ORDINANCE NO. 07-2017

AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF COVINGTON, KING COUNTY, WASHINGTON, ADOPTING THE PUGET SOUND REGIONAL FIRE AUTHORITY SIX-YEAR CAPITAL FACILITIES IMPROVEMENT UPDATE FOR 2016-2021 BY REFERENCE IN THE 2015-2035 COMPREHENSIVE PLAN.

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

WHEREAS, the Puget Sound RFA adopted their Master Capital Plan and Mitigation and Level of Service Policy through their Governance Board on September 3, 2014 under Resolutions 68 and 69 (the "Plan") and submitted their Plan to the City; 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, upon providing appropriate public notice, the Covington Planning Commission conducted a public hearing on July 6, 2017 to receive testimony regarding the proposed adoption of the of Puget Sound RFA six-year capital improvement plan, as amended and referenced in the 2015-2035 City's Comprehensive Plan; and

WHEREAS, the Puget Sound RFA and the city council authorized the city manager to execute an "Interlocal Agreement for the Collection, Distribution, and Expenditure of School Impact Fees".

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

Section 1. Findings of Fact. The "Whereas" provisions above shall constitute Findings of Fact and are incorporated by reference as if fully set forth herein

Section 2. Adoption. The City hereby adopts, by reference, the Puget Sound Regional Fire Authority Six-Year Capital Improvement Update 2016-2021, replacing the RFA's previously referenced capital facilities plan in the 2015-2035 Comprehensive Plan, as set forth in Exhibit A attached and incorporated herein by this reference.

Section 3. Severability. If any provision of this ordinance, or ordinance modified by it, is determined to be invalid or unenforceable for any reason, the remaining provisions of this ordinance and ordinances and/or resolutions modified by it shall remain in force and effect.

Section 4. 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 5. Effective Date. This ordinance shall be in full force and effect five (5) days after publication in the city's newspaper of record. 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, WASHINGTON, at a regular meeting thereof on the 25th day of July, 2017, and signed in authentication of its passage.

For Se Sm MPT

Mayor Jeff Wagner

ATTESTED:

Sharon Scott, City Clerk

PUBLISHED: July 28, 2017
EFFECTIVE: August 2, 2017

APPROVED AS TO FORM:

Kathy Hardy, City Attorney

ORDINANCE NO. 07-2017
EXHIBIT A

2016 – 2021

6 Year Capital Improvement Update

Kent Regional Fire Authority

Six-Year Capital Facilities & Equipment Plan
2016-2021
Kent Regional Fire Authority

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

Fire Chief
Jim Schneider

Finance Manager
Margaret Martin
Deputy Chief
John Willits and Brian Wiwel
Division Chief
Mark Jones, Pat Pawlak and Larry Rabel
District Chief
Kevin Garling, Tom Shepard, Jeff Richardson

Deployment Dynamics Group LLC

Governance Board Members
Fire District 37
Allan Barrie
Harry George
Margaret Harto
City of Kent
Bill Boyce
Dennis Higgins
Les Thomas
City of Covington
Sean Smith
City of SeaTac
Erin Sitterley

November 2016

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1 Executive Summary

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

This Plan update uses data available through the first quarter of 2016 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 (2016 – 2021) 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 for resources.

Since adoption and publication of the Master CFEP in 2014, the post-recession economy has continued to recover and community growth is returning to near pre-recession rates. The City of Kent has published an 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 their projected growth targets to more closely reflect past market rates but, the combined rate of growth for Covington, Kent, and unincorporated areas of the KRFA response area remain consistent with the projections of the 2014 CFEP. As a result, only minor changes have been made to baseline impact fees in Table 2, which are based upon the updated costs associated with funding the capital resources required to maintain fire service concurrency.

The GMA requires a six-year funding plan and the plan in Table 3 has been balanced through 2021 with a $702,000 surplus using projected revenue. However, the timing of resources funded in this plan have been pushed back in time from the Master 2014 CFEP because of the limits on available capital funding.

Table 1 2017 Fire Impact Fees

Level Of Service Fee Calculation								
Land Use Type	System wide C&E	Res/Com Split	Usage Factor	ERF Factor	New Dev Share	Projected New Units 2011 - 2030	Type of Unit	Impact & LOS Contribution Fee Amount
Residential								
Single Family	$86,252,690	74%	57%	1	90%	19,068	Living unit	$1,702.12
Multi Family	$86,252,690	74%	43%	1.3	90%	19,068	Living unit	$1,664.46
Commercial								
COMM/IND	$86,252,690	26%	30%	3	80%	14,000,000	Sq Feet	$1.15
HOSP/MED/CIV/SCH/CHUR	$86,252,690	26%	30%	2	80%	14,000,000	Sq Feet	$0.77
ASSISTED CARE	$86,252,690	26%	40%	3	80%	14,000,000	Sq Feet	$1.54

Table 2 Six-Year Funding Plan

6 - Year Cost/Funding Sources for Capital Needs							
Costs in thousands based on 2014 dollars							
Cost/Funding Source	2016	2017	2018	2019	2020	2021	Totals
Expense Sources							
Station Construction & Land Purchase	$50	$55	$1,100	$98	$1,485	$3,103	$5,891
Apparatus	$714	$1,331	$1,174	$1,518	$1,645	$1,609	$7,991
Equipment	$118	$1,046	$827	$431	$377	$397	$3,197
Asset Preservation	$77	$1,003	$488	$312	$142	$183	$2,205
I.T. Capital	$153	$792	$207	$115	$195	$202	$1,664
72nd Ave S Extension	$120	$120	$120	$120	$120	$120	$720
Debt Cost	$0	$0	$0	$0	$0	$0	$0
Revenue Sources							
Annual Tax Revenue to Capital	$1,000	$1,890	$1,890	$1,890	$1,890	$1,890	$10,450
Taxpayer Bond Funds	$0	$0	$0	$0	$0	$0	$0
Sale of Surplus Property	$0	$93	$253	$32	$98	$50	$526
Covington Impact/LOS Fees	$250	$252	$255	$255	$255	$255	$1,522
Kent Impsct/Los Fees	$630	$610	$900	$900	$900	$900	$4,840
Councilmatic Bonds	$0	$0	$0	$0	$0	$0	$0
King County Radio Program	$0	$0	$767	$0	$0	$0	$767
Decrease in Kent ILA for IT	$0	$25	$75	$130	$130	$130	$490
Apparatus Grant	$102	$306	$0	$0	$0	$0	$408
Burn Prop Grant	$0	$383	$0	$0	$0	$0	$383
SeaTac ILA Capital	$475	$485	$493	$500	$510	$520	$2,983
Summary of Revenues less Expenses							
Expense	$1,232	$4,347	$3,915	$2,594	$3,965	$5,613	$21,667
Revenue	$2,458	$4,044	$4,633	$3,707	$3,783	$3,745	$22,369
Balance	$1,226	$922	$1,640	$2,752	$2,570	$702	$702

2 Background and Demographics

The KRFA 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 KRFA 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, the KRFA'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 2016 population of KRFA service area is 177,390.[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 KRFA 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 KRFA'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. The following pages describe:

- The current demographics of the KRFA
- 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 2021.

[1] Washington State Office of Financial Management April 2015 with estimates of fire district 37's unincorporated area based upon housing counts and 3 persons per dwelling

2.1 SeaTac Service Area

The KRFA 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 2016 population of 27,810.

Three fire stations owned by SeaTac are leased and operated by the KRFA under the service contract. All other capital resources previously owned by SeaTac prior to 2014, have been transferred to the ownership of the KRFA. As a condition of the service contract, SeaTac provides an annual capital payment to the KRFA 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 2016 – 2021

In the post-Great Recession years from 2010 to 2016, the KRFA'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 2016, the Office of Financial Management reports the greatest year over year population growth since 2007 in Washington State resulting in a 1.14% population increase within the KRFA 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%. The total 6-year increase in service demand was 21% with overall population growth of just 4.45%. The cause of this anomalous incident growth is unknown but likely caused from an aging population, increase in work force populations post-recession, and a higher rate of occupancy in existing dwelling units, many of which were foreclosed and vacant for an extended period of time during the recession.

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

Service Area	2000 Actuals		2011 Actuals		2016 Actuals		2021 Estimates		2035 Estimates	
	Housing Units	Population	Housing Units	Population	Housing Units	Population	Housing Units	Population	Housing Units	Population
Covington	4,203	**13,783**	6,081	**17,575**	6,379	**18,750**	7,304	**21,469**	10,387	**30,531**
Kent	32,488	**79,524**	42,793	**118,200**	46,997	**124,500**	48,730	**129,090**	59,588	**157,908**
King Co	9,950	**27,362**	2,036	**5,598**	2,203	**6,062**	2,406	**6,414**	2,711	**7,226**
Total	46,461	**120,669**	54,078	**141,373**	**55,579**	**149,312**	58,440	**156,973**	72,686	**195,665**

The Puget Sound Regional Council's regional plan "Vision 2040," identifies Kent as both a residential and commercial/industrial growth center. This makes it unlikely that the limited commercial growth of less than one-half of one percent between 2013 and 2015 will continue. While the Amazon fulfillment center built in the Kent Valley was new growth of more than 1 million square feet, the selloff and demolition of buildings previously part of the Boeing Space Center netted almost neutral growth.

The table below provides both a low and high range estimate of commercial growth. Continued growth at the 2013 to 2016 rate is the "Low" estimate for 2021 and 2035, and the "High" estimate more closely relates to market growth prior to the Great Recession. 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 / 90,993,003

[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

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 2015 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 KRFA 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.

WSRB collects information on fire-protection efforts in communities throughout Washington. In each community, WSRB analyzes the relevant data using their rating schedule and then assigns a Public Protection Classification from 1 to 10. Class 1 represents exemplary public protection, and Class 10 indicates that the area's fire-suppression program does not meet WSRB's minimum criteria.

The PPC rating program recognizes the efforts of communities to provide fire-protection services for citizens and property owners. A community's investment in fire mitigation is a proven and reliable predicator of future fire losses. 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 KRFA service area, save more than $28 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 10% 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 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 (Covington, Kent, King County SeaTac) ability to adopt and enforce effective building codes makes up 10% 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 40% 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, the KRFA must maintain the fire protection equipment staffing and deployment that supports its current PPC rating. This is why emergency medical services are often provided through firefighters arriving on a fire engine or ladder truck instead of an aid car. The KRFA maintain its fire protection system first, and only then can it expand to deliver emergency medical services (EMS) from less costly aid cars or other service delivery platforms.

The KRFA 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 $28 million annually in decreased insurance costs to the service area. To deploy both types of vehicles, additional staffing is required and currently, the KRFA 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 27 years old with ages ranging from 8 to 52 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. All 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 stored in these spaces now.

4.2.2 Support Facilities

Support facilities include spaces for emergency management functions, a fire-training tower with computerized fire simulators, a training facility, apparatus & vehicle maintenance facilities, a logistics warehouse, and a roadway. An inventory of these facilities is found in Table 4 below.

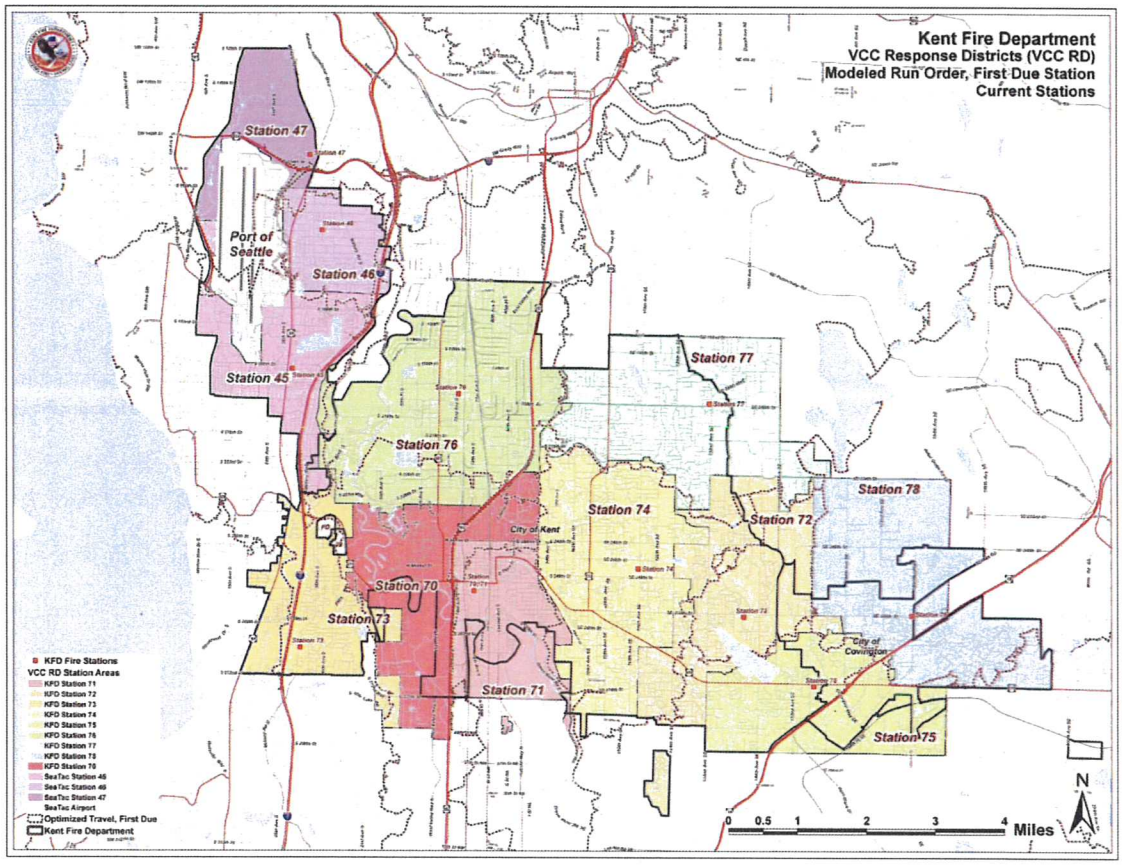
4.2.3 Roadways - 72nd Ave South

72nd Ave S in the Kent valley is currently under construction and is a support facility to the KRFA because previous analysis determined only two ways to resolve level of service deficiencies in the northeast Kent valley. Either build and staff a fire station in that area, or construct a missing link of 72nd Ave S. north of Station 76. Completion of the missing link of 72nd Ave allows responses from station 76 to access the eastbound rail overpass of S. 196th St. and connect with the East Valley Highway. This new route opening in early 2017, will bypass chronic response delays caused by traffic congestion associated with S 212th Street and SR 167 traffic at the East Valley Highway. KRFA's part in completing this section of roadway is the provision of funding $1.2 million of the project's cost through an inter-local agreement with the City of Kent. This one-time cost is less than a single year's cost of wages and benefits for personnel to staff a new fire station. Building the missing link of 72nd Ave S is the most cost effective way to solve the level of service deficiency that growth and increased traffic congestion has created and continues to erode in the northern Kent valley.

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	52	2010	3.5 bays	Fair	1.05	10
Station 72	25620 140th Ave SE	7,772	1982	34	2010	3 bays	Fair	0.91	6
Station 73	26512 Military Road South	13,000	1990	26	2010	3 bays	Good	4.69	9
Station 74	24611 116th Ave SE	26,653	1990	26	Lease 2010	3 Bays	Good	8.66	17
Station 75	15635 SE 272nd Street	12,425	1990	26	Lease 2010	3 bays	Good	4.18	14
Station 76	20676 72nd Ave S	13,104	1989	27	2010	3 bays	Good	2.80	9
Station 77	20717 132nd Ave SE	15,900	2001	15	2010	3 bays	Good	1.98	8
Station 78	17820 SE 256th Street	17,685	2009	7	2010	4 bays	Good	3.10	10
	Totals	117,397		213				27.37	83
Future Fire Station Sites Owned by KFDRFA									
Benson Station	21599 108th Ave SE	0	0		2010	0	Land	0.29	
App Storage	116th SE & SE 248th	0	0		2016		Land	2.03	
	Totals							0.29	
Accesory Structures Owned, Maintained or Funded by KFDRFA									
EM	24425 116th Ave SE	2,860	1963	53	2010		Good	0.23	
Training Tower	24523 116th Ave SE	4,652	1990	26	Lease 2010		Good	N/A	
Training Annex	24524 116th Ave SE	1,152	2005	11	2005		Poor	N/A	
Apparatus Shop	20678 72nd Ave S	10,865	1989	27	2010	4 Bays	Good	N/A	
Logistics Center	8320 S 208th Street	20,000	1979	5	2013		Good	N/A	
Sub-Total	Totals	39,529		122				0.23	
Total		**156,926**						**27.89**	**83**

Exhibit 1: KRFA 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

KRFA keeps response vehicles well maintained but historic delays in funding life cycle replacement has allowed the fleet to age past industry standards. Agencies with workload similar to the KRFA 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, the KRFA's long-term goal will be to continue with a 10 year front line life cycle but shorten the reserve life cycle to 5 years and recapturing significantly higher surplus values when these apparatus are sold. Studies show this will also reduce overall maintenance costs, downtime, and provide greater savings than longer life cycles.

4.3.2 Fire Engines

KRFA fire engines are specialized apparatus equipped with pumps capable of 1,500 gallons per minute or more of fire flow, with onboard water supplies of 500 gallons or more and a compliment of hoses, nozzles and firefighting equipment necessary to the extinguishment of fires. The inventory of 19 fire engines has an average age of 14 years and average miles of 87,843. The six reserve engines have an average age of 26 years with average miles of 137, 100.

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 55 to 75 in length compared to the typical ladder trucks reach of 100 feet or greater. Ladder trucks do not carry or pump water. The KRFA 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 KRFA'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 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 60,000 miles, and 800 ladder hours. Apparatus 768 (Ladder 46) is two years old making the average age of the two front line ladders 6 years old with average mileage of 35,000. Reserve apparatus 715 is 20 years old with over 84,000 miles and 1,100 ladder hours.

4.3.5 Aid Cars

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

4.3.6 Command and Staff Vehicles

Command and staff vehicles are utilized to support both emergency and non-emergency operations of the KFRFA. Command vehicles are specially outfitted with equipment and communications equipment necessary to providing coordinated command over emergency incidents.

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 4 provides a listing of the equipment maintained by KRFA.

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 the KRFA and are based upon industry best practices. Industry standards have been cooperatively established by the International City/County Managers Association (ICMA) National Fire Protection Association (NFPA) and the Center for Public Safety Excellence (CPSE) in the 8th edition Fire and Emergency Service Self-Assessment Manual (FESSAM) published through the CPSE. KRFA's standards exceed the expectations established by these groups largely because of limited funding to deliver service. Compared to the NFPA, the KRFA's level of service 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, they become "unreliable" to meet additional demand. Because of units becoming unreliable, units from farther away must respond in the 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.

5.3 Benchmark / Baseline Gap Performance and Relation to Staffing

KRFA 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. The goal of capital planning in the KRFA is to close the gap between Baseline and Benchmark performance. The CPSE annually reviews the KRFA'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 KRFA Master Capital Plan and this 2016 – 2021 six-year update of that Plan. Operational funding is also required to close the resource gap. Where additional response stations and apparatus are required, the KRFA must also fund the annual operational cost of additional firefighters and support staff.

5.4 Components of Response Performance

There are three components in the measurement of "Total Response Time", Alarm Handling, Turnout and Drive time.

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

5.4.1 Alarm Handling Time

Alarm handling is completed at Valley Communications Center, the dispatch agency available to KRFA. 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 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.

5.5 Deployment and Measures of Response Resources

The performance measure directly in the KRFA'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 response levels of service (LOS) 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 resource; 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 force or 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 at least 3 firefighting units 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 17 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, 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 CFEP are funded, implemented and staffed. Baseline performance objectives are the minimum levels of service KRFA 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 KRFA for the two main categories of emergency incidents; those requiring donning of full firefighting personal protective gear 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 KRFA Capital Facilities and Equipment Plan.

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

Response Standards - No EMS					
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 - EMS			
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" sometimes referred to "unit hour utilization," referring to the 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 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 often the best predictor of service capacity of deployed units. As workload 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 KRFA Service Level Performance

6.1 Response Performance Findings

Analysis of KRFA's historical response data reveals sub-standard performance compared to benchmark expectations. See Tables 7 & 8 Base 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 is high and unit reliability is low. Second, some areas of KRFA simply cannot be reached within the adopted time standards because of excess distance from a fire station. Finally, latencies in current communications and alerting systems extend firefighter turnout times beyond benchmark standards.

6.1.1 Reliability Performance

Reliability performance 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 workload. Reliability below 90% (displayed as red) prevents reliable achievement of response standards. Those units with reliability displayed in red are considered in resource exhaustion and begin to impact surrounding fire station reliability by drawing in other resources to cover for the deficient capacity or resource exhaustion occurring during peak demand hours. This ripple effect of deficient reliability spreads outward with the consequences 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 the KRFA 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 2015

2015 Reliability of Existing Stations & Resources with Minimum Staffing													
	Station 71			Station 72	Station 73	Station 74			Station 75	Station 76	Station 77	Station 78	KRFA - All
Hour of Day	Aid 70	Aid 71	Engine 71	Engine 72	Engine 73	Aid 74	Engine 74	Ladder 74	Quint 75	Quint 76	Engine 77	Engine 78	All Response Vehicles
0:00	No Staff	87.29%	94.64%	95.76%	91.27%	90.30%	No Staff	95.90%	94.60%	95.10%	92.45%	95.61%	93.29%
1:00	No Staff	86.70%	94.37%	95.05%	91.07%	90.00%	No Staff	97.05%	95.50%	95.04%	94.18%	97.16%	93.61%
2:00	No Staff	89.14%	95.36%	96.40%	93.38%	91.33%	No Staff	96.87%	97.75%	94.74%	92.15%	96.97%	94.41%
3:00	No Staff	87.93%	94.65%	97.02%	92.99%	90.71%	No Staff	96.99%	95.95%	95.66%	93.03%	96.90%	94.18%
4:00	No Staff	87.82%	95.87%	96.78%	93.98%	91.34%	No Staff	97.97%	96.23%	96.06%	94.94%	97.34%	94.83%
5:00	No Staff	90.92%	96.90%	96.18%	93.27%	94.21%	No Staff	97.09%	96.77%	95.97%	93.75%	97.84%	95.29%
6:00	No Staff	88.92%	95.96%	96.34%	92.25%	91.40%	No Staff	96.13%	95.78%	93.72%	95.43%	97.61%	94.35%
7:00	No Staff	87.70%	93.86%	94.99%	92.12%	89.46%	No Staff	96.17%	95.37%	92.11%	92.88%	96.97%	93.16%
8:00	No Staff	86.79%	93.96%	93.38%	92.05%	86.92%	No Staff	94.28%	94.38%	92.82%	91.77%	94.11%	92.05%
9:00	No Staff	83.70%	92.38%	92.62%	90.89%	88.84%	No Staff	95.11%	94.87%	91.52%	88.81%	94.79%	91.35%
10:00	No Staff	83.12%	91.85%	90.42%	90.73%	86.16%	No Staff	92.26%	93.33%	91.70%	90.49%	92.67%	90.27%
11:00	No Staff	81.86%	91.39%	88.99%	90.65%	85.80%	No Staff	93.82%	92.35%	91.79%	91.70%	94.03%	90.24%
12:00	No Staff	82.74%	90.83%	90.60%	89.15%	84.16%	No Staff	94.54%	90.09%	89.31%	88.47%	93.55%	89.34%
13:00	No Staff	80.17%	88.51%	90.65%	89.23%	85.01%	No Staff	92.63%	90.39%	89.93%	87.81%	93.62%	88.79%
14:00	No Staff	80.59%	88.22%	88.54%	87.09%	83.75%	No Staff	91.10%	90.24%	89.89%	86.86%	91.25%	87.75%
15:00	No Staff	79.32%	86.40%	88.47%	89.91%	84.20%	No Staff	92.10%	90.50%	89.78%	87.69%	91.05%	87.94%
16:00	No Staff	78.74%	85.00%	90.86%	87.19%	85.37%	No Staff	90.39%	88.77%	88.18%	88.23%	90.38%	87.31%
17:00	No Staff	78.24%	88.01%	89.42%	88.16%	84.48%	No Staff	92.14%	90.59%	89.25%	88.50%	91.35%	88.01%
18:00	No Staff	78.19%	89.67%	87.65%	88.24%	85.48%	No Staff	90.79%	90.55%	90.78%	87.64%	92.93%	88.19%
19:00	No Staff	80.32%	89.10%	88.38%	87.21%	85.66%	No Staff	91.11%	89.46%	91.70%	89.10%	93.91%	88.60%
20:00	No Staff	82.62%	91.07%	88.85%	87.05%	83.97%	No Staff	91.35%	90.94%	94.57%	88.65%	92.95%	89.20%
21:00	No Staff	82.69%	91.87%	90.61%	87.50%	87.12%	No Staff	92.09%	93.06%	94.61%	90.03%	94.84%	90.44%
22:00	No Staff	85.90%	92.88%	91.71%	89.34%	87.80%	No Staff	93.70%	92.74%	94.83%	90.48%	94.20%	91.36%
23:00	No Staff	90.19%	95.40%	95.54%	92.82%	92.56%	No Staff	96.55%	95.07%	96.46%	94.17%	97.94%	94.67%

7 Conclusion of Need for Capital Resources 2016 – 2021

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 the KRFA 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 2016, 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.

Nearly 1,000 new apartment units and 300 single family homes are currently permitted and under construction in 2016. Growth within the KRFA 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 KRFA Capital Facilities and Equipment Master Plan identified the need for more than $87 million in capital investments to maintain fire service concurrency through 2033. This 6 year plan explores 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 reduces the cost of some resources needed in the next 6 years.

The additional cost associated with the KRFA'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 decreased from $87.14 million to $86.25 million.

7.1.1 Planned Capital Purchases 2016 – 2021

The table below identifies the capital expenses to be incurred between 2016 and 2021 based upon the current know 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 (2016-2021) Capital Costing

6 - Year Cost/Funding Sources for Capital Needs							
Costs in thousands based on 2014 dollars							
Cost/Funding Source	2016	2017	2018	2019	2020	2021	Totals
Expense Sources							
Station Construction & Land Purchase	$50	$55	$1,100	$98	$1,485	$3,103	$5,891
Apparatus	$714	$1,331	$1,174	$1,518	$1,645	$1,609	$7,991
Equipment	$118	$1,046	$827	$431	$377	$397	$3,197
Asset Preservation	$77	$1,003	$488	$312	$142	$183	$2,205
I.T. Capital	$153	$792	$207	$115	$195	$202	$1,664
72nd Ave S Extension	$120	$120	$120	$120	$120	$120	$720
Debt Cost	$0	$0	$0	$0	$0	$0	$0
Revenue Sources							
Annual Tax Revenue to Capital	$1,000	$1,890	$1,890	$1,890	$1,890	$1,890	$10,450
Taxpayer Bond Funds	$0	$0	$0	$0	$0	$0	$0
Sale of Surplus Property	$0	$93	$253	$32	$98	$50	$526
Covington Impact/LOS Fees	$250	$252	$255	$255	$255	$255	$1,522
Kent Impsct/Los Fees	$630	$610	$900	$900	$900	$900	$4,840
Councilmatic Bonds	$0	$0	$0	$0	$0	$0	$0
King County Radio Program	$0	$0	$767	$0	$0	$0	$767
Decrease in Kent ILA for IT	$0	$25	$75	$130	$130	$130	$490
Apparatus Grant	$102	$306	$0	$0	$0	$0	$408
Burn Prop Grant	$0	$383	$0	$0	$0	$0	$383
SeaTac ILA Capital	$475	$485	$493	$500	$510	$520	$2,983
Summary of Revenues less Expenses							
Expense	$1,232	$4,347	$3,915	$2,594	$3,965	$5,613	$21,667
Revenue	$2,458	$4,044	$4,633	$3,707	$3,783	$3,745	$22,369
Balance	$1,226	$922	$1,640	$2,752	$2,570	$702	$702

7.2 Progress toward Planned Capital Purchases

As a result of the Great Recession and the uncertainty of the economy during that time, the KRFA delayed some planned equipment purchases between 2014 and 2016 and placed funding toward the new Valley Station and the Benson Station on hold. The Valley Station is now scheduled to be completed in 2022 with the Benson Station scheduled for opening in 2026. All asset preservation projects, equipment needs and apparatus are now schedule for funding and replacement through 2021.

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

- Annual tax revenue to capital between 2022 – 2033 averages $2.43 million per year
- Impact fees revenue between 2022 – 2033 averages $1.7 million per year

8 2016 – 2021 Capital Plan Effects on Impact Fees

Impact fees are established in the KRFA 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 decreased because of this update, resulting in a slight decrease in impact fees displayed in Table 12 below.

Table 12: 2015 Impact Fees[5]

Level Of Service Fee Calculation								
Land Use Type	System wide C&E	Res/Com Split	Usage Factor	ERF Factor	New Dev Share	Projected New Units 2011 - 2030	Type of Unit	Impact & LOS Contribution Fee Amount
Residential								
Single Family	$86,252,690	74%	57%	1	90%	19,068	Living unit	$1,702.12
Multi Family	$86,252,690	74%	43%	1.3	90%	19,068	Living unit	$1,664.46
Commercial								
COMM/IND	$86,252,690	26%	30%	3	80%	14,000,000	Sq Feet	$1.15
HOSP/MED/CIV/SCH/CHUR	$86,252,690	26%	30%	2	80%	14,000,000	Sq Feet	$0.77
ASSISTED CARE	$86,252,690	26%	40%	3	80%	14,000,000	Sq Feet	$1.54

[5] 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 (2016 - 2021) Special Equipment Costs										
				Estimated Annual Purchases						Total
Fire Equipment	Quantity	Avg Cost	LifeCycle	2016	2017	2018	2019	2020	2021	
Fire Hose	1249	$208	20-Yrs	$13,000	$13,000	$13,000	$13,000	$13,000	$13,000	$78,000
Fire Hose Nozzles	160	$1,150	15-Yrs	$12,300	$12,300	$12,300	$12,300	$12,300	$12,300	$73,800
Rescue Tools	11	$42,000	12-Yrs	$0	$0	$0	$42,000	$0	$42,000	$84,000
Self-Contained Breathing Apparatus (SCBA)	137	$4,106	10-Yrs	$0	$123,188	$439,369	$0	$0	$0	$562,556
SCBA Air Bottles	292	$979	10-Yrs	$0	$285,998	$0	$0	$0	$0	$285,998
SCBA Misc -Masks, SABA Fill Stations	NA	NA	10-Yrs	$0	$290,421	$0	$0	$0	$0	$290,421
Ballistic Vests	160	$525	5-Yrs	$0	$16,800	$16,800	$16,800	$16,800	$16,800	$84,000
Mobile Radios	55	$5,000	10-Yrs	$0	$5,000	$5,000	$5,000	$5,000	$5,000	$25,000
Portable Radios	168	$3,750	10-Yrs	$0	$31,500	$31,500	$31,500	$31,500	$31,500	$157,500
Personal Protective Gear - Fire	350	$3,000	10-Yrs	$0	$105,000	$105,000	$105,000	$105,000	$105,000	$525,000
Personal Protective Gear - Haz-Mat	20	$3,400	8-Yrs	$0	$0	$6,800	$13,600	$6,800	$13,600	$40,800
Haz-Mat Equipment	14	$5,000	6-Yrs	$0	$40,000	$12,000	$12,000	$12,000	$12,000	$88,000
Defibrillators	15	$18,500	10-Yrs	$0	$0	$37,000	$18,500	$37,000	$37,500	$130,000
Fuel Pumps	8	$25,000	25-Yrs	$0	$25,000	$25,000	$25,000	$25,000	$25,000	$125,000
Above Ground Fuel Tanks	4	$15,000	25-Yrs	$0	$0	$0	$15,000	$15,000	$15,000	$45,000
Forklifts	2	$25,000	20-Years	$25,000	$0	$25,000	$0	$0	$0	$50,000
Steam Cleaner	1	$8,500	10-Yrs	$0	$0	$0	$8,500	$0	$0	$8,500
Whole Shop Compressor	1	$15,000	10-Yrs	$0	$0	$0	$15,000	$0	$0	$15,000
Thermal Imaging Cameras	12	$9,837	10-Yrs	$0	$30,000	$30,000	$30,000	$30,000	$0	$120,000
Hydrant Retrofit (storz connections)	5000	$235	40-yrs	$68,000	$68,000	$68,000	$68,000	$68,000	$68,000	$408,000
				$118,300	$1,046,206	$826,769	$431,200	$377,400	$396,700	$3,196,575
									6 - Year Total	$3,196,575

9.2 Asset Preservation Costs

Capital Improvements Neccesary to Maintain Existing Assets							
Station	2016	2017	2018	2019	2020	2021	Total
71	$55	$76	$27	$0	$54	$40	$252
72	$0	$0	$0	$127	$0	$0	$127
73	$0	$101	$120	$0	$40	$63	$324
74	$0	$101	$27	$0	$0	$0	$128
75	$0	$101	$53	$73	$40	$40	$307
76	$22	$101	$93	$32	$0	$40	$288
77	$0	$101	$50	$43	$8	$0	$202
78	$0	$0	$119	$37	$0	$0	$156
Emer Mgmt	$0	$0	$0	$0	$0	$0	$0
App Shop	$0	$0	$0	$0	$0	$0	$0
Training	$0	$422	$0	$0	$0	$0	$422
Admin	$0	$0	$0	$0	$0	$0	$0
Total	$77	$1,003	$488	$312	$142	$183	$2,205

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

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**

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**

10 Inventories

10.1 Apparatus Inventory & Funding Schedule

20 Year Apparatus Cost / Replacement Schedule - Updated 2016									
Unit #	Year	Unit Type	2016	2017	2018	2019	2020	2021	Totals
19	1999	SUV	$0	$71	$0	$0	$0	$0	$71
21	2000	SUV	$0	$0	$0	$0	$47	$0	$47
22	2003	SUV	$0	$0	$0	$71	$0	$0	$71
23	2005	SUV	$0	$0	$0	$47	$0	$0	$47
24	2006	SUV	$0	$0	$0	$0	$0	$0	$0
25	2006	SUV	$0	$0	$0	$0	$0	$0	$0
26	2008	PICKUP	$0	$0	$0	$0	$0	$0	$0
27	2007	BOAT	$0	$0	$0	$0	$0	$0	$0
28	2009	TRAILER	$0	$0	$0	$0	$0	$0	$0
31	2013	SUV	$0	$0	$0	$0	$0	$0	$0
115	1997	Engine	$0	$275	$275	$275	$0	$0	$825
116	1998	Aid	$0	$0	$261	$0	$0	$0	$261
117	2000	Engine	$0	$275	$275	$275	$0	$0	$825
118	2004	Engine	$0	$0	$0	$0	$0	$0	$0
120	2008	RESCUE	$0	$0	$0	$0	$0	$0	$0
121	2008	Engine	$0	$0	$0	$0	$0	$0	$0
122	1947	Engine	$0	$0	$0	$0	$0	$0	$0
768	2014	Ladder	$0	$0	$0	$0	$0	$0	$0
701	1999	Air	$0	$0	$0	$0	$0	$0	$0
702	2003	Aid	$0	$123	$0	$0	$0	$0	$123
703	2003	Aid	$0	$0	$0	$0	$123	$0	$123
704	2005	Aid	$0	$0	$0	$0	$0	$0	$0
705	2007	Aid	$0	$0	$0	$0	$0	$0	$0
706	2001	Engine	$0	$0	$0	$0	$0	$0	$0
707	2003	PU	$0	$0	$0	$0	$0	$0	$0
708	2001	Engine	$0	$0	$0	$0	$0	$0	$0
709	2003	SUV	$0	$53	$0	$0	$0	$0	$53
710	2004	Engine	$0	$0	$0	$0	$0	$0	$0
711	2006	PU	$0	$0	$0	$0	$0	$0	$0
712	2005	Engine	$0	$0	$0	$0	$0	$0	$0
713	2006	Ladder	$0	$0	$0	$0	$0	$0	$0
715	1996	Ladder	$0	$0	$0	$319	$319	$319	$957
716	2009	HM Trailer	$0	$0	$0	$0	$0	$0	$0
717	2009	Skyboom	$0	$0	$0	$0	$0	$0	$0
718	2009	Skyboom	$0	$0	$0	$0	$0	$0	$0
721	2010	SUV	$0	$0	$0	$0	$0	$0	$0
722	2009	HM Tractor	$0	$0	$0	$0	$0	$0	$0
723	2009	Boat Tr	$0	$0	$0	$0	$0	$0	$0
726	2007	HM Decon	$0	$0	$0	$0	$0	$0	$0
727	1989	Engine	$0	$0	$0	$0	$0	$0	$0
729	2006	Pump Test	$0	$0	$0	$0	$0	$0	$0
730	1989	Engine	$0	$0	$0	$0	$0	$0	$0
731	1989	Engine	$0	$0	$0	$0	$0	$0	$0
732	1989	Engine	$0	$0	$0	$0	$0	$0	$0
735	2009	Rescue Boat	$42	$0	$0	$0	$0	$0	$42
738	2011	PU	$0	$0	$0	$0	$0	$0	$0
745	2010	Boat Tr	$0	$0	$0	$0	$0	$0	$0
746	2010	Jon Bt	$0	$0	$0	$0	$0	$0	$0
747	2010	Jon Bt	$0	$0	$0	$0	$0	$0	$0
748	2010	Jon Bt	$0	$0	$0	$0	$0	$0	$0
749	2010	Jon Bt	$0	$0	$0	$0	$0	$0	$0
750	2010	Boat Tr	$0	$0	$0	$0	$0	$0	$0
754	1991	Boat Tr	$0	$0	$0	$0	$0	$0	$0
756	2010	Utility Tr	$0	$0	$0	$0	$0	$0	$0
762		MCI Unit	$0	$0	$0	$0	$0	$0	$0
763	1994	Utility Tr	$0	$0	$0	$0	$0	$0	$0
764	1995	PU	$0	$0	$0	$0	$39	$0	$39
765	2000	Utility Tr	$0	$0	$0	$0	$3	$0	$3
766	2001	Engine	$0	$0	$0	$206	$206	$206	$618
767	2001	Engine	$0	$0	$0	$206	$206	$206	$618
769	2016	Engine	$127	$127	$127	$0	$0	$0	$381
770	2016	Engine	$127	$127	$127	$0	$0	$0	$381
771	2016	Engine	$172	$172	$172	$172	$0	$0	$688
772	2016	Engine	$246	$442	$0	$0	$0	$0	$688
773	1995	Panel Van	$0	$0	$0	$0	$0	$0	$0
774	2016	Utility Tr	$0	$0	$0	$0	$0	$0	$0
775	2007	PU	$0	$0	$0	$0	$0	$0	$0
776	2004	PU	$0	$0	$0	$0	$0	$0	$0
7100	2008	PU	$0	$0	$0	$0	$43	$0	$43
7101	2007	Shelter Tr	$0	$0	$0	$0	$0	$0	$0
7102	2006	SUV	$0	$0	$47	$0	$0	$0	$47
7103	2012	SUV	$0	$0	$0	$0	$0	$0	$0
7104	2006	SUV	$0	$0	$0	$0	$0	$71	$71
7105	2010	Mower	$0	$0	$0	$0	$0	$0	$0
7106	2007	SUV	$0	$0	$0	$0	$0	$29	$29
7107	2012	Cross	$0	$0	$0	$0	$0	$0	$0
7108	2012	Van	$0	$0	$0	$0	$0	$0	$0
7114	2011	Utility Tr	$0	$0	$0	$0	$0	$0	$0
7115	2011	Gator	$0	$0	$0	$0	$0	$0	$0
7122	2008	SUV	$0	$0	$0	$47	$0	$0	$47
7123	2015	Mini Van	$0	$0	$0	$0	$0	$0	$0
7125	2015	Mini Van	$0	$0	$0	$0	$0	$0	$0
7127	2015	Mini Van	$0	$0	$0	$0	$0	$0	$0
7128	2015	Mini Van	$0	$0	$0	$0	$0	$0	$0
7201	2003	CERT Tr	$0	$0	$0	$0	$0	$0	$0
7202	2008	Cross	$0	$0	$0	$0	$29	$0	$29
7203	2008	SUV	$0	$47	$0	$0	$0	$0	$47
7204	2008	PU	$0	$0	$0	$0	$0	$0	$0
7205	2008	PU	$0	$0	$0	$0	$43	$0	$43
7206	2008	Cross	$0	$0	$0	$0	$0	$29	$29
7207	2007	Box Truck	$0	$0	$0	$0	$0	$0	$0
7218	2005	Van	$0	$37	$0	$0	$0	$0	$37
7231	2006	PU	$0	$0	$0	$0	$0	$0	$0
7232	2000	Box Truck	$0	$0	$0	$0	$0	$0	$0
7501	2012	Club Car	$0	$0	$0	$0	$0	$0	$0
7502	2012	Utility Tr	$0	$0	$0	$0	$0	$0	$0
7516	2007	PU	$0	$0	$0	$0	$0	$0	$0
7603	1998	Mini Van	$0	$0	$28	$0	$0	$0	$28
7608	1998	Cross	$0	$0	$0	$38	$0	$0	$38
7610	2000	Car	$0	$0	$0	$0	$29	$0	$29
7611	1995	PU	$0	$52	$0	$0	$0	$0	$52
7612	1995	PU	$0	$0	$0	$0	$0	$0	$0
7619	2001	Mini Van	$0	$0	$0	$0	$0	$28	$28
7620	2001	Car	$0	$0	$0	$0	$0	$29	$29
7624	1997	Car	$0	$26	$0	$0	$0	$0	$26
7625	2000	Mini Van	$0	$0	$0	$0	$0	$28	$28
7627	1997	Car	$0	$26	$0	$0	$0	$0	$26
7628	1997	Mini Van	$0	$28	$0	$0	$0	$0	$28
7630	1999	Cross	$0	$0	$0	$0	$38	$0	$38
7632	1999	Mini Van	$0	$0	$0	$0	$0	$0	$0
7633	2000	PU	$0	$0	$0	$0	$28	$0	$28
7634	2000	PU	$0	$0	$0	$0	$28	$0	$28
7635	2000	Cross	$0	$0	$0	$0	$0	$0	$0
7636	2000	Mini Van	$0	$0	$0	$0	$52	$0	$52
7637	2015	Car	$0	$0	$0	$0	$0	$0	$0
7638	2015	Car	$0	$0	$0	$0	$0	$0	$0
9904	2006	SUV	$0	$0	$0	$0	$0	$46	$46
9912	2006	Pub Ed Tr	$0	$0	$0	$0	$0	$0	$0
Total Annual Cost			$714	$1,881	$1,312	####	$1,233	$991	$7,787