A-71	E-71	E-72	E-73	A-74	E-74	L-74	Q-75	Q-76	E-77	E-78
0:00	91.40%	92.79%	95.53%	99.18%	88.76%	95.37%	95.04%	90.88%	97.66%	87.51%	98.27%	95.51%	94.78%	93.72%	96.32%
1:00	92.10%	92.35%	96.57%	99.43%	87.39%	93.65%	96.32%	90.56%	97.57%	87.97%	98.24%	96.30%	94.55%	94.82%	96.05%
2:00	90.53%	92.62%	96.41%	99.38%	87.27%	94.91%	97.05%	92.15%	96.92%	89.36%	97.12%	95.14%	95.01%	94.71%	96.22%
3:00	90.51%	93.69%	97.28%	99.55%	88.30%	96.22%	96.30%	91.04%	98.24%	90.33%	98.33%	96.20%	93.62%	93.33%	97.90%
4:00	92.59%	93.18%	95.87%	99.09%	91.00%	96.15%	95.53%	92.89%	97.85%	90.53%	98.71%	95.93%	94.43%	94.48%	97.57%
5:00	92.46%	93.32%	96.52%	99.76%	91.88%	95.41%	95.67%	93.58%	97.67%	89.41%	98.24%	95.59%	94.21%	93.45%	96.75%
6:00	90.88%	93.96%	96.80%	98.99%	88.83%	95.44%	95.98%	93.37%	98.06%	87.51%	97.45%	95.40%	91.26%	93.85%	97.27%
7:00	88.95%	94.04%	96.73%	99.38%	85.50%	92.35%	96.23%	91.22%	97.35%	85.72%	95.60%	94.99%	90.64%	92.30%	96.89%
8:00	89.08%	92.83%	95.61%	100.00%	85.09%	90.69%	92.35%	92.04%	97.99%	84.51%	95.91%	91.70%	89.89%	90.14%	93.90%
9:00	87.81%	92.51%	94.00%	99.76%	84.02%	88.37%	92.25%	91.42%	96.51%	83.89%	94.82%	92.06%	88.75%	89.85%	92.90%
10:00	88.80%	93.91%	93.03%	99.80%	81.84%	88.35%	91.44%	88.64%	96.28%	81.80%	94.00%	91.56%	88.15%	90.60%	93.46%
11:00	89.02%	91.72%	93.88%	99.59%	82.01%	89.64%	91.35%	86.79%	96.20%	80.34%	92.54%	91.21%	89.17%	90.83%	93.13%
12:00	87.54%	91.60%	93.63%	99.73%	79.77%	89.00%	90.48%	87.06%	96.80%	77.84%	92.54%	89.12%	88.22%	87.15%	91.55%
13:00	88.05%	91.71%	91.56%	99.03%	80.41%	88.69%	90.55%	88.55%	95.87%	77.89%	91.38%	89.04%	87.58%	90.06%	91.55%
14:00	87.97%	90.89%	91.20%	98.97%	78.26%	87.20%	88.74%	87.92%	96.89%	81.32%	92.06%	89.65%	86.97%	89.11%	92.65%
15:00	86.84%	90.77%	91.43%	99.50%	79.60%	86.52%	89.38%	86.85%	97.44%	78.63%	91.47%	89.39%	88.75%	88.57%	92.40%
16:00	86.23%	87.94%	91.62%	99.61%	80.54%	88.01%	88.30%	86.80%	96.86%	78.17%	92.98%	89.10%	88.84%	87.61%	92.52%
17:00	85.38%	89.04%	91.48%	99.39%	80.43%	90.31%	91.26%	86.57%	97.34%	78.85%	93.53%	87.98%	89.18%	87.10%	94.33%
18:00	87.19%	88.31%	89.71%	99.75%	79.04%	88.91%	90.26%	88.03%	96.40%	78.09%	91.67%	90.56%	91.23%	88.48%	91.53%
19:00	87.48%	89.65%	92.70%	99.60%	80.88%	89.74%	90.16%	85.89%	95.00%	79.57%	92.86%	90.93%	89.20%	86.92%	93.43%
20:00	86.55%	90.51%	93.14%	98.83%	82.35%	91.96%	89.70%	87.44%	95.09%	80.43%	93.95%	89.70%	91.55%	89.87%	95.19%
21:00	87.32%	88.36%	92.31%	98.94%	82.77%	91.88%	91.21%	87.28%	94.78%	81.58%	93.74%	93.11%	92.10%	89.30%	93.44%
22:00	87.73%	90.32%	92.89%	99.10%	81.86%	91.92%	93.08%	88.12%	96.22%	84.16%	95.39%	93.09%	92.49%	90.45%	93.61%
23:00	91.72%	94.81%	95.84%	99.38%	87.98%	96.13%	95.51%	93.09%	97.73%	89.56%	96.83%	95.54%	94.93%	94.07%	97.17%

Figure 12 – Reliability of Stations and Staffing

11.2.Components of Response:

11.2.1. PSF measures the direct impact of an individual development on system performance by determining the development's impact on service capacity and fire department response times. PSF tracks three primary performance measures.

- 11.2.1.1. First is the arrival time of the initial arriving "first-in" or distribution resource.

- 11.2.1.2. Second is the arrival of all the first three units for fire incidents. These first three units are referred to as the "Minimum Effective Response Force" (MERF). Data shows these first three units can often hold fires in check but need additional assistance for final extinguishment.

- 11.2.1.3. Third is the arrival of the full first alarm assignment which provides the resources needed to effectively mitigate the emergency incident. This is referred to as the "Effective Response Force" (ERF) or concentration resources. An initial arriving resource can begin to render aid or perform other necessary tasks as a component of the ERF but cannot resolve the incident alone. An ERF for a life threatening medical call requires two or more fire resources and a structure fire requires five or more fire resources. The additional resources of the MERF and ERF must respond from greater distances than the first-in resource therefore the first-in, MERF, and ERF have separate performance expectations.

11.3 Effect of Development on Fire System Performance:

11.3.1. Each new development uses service capacity affecting the reliability and the temporal performance of fire service resources. Where service capacity exists to accommodate the impacts of new development, mitigations should be reduced accordingly to allow new development credit for the existing capacity. However, service capacity or resource reliability must be carefully measured to assess the reliability and response performance of both first-in and full first alarm (ERF) resources.

11.3.2. It is important to understand whether a new development is placed nearer to, or farther from a fire station, its use of service capacity will have a negative effect on the fire service systems performance. Therefore, the mitigation necessary to maintain fire service concurrency is not dependent on geographical location within a fire stations

service area, but on the fact that each development consumes service capacity negatively affecting reliability and response performance. Those developing property away from existing fire stations directly impact the system because they are using capacity that would otherwise serve development close to existing fire stations. As close-in properties develop, they in turn, directly impact the system by reducing resource reliability for those developments that are more distant.

11.4. Mitigation Actions Required:

11.4.1. PSF's limited funding and resources has caused the need to adopt standards that establish levels of service below nationally recognized benchmark standards. As a result, all new development has a direct impact on PSF's service capacity.

11.4.2. When system inadequacies exist, the impact of each new development will have an unacceptable direct impact on PSF's ability to provide service. Each new development shall be reviewed to determine whether it will further impact the following identified service deficiencies. Mitigation shall be required if any one or more of the following performance deficiencies exist within the response district (typically a quarter section) of the proposed development:

- 11.4.2.1. Historical performance data shows arrival time for first-in unit response times exceed the adopted Level of Service standard.

- 11.4.2.2. Historical performance data shows arrival time of minimum effective response forces (MERF) or full first alarm (effective response force ERF) units exceed the adopted Level of Service standard.

- 11.4.2.3. Historical performance data shows reliability of first in units is equal to or less than the adopted standard (90%) during peak demand hours.
- 11.4.2.4. Historical performance data shows reliability of the assigned MERF or ERF resources is equal to or less than the adopted standard (90%) during peak demand hours.

- 11.4.2.5. Historical data shows evidence that one or more mutual-aid company has been consistently relied upon to provide an effective response force to the area of proposed development.

- 11.4.2.6. Less than 1,500 gallons of fire flow is available when any structure to structure spacing is less than 15 feet from any part of another structure.

11.5. Mitigation Options:

11.5.1. PSF staff may utilize the options listed below and/or any state or locally adopted building code set, and any NFPA or other recognized standard to mitigate the impacts of new development upon the ability of PSF to deliver adopted levels of service.

11.5.2. Acceptable mitigations shall appropriately address risk of the development and may include, but not be limited to one or more of the following options to achieve concurrency:

11.5.2.1. Installation of automatic fire sprinkler systems to provide onsite fire control until PSF response units can arrive on scene. All automatic fire sprinkler systems shall comply with NFPA 13.

- 11.5.2.1.1.1. Exception: *Partial flow through or multi-purpose or, water mist fire protection systems may be allowed in one and two-family structures upon approval of the Fire Marshal representing the authority having jurisdiction.*

11.5.2.2. Installation of monitored alarm and alerting systems to provide early alerting to PSF.

11.5.2.3. Installation of fire walls or other building separations to reduce fire flow and/or firefighting resource requirements.

11.5.2.4. Use of alternate construction materials or design to reduce chance of fire spread between structures.

11.5.2.5. Installation of systems or features that assist evacuation and sheltering in place.

11.5.2.5.1. Areas of refuge in multi-story stairwells.

11.5.2.5.2. A central fire department lobby control with intercom systems in taller high-risk (multi-family housing) buildings to assist evacuation and sheltering in place.

11.5.2.6. Addition of access enhancements such as secondary access points, fire lanes, ambulance parking spaces etc.

11.5.2.7. Installation of incident reduction features such as grab bars in senior and disabled housing units.

11.5.2.8. Installation of monitored medical alarms.

11.5.2.9. Installation of alarm monitored defibrillators in public areas of multi-family housing, places of assembly, and public buildings.

11.5.2.10. Impact Fees.

11.5.2.11. Level of Service Fees.

11.5.3. Selected mitigation measures should be relational to the risk imposed by the development and its use. Time is the critical issue in the delivery of emergency fire and medical services. Mitigation measures should be appropriate and adequate to achieve a level of public safety that would be equivalent to PSF's achievement of response time standards within a reasonable, six-year period.

12. Developer Agreements

12.1. Developer agreements may be required for all developments occurring within PSF service area when impact or level of service fees alone, do not adequately mitigate the risk of the new development or ensure concurrency. When determined by the Chief's or his designee, PSF and the development applicant shall enter into a mitigation agreement that clearly identifies all mitigation necessary to maintain fire service concurrency.

12.2. Basis for Calculating Impact and Level of Service Fees (Appendix A):

12.2.1. Boundaries: As a point of reference, PSF boundaries shall be used to determine the service capacity according to PSF's adopted response time standards. This policy shall be applied to all or administratively defined areas within the boundaries of PSF.

12.2.2. Property Categories: Properties are grouped by three basic categories, residential, commercial and regional commercial.

12.2.2.1. Residential properties shall include both single family and multifamily units.

12.2.2.2. Commercial property shall be those property uses that would otherwise be classified as industrial, business, retail sales and services, wholesale sales, storage, assisted care facilities, churches and medical facilities.

12.2.2.3. A "regional commercial" designation may be applied to commercial properties when by design, location, and business plan is intended to serve a regional largely non-resident population. Regional commercial

designations are likely to occur near regional transportation, shopping and entertainment centers, places of assembly, and will produce fire service impacts that are much higher than like properties in other areas serving resident populations.

12.2.3. **Capital Improvements:** PSF's Capital Facilities and Equipment Plan identifies the resources and revenue needed to provide adequate service and maintain public health and safety over a 20-year planning cycle. Each year an updated Six Year Capital Plan shall be adopted to provide current levels of service and provide the basis for updating construction and equipment costs and impact and level of service fees.

12.2.4. **Fire Department Service Demand:** Past demand for fire department services to property categories identified above, shall be used to predict future service level demand to those proposed property types. The percentage of service use by new development and its impact on PSF Service Levels shall be used to determine appropriate and relational contributions for each property type (see Appendix A, Res/Com Split). Needed expenditures for capital improvements identified in PSF's Capital Facilities and Equipment Plan will be the basis for determining the construction and equipment costs (C&E) which are used in calculating impact fees and level of service contributions.

12.2.5. **Usage Factor:** The specific use of fire services by land use category. Use factors are based on actual incident rates. (see appendix A)

12.2.6. **ERF (Effective Response Force) Factor:** The minimum amount of staffing and equipment that must reach a specific emergency location within the maximum adopted level of service time capable of fire suppression, EMS and/or another incident mitigation.

12.2.7. **New Development Share:** That portion of C&E to be paid for by new development. New Development share is used to assure that new development pays only for improvements related to growth and maintenance of fire service concurrency.

12.2.8. **Projected Development:** The 20-year growth projections found in PSF's Capital Facilities and Equipment Plan will be the basis for PSF calculations of future dwelling units and future square-footage of commercially developed properties.

13. Mitigation Methodology and Fee Application:

13.1. New Development Assessment:

13.1.1. Impact Fees & Mitigations

13.1.1.1. In areas where fire service impact fees have been adopted in support of PSF by the authority having jurisdiction to permit building and land uses, each new proposed

development will have a capacity analysis completed to determine the system wide impacts the proposed development will have on fire concurrency within PSF service area.

13.1.1.2. System impacts will be assessed utilizing PSF's Mitigation Assessment Worksheet. (See Appendix D).

13.1.1.3. Impact fees will be calculated and determined through a capacity analysis (Appendix B or C) and applying the appropriate formula found in Appendix A.

13.1.1.4. PSF staff will determine appropriate non-fee mitigations that may be necessary in addition to impact fees to provide for adequate built-in protection or mitigations necessary for fire service concurrency to the proposed development.

13.1.1.5. PSF staff shall consider developer submitted alternate mitigations and fee amounts presented in a study that provides acceptable alternatives to the mitigations found in this policy.

13.1.2. **Level of Service Fees & Mitigations**

13.1.2.1. In areas where fire service impact fees have not been adopted in support of PSF by the authority having jurisdiction to permit building and land uses, each new development when proposed, and upon notice of application, shall have their direct impacts assessed and their appropriate mitigation options determined.

13.1.2.2. PSF shall pursue all appropriate mitigations necessary to maintain public safety and fire service concurrency through the provisions provided by the Growth Management Act (GMA), State Environmental Protection Act (SEPA), Washington State subdivision codes, and the adopted land use regulations in the authority having jurisdiction.

13.1.2.3. Direct impacts will be assessed and mitigations determined by utilizing PSFs Mitigation Assessment Worksheet. (See Appendix D)

13.1.2.4. Appropriate Level of Service Contribution fees will be calculated and determined by applying the formula found in Appendix A.

13.1.3. **Impact and Level of Service Fee Reduction:**

13.1.3.1. Where automatic fire sprinklers are voluntarily installed in single family residential occupancies in compliance with RCW 82.02.100 a reduced fee equal to 70%

of the impact or level of service fee shall serve to mitigate the costs of needed EMS and rescue resources. Additional reductions shall be applied as identified on PSF Service Capacity Analysis worksheet in Appendix B.

13.1.4. **Determination of fee – Adjustments – Exception - Appeals**

The fee shall be determined through a capacity analysis to determine the service capacity credits to be applied to the base fees as outlined in Appendix – A.

The developer may be entitled to a credit for the value of any dedication of land for, improvements to, or new construction of any system improvement provided by the developer to fire protection facilities identified in the PSF Capital Plan.

The standard impact or level of service fee may be adjusted in one of the following circumstances:

The developer demonstrates that the impact fee was improperly calculated; or,

Where unusual circumstances are identified by the land use authority having jurisdiction, the developer or PSF staff, the fee may be adjusted in specific cases to ensure that impact fees are imposed fairly. Adjustments will be determined jointly by the director for the land use authority having jurisdiction and PSF's designee.

In cases where a developer requests an independent fee calculation, adjustment exception or a credit pursuant to RCW 82.02.060(6), PSF's designee will consult with the director for the land use authority having jurisdiction prior to making the final impact fee determination.

A developer may provide studies and data to demonstrate that any factor used by PSF may not be appropriately applied to the development proposal.

Any appeal about fee amounts shall follow the process for the appeal of the development application in the authority having jurisdiction for land use approval.

Impact fees may be paid under protest to obtain a building permit or a manufactured home permit.

13.1.5. **Fee Collection Policy:**

13.1.5.1. Payment of impact fees shall comply with the guidelines of chapter 82.02 RCW, applicable implementing city/county codes, and will be collected by the jurisdiction having authority at time of permitting, or as defined by a required development

agreement. Impact or level of service fees shall be based on the most recently adopted formula and fees. Any fees paid later than required shall be subject to interest at a rate of one (1) percent per month.

13.1.5.2. All impact fees collected by the authority having jurisdiction shall be held in separate account, transferred to PSF with interest, where they shall be held in a reserve account used to fund PSF's Capital Improvement Plan. If impact fees are not utilized within ten years of receipt, a refund will be issued to the developer with interest.

13.1.5.3. All level of service contributions collected, shall be held by PSF in a reserve account used to fund PSF's Capital Improvement Plan. If level of service fees is not utilized within five years of receipt, a refund will be issued to the developer with interest.

13.1.6. **Multi-Family common space credit:**

13.1.6.1. Each MF dwelling unit shall be credited 50 square feet toward common spaces (not including commercial spaces) in other parts of residential portions of the structure. Total common spaces within the residential portion of the structure exceeding the sum of 50 square feet times the number of total dwelling units shall be assessed the per square foot fee identified in Appendix A for Commercial/Industrial properties for each square foot of common space exceeding the credited amount.

13.1.6.2. Common space credits per dwelling unit shall not apply to mixed use developments where separate commercial and parking spaces are not part of the common living areas of the multi-family space.

13.1.7. **Fee Exempt Properties:**

13.1.7.1. Shelters or dwelling units for temporary placement, which provide housing to persons on a temporary basis not exceeding two weeks.

13.1.7.2. Rebuilding or remodeling of a legally established structure destroyed or damaged by fire, flood, explosion, act of nature or other accident or catastrophe; provided, that a building permit for the rebuilding or remodeling is issued within one year after such damage or destruction occurs. The exemption shall not apply to any additional structure or expansion of the original square footage that is proposed to be built on the same tax parcel on which the structure that was damaged or destroyed is being rebuilt or remodeled.

13.1.7.3. Projects in which existing dwelling units are converted into condominium ownership and where no new dwelling units are created.

13.1.7.4. Any development activity that is exempt from the payment of an impact fee pursuant to RCW 82.02.100(1), as amended.

13.1.7.5. Any development activity for which fire impacts have been mitigated pursuant to a voluntary agreement entered into with PSF to pay fees, dedicate land or construct or improve fire facilities; provided, that the agreement predates the effective date of fee imposition.

13.1.7.6. Any development of 200 square feet or less that does not use or store hazardous materials that would create a life safety risk.

13.1.7.7. Alterations of an existing nonresidential structure that does not expand the useable space and that does not involve a change in use.

13.1.7.8. Demolition of or moving an existing structure within PSF from one site to another.

13.1.7.9. Miscellaneous improvements that do not create additional demands and need for fire protection facilities, including, but not limited to, fences, walls, swimming pools, and signs.

13.1.7.10. Alteration or expansion of or remodeling of an existing dwelling or structure where the use is not changed.

13.1.7.11. Construction of an accessory dwelling unit on a parcel with an existing single-family dwelling unit; provided however, that this shall only exempt the construction from two-thirds of the normal residential impact fee that would otherwise apply.

13.1.7.12. Pursuant to RCW 82.02.100(2), where automatic fire sprinklers are voluntarily installed in single family residential occupancies, a reduced fee equal to 70% of the impact or level of service fee shall serve to mitigate the costs of needed EMS and rescue resources.

Existing structures retained and incorporated into a new subdivision of land.

13.1.8. **Agreements:**

13.1.8.1. All mitigation agreements between PSF and developers shall be recorded as a lien against the property of the proposed development. Upon receipt of payment, PSF will

promptly notify the appropriate authority having jurisdiction and remove any encumbrances recorded against the appropriate property.

14. PSF Funding Share

14.1. PSF Funding Participation: There is currently an identified need for additional fire facilities and equipment in PSF related to growth that occurred prior to this policy. Total funding of PSF's Capital Facilities and Equipment Plan is split between PSF and new development. New development through impact fees or level of service fees shall only be required to fund that share related to new growth. PSF will share in the expense of needed resources as outlined below:

14.1.1. PSF will be directly responsible for the percentage of construction and equipment costs beyond the growth share determined for new development.

14.1.2. PSF will contribute shortages as a result of loss of, or default on collections of impact and level of service fees.

14.1.3. Estimated revenues are never fully realized from development and PSF will need to supplement shortages.

14.1.4. PSF will contribute the actual construction and equipment costs exceeding original estimates.

14.1.5. Payment of unanticipated costs associated with implementing PSF Capital Improvement Plan.

14.1.6. Advancing funds for capital expenses before total collection of impact fee or level of service contributions.

14.1.7. Management of this policy, and the Capital Improvement Plan.

15. Adequate Provisions for Public Safety, Limitations, Intent of Concurrency:

15.1. The safety and welfare of current and future residents of PSF is of paramount concern to PSF. It is recognized that this policy may have limitations and may not provide definitive guidance for effective mitigation of direct development impacts on PSF's service capacity in all cases.

15.2. It is not the intent of this policy to limit PSF's staff in making decisions outside of this policy where those decisions and mitigation options serve the intent of maintaining concurrency with development and protecting PSF's service capacity; making rational and relational mitigation requests appropriate to the level of risk, and protecting the safety of the public and firefighters in a fair and consistent manner.

16. Policy Review and Adjustment:

16.1. At least annually, this Policy will be reviewed and amended as necessary. This review will include updates to reflect current level of service capacity. Amendments will be made consistent with the annual revision of the six (6) year Capital Improvement Plan and shall be approved through a resolution of PSF's Governance Board.

LEVEL OF SERVICE & IMPACT FEE FORMULAS

LOS Formula Calculation

Land Use Type	System wide C&E	Res/Com Split	Usage Factor	ERF Factor	New Dev Share	Projected New Units 2014 - 2035	Impact & LOS Contribution Fee
Residential							
Single Family	$95,468,923	65%	56%	1.13	80%	16,884 living units	$1,860.61
Multi Family	$95,468,923	65%	44%	1.37	80%	16,884 living units	$1,772.41
Commercial							
COMM/IND	$95,468,923	35%	32%	2.75	80%	12,500,000 sq ft	$1.88
HOSP/MED/CIV/SCH/CHUR	$95,468,923	35%	30%	2	80%	12,500,000 sq ft	$1.28
ASSISTED CARE	$95,468,923	35%	38%	3	95%	12,500,000 sq ft	$2.89
Regional Commercial							
COMM/IND	$95,468,923	35%	32%	2.75	98%	12,500,000 sq ft	$2.31
HOSP/MED/CIV/SCH/CHUR	$95,468,923	35%	30%	2	98%	12,500,000 sq ft	$1.57

LOS Formula Definitions

- **Land Use Type:**
  Defines the land uses types and structure uses that impact and level of service fees are assessed on.
- **System wide C&E:**
  The construction and equipment costs for the 20-year time span of PSF's Capital Improvement Plan
- **Res/Com Split:**
  Percentage of annual emergency responses by property type; Residential = 65%, Commercial = 35%
- **Usage Factor:**
  The portion of Res/Com Split that is used by a specific property type; Single Family = 56% of all emergency responses that are used by the residential properties and the remaining 44% is used by Multi-Family properties.
- **ERF Factor:**
  The ERF or effective response force factor represents the size of the first alarm emergency response in numbers of firefighters and equipment that is needed to effectively handle the risk posed by that property type.

- **New Dev Share:**

  Represents the portion of C&E costs assigned to new development. The remaining portion is to be paid for by PSF through annual tax collections.

- **Projected New Units:**

  Defines the number of new units projected to be constructed within PSF service area between 2014 and 2035

- **Impact and LOS Contribution Fee Amount:**

  Represents the maximum fee to be paid by new development for each specific property type. This fee amount may be reduced if existing fire service capacity is adequate to serve the new development.

Service Capacity Credit Criteria	
Residential Fee Reduction Factors: *	
Historical data shows first in station response area meets LOS	= 15%
Historical data shows F-Box of development meets first in LOS	= 10%
First in station reliability data meets peak hour standard	= 10%
Historical data shows full first alarm reliability meets peak call volume standard	= 15%
Automatic sprinkler system installed voluntarily (single family only)	= 30%
Historical data shows full first alarm ERF meets LOS standard to F-Box	= 30%

**Accumulated discounts shall not exceed the LOS contribution amount and cumulative discounts cannot be used as credits to be transferred.*

Multi-Family and Commercial/Industrial Reduction Factors[4]:	
Historical data shows first in station response area meets LOS	= 15%
Historical data shows F-Box of development meets first in LOS	= 10%
First in station reliability data meets peak hour standard	= 10%
Historical data shows full first alarm reliability meets peak call volume standard	= 15%
Historical data shows full first alarm ERF meets LOS standard to F-Box	= 30%

[4] Because of the risk and complexity associated with firefighting in multi-family structures, fire sprinklers are considered a required risk reduction factor and therefore shall not be allowed a discount of the mitigation fee.

Appendix B

Puget Sound Regional Fire Authority
Service Capacity Analysis for New SFR Development

Date of Analysis: _____ Project Permit #_____

Project Address:_____ Land Parcel #_____

Fire Box Location: _____ Fire Box Performance: 1st In ____% ERF ___%

1st in Station ___ Peak Hour Reliability ___% 1st in Area Performance ____%

Fire ERF Required ____ ERF Pick List ____, ____, ____, ____, ____, ____

ERF Reliability ___% ___% ___% ___% ___% ___%

Capacity Allowance Calculator:

1st in response area meets LOS	_____ = 15% _____%
F-Box development meets first in LOS	_____ = 10% _____%
1st in reliability meets peak hour standard	_____ = 10% _____%
1st alarm reliability meets peak hour standard	_____ = 15% _____%
Sprinklers installed voluntarily	_____ = 30% _____%
1st alarm ERF meets LOS standard to F-Box	_____ = 30% _____%

Total Capacity Allowance _____%

Total Fee Calculation:

Full SFR Impact Fee Rate = _____

SFR units in development x _____

Total impact fee amount _____

Impact fee to be assessed:

Total impact fee _____ x capacity allowance _____ = $_____

Appendix C

Puget Sound Regional Fire Authority
Service Capacity Analysis for New non-SFR Development

Date of Analysis: _____ Project Permit # _____

Project Address: _____ Land Parcel # _____

Fire Box Location: _____ Fire Box Performance: 1st In _____ % ERF ____%

1st in Station ___ Peak Hour Reliability ___ % 1st in Area Performance _____%

Fire ERF Required _____ ERF Pick List ____, ____, ____, ____, ____, ____, ____,

ERF Reliability ___% ___% ___% ___% ___%___%___%

Capacity allowance calculator:

1st in response area meets LOS	_____ = 15% _____
F-Box development meets first in LOS	_____ = 10% _____
1st in reliability meets peak hour standard	_____ = 10% _____
1st alarm reliability meets peak hour standard	_____ = 15% _____
1st alarm ERF meets LOS standard to F-Box	_____ = 30% _____
Total Capacity Allowance	_____

Impact fee category and rate:

Multi Family	___	Impact fee rate per square foot ____
Commercial/Industrial	___	Impact fee rate per square foot ____
Hospital/Medical/Civic	___	Impact fee rate per square foot ____
Assisted Care	___	Impact fee rate per square foot ____

Total fee calculation:

Full impact fee rate	= _____
Square footage of development	x _____
Total impact/LOS amount	$ _____

Impact fee to be assessed:

Total impact/LOS amount _____ x capacity allowance _____ = $_____