

2017 Connection Charge Update

Presentation to the Board of Commissioners

June 20, 2017



Agenda

- No in-depth review of the calculation or discussion of the results – *flash drives of the actual computation and the related source materials will be provided to those who are interested*
- Review of the:
 - Legal framework
 - Theoretical framework
 - History of connections charges at the District
- Summary of changes since the last update (*user feedback and applications will be noted*)
 - Inputs
 - Assumptions
 - Methodology
- Phasing options
- Recommend new charges
- Impacts to sample customers
- Review of feedback provided by a potential customer

Legal Framework for Connection Charges

For Special Purpose Districts

RCW 57.08.005

Powers.

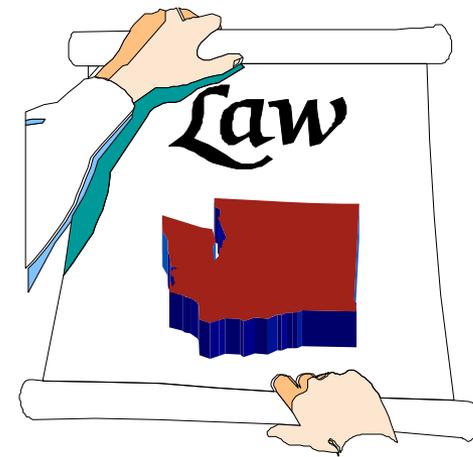
(10) To fix rates and charges for water, sewer, and drain service supplied and to charge property owners seeking to connect to the district's systems, as a condition to granting the right to so connect, in addition to the cost of the connection, such reasonable connection charge as the board of commissioners shall determine to be proper in order that those property owners shall bear their equitable share of the cost of the system. For the purposes of calculating a connection charge, the board of commissioners shall determine the pro rata share of the cost of existing facilities and facilities planned for construction within the next ten years and contained in an adopted comprehensive plan and other costs borne by the district which are directly attributable to the improvements required by property owners seeking to connect to the system. The cost of existing facilities shall not include those portions of the system which have been donated or which have been paid for by grants.

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The connection charge may include interest charges applied from the date of construction of the system until the connection, or for a period of ten years, whichever is shorter, at a rate commensurate with the rate of interest applicable to the district at the time of construction or major rehabilitation of the system, or at the time of installation of the lines to which the property owner is seeking to connect...

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...Revenues from connection charges excluding permit fees are to be considered payments in aid of construction as defined by department of revenue rule. Rates or charges for on-site inspection and maintenance services may not be imposed under this chapter on the development, construction, or reconstruction of property.



Theoretical Framework

Connection Charges are in place to recover from new customers the cost of infrastructure that is needed to provide service, over and above what is required for existing customers - *buy-in of excess capacity*.

It is not for the service itself, such as operations and maintenance. Those costs are recovered through the service rates.

Theoretical Framework

Since the District provides two major types of services, the connection charges now reflect this. *The cost of providing **fire suppression** has increased so significantly over the years that it **can no longer be considered a tangential service**, and the connection charges now treat the costs of infrastructure needed for fire suppression on an equal footing with the costs of infrastructure needed for capacity.*

Capacity / Domestic – The cost of infrastructure needed to provide water for personal use – drinking, bathing, laundry, irrigating, recreation, etc - Water that flows through meters – **Basis of the charge is based on meters** – (by a single meter for low density and by meter size for high density)

Fire Suppression – The cost of infrastructure required to provide water for fighting fires - Water that flows through hydrants – **Bases are consistent with the requirements of the International Fire Code:**

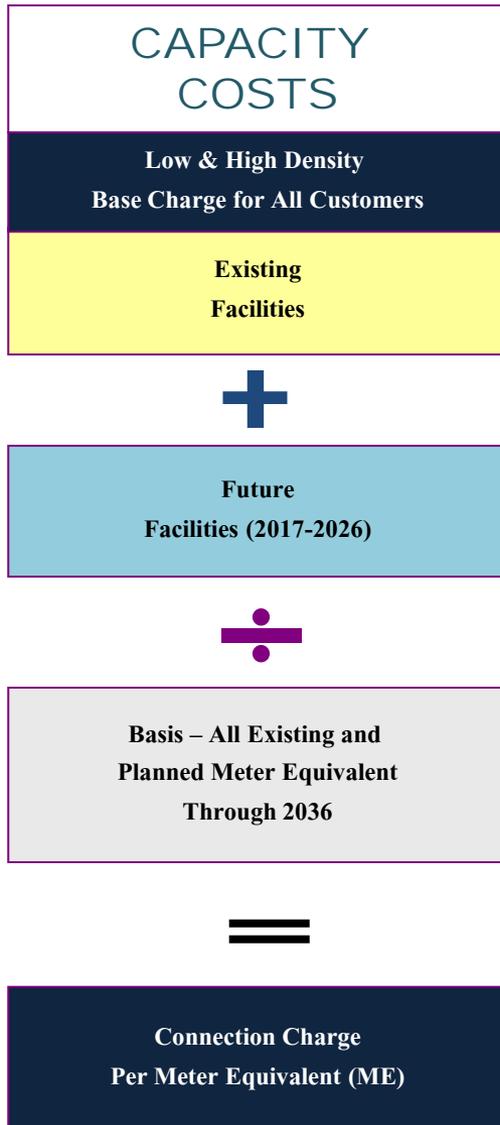
- ✓ Single connection for **Low Density** (*Single Family Residential (SFR) customers*) – **a share of costs** to provide fire suppression at 1,500 gpm for 2 hours duration – generally 8-inch mains
- ✓ Square Footage for **High Density** (*Non-SFR customers*) – **a share of costs** to provide fire suppression at 1,500 gpm for 2 hours duration and **all incremental costs** to provide fire suppression at 3,500 gpm for 3 hours duration – 12-inch mains or larger

An Equitable Charge

Some History:

- In response to the directive in RCW 57.08.005 to “charge property owners seeking to connect to the district's systems, as a condition to granting the right to so connect, in addition to the cost of the connection, such reasonable connection charge as the board of commissioners shall determine to be proper in order that those **property owners shall bear their equitable share of the cost of the system**”, a new and more equitable approach was first developed by the District in 2007.
- The old method, where connection charges were based on meter size, was no longer fair to all our customers because it presumed that the correlation between a large meter and a large building was adequate enough for recovering all our facility costs in a pro rata or fair manner from new customers. *(It only did suffice for decades because the investment in fire suppression infrastructure was relatively small and therefore was not significant enough to require a more precise measure to achieve complete fairness.)*
- However, the regulatory environment for providing fire suppression had caused the investment in fire suppression infrastructure to grown steadily more expensive over several decades.
- By 2007 the tipping point had been reached and it was time to consider a more equitable basis for the connection charge because buildings with a large foot print and a low need for water consumption (e.g. large box stores, parking facilities, storage buildings, schools, churches, etc.) were not paying their pro-rata or fair share – **and the amount was no longer insignificant!**
- Since the higher cost of fire suppression was driving the need for change, the first place to look for a new basis was at what was driving the need to continually update the District's system to meet these changing requirements. It was clear – the single largest variable considered when determining the fire flow requirements *(and therefore the size of our mains)* is the square footage of the building being served – not the size of the meter for water consumption.
- Therefore in 2007 the District determined that square footages (as expressed in an equivalent residential units or ERUs of 840 sq ft =1 ERU), would be a more fair basis for the connection charge.
- Now, with the 2016 and 2017 updates of the connection charge, the District will make another change to develop an even more equitable charge by having two different bases for the charge – meter size for capacity (personal water use) costs and square footage (not ERUs) for fire suppression costs. This will also align the connection charge methodology with the method used to determine the cost of service rates for the District.

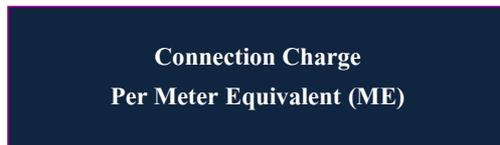
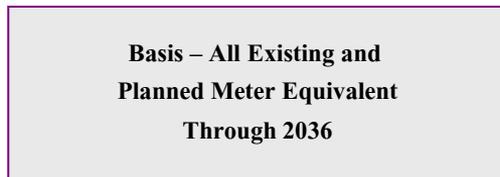
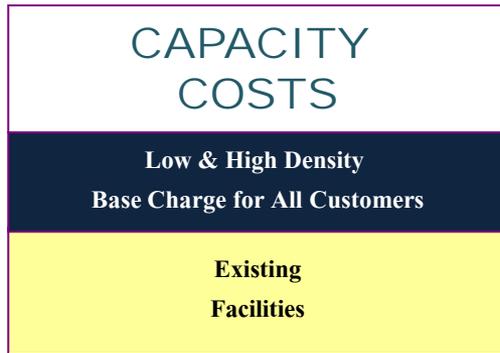
Connection Charge Elements



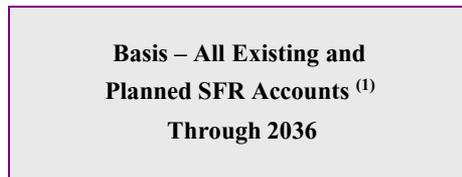
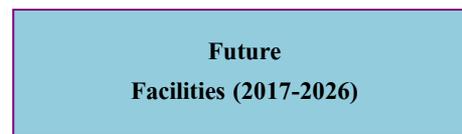
The District's elements start with Capacity Costs. Prior to 2007, the District did not segregate costs between capacity and fire.

Since the District is in the forefront of developing connection charges based on segregating costs between capacity and fire, it is likely most other utilities would do this exact same calculation but for total costs only.

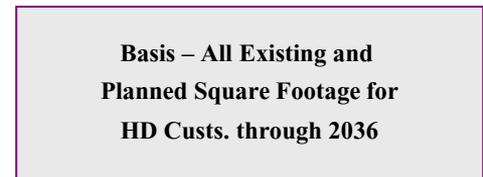
Connection Charge Elements



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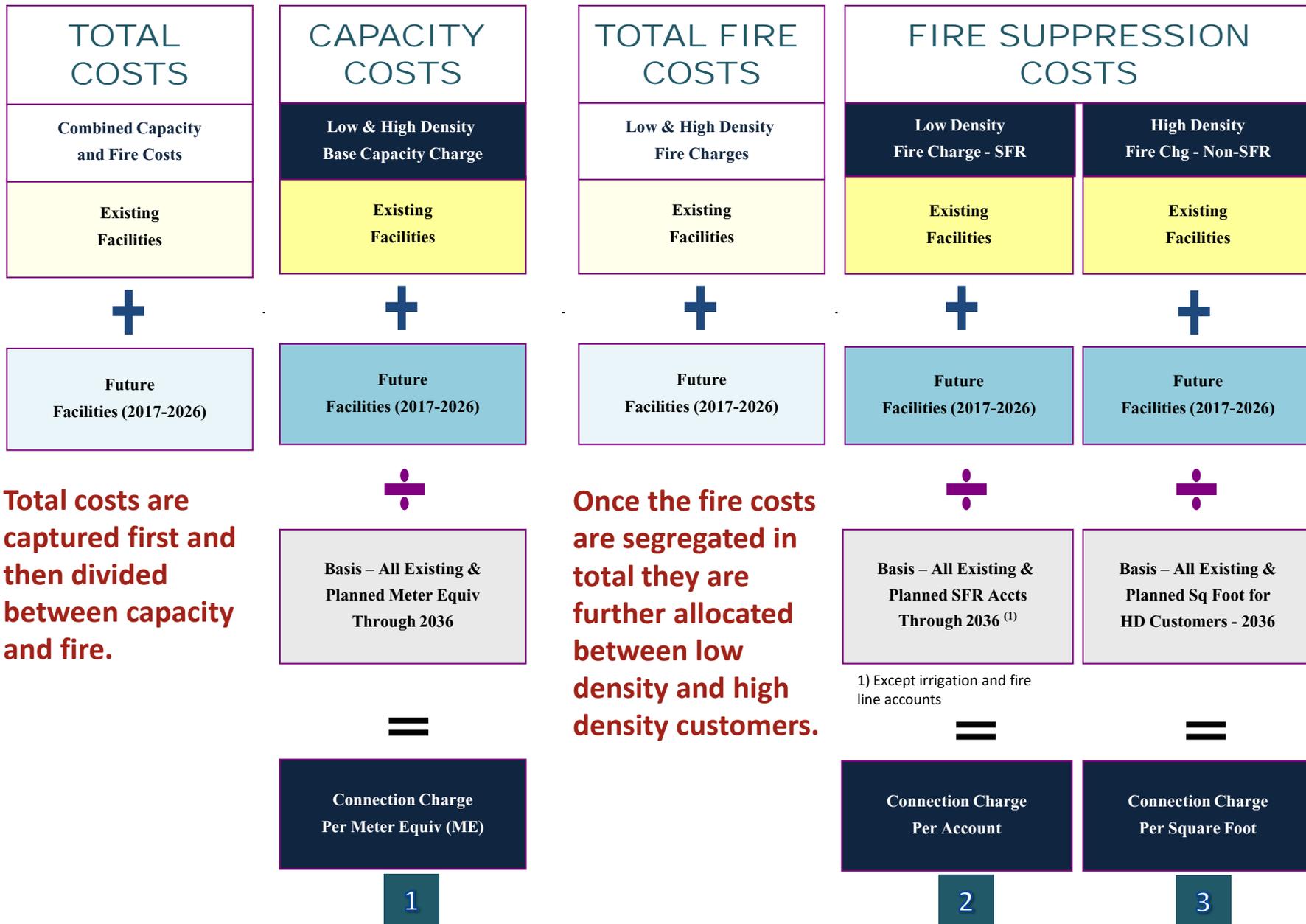
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1) Except irrigation and fire line accounts

Closer Look at the Costs



Summary of Changes

INPUTS

Costs:

- Total Plant in Service went up by approximately \$50k – *(it would have been higher except for the write of some disposed assets with remaining book value)*
- The combined projects under construction and planned over the next ten years went down by approximately \$1 million – *(all capital projects from 2023-2026 that were in the Comp Plan but not approved in the most recent budget were removed from future project costs)*
- The Total Allocable Costs went down by approximately \$3 million *(due to the impacts of the above two items, plus an updated estimate of future debt, net of cash balances)*

Bases:

- Meter Equivalents went up by about 200 MEs due to a longer growth forecast period – 20 years instead of 15
- Single Family Accounts went down by about 100 due to the houses being purchased by Sound Transit
- Total high density square footage went up by nearly 1.6 million due to a longer forecast period plus using the higher amounts specified by King County

The net impact of decreasing the costs and increasing the bases does not decrease the charges across the board due to changes in the assumptions used for the allocation of costs between Capacity and Fire and the allocation of Fire costs between High and Low Density customers

Summary of Changes

ASSUMPTIONS – Related to the Allocation of Costs between Capacity and Fire

Pipes/Mains:

- Instead of assuming all pipes replaced after 1933 were upsized from 3-inch pipes, 6-inch pipes were used as the base pipe size. *(Until hydraulic modeling can show that 3-inch pipes can provide all of the District's capacity needs, the allocation of existing pipe costs between capacity and fire will be computed using 6-inch pipes as the base pipe size.)*

Pumping:

- Instead of assuming pumping costs track solely with pipes and mains, the allocation was based on the weighting of pipes and storage *(pumps are needed directly from SPU to District pipes and to fill the reservoir)*

Storage:

- Instead of using the storage allocations provided in the last Comp Plan, the allocations were recomputed based on DOH requirements and/or actual use of the stored water.
- All allocations of total storage costs were no longer based on professional judgment. *(Example - instead of standby water being allocated between Capacity and Fire on a 50/50 ratio it is now being allocated 100% to Base Capacity.)*

The net impact of these changes in assumptions resulted in a shift of costs from Fire Plant to Capacity Plant.

Summary of Changes

METHODOLOGY & ASSUMPTIONS – Related to the Allocation of Fire Costs between Low and High Density Customers

Pipes/Mains:

- Instead of first segregating pipes between low and high density pipes and then applying a weighting factor, a methodology was used that is based entirely on a weighted allocation. NOTE: Pumping and Storage track with pipes and mains.

Hydrants:

- Instead of allocating hydrant costs between high and low density customers in a manner consistent with the other Fire costs, the hydrants were counted by land use area and allocated with a simple average.

The net impact of these changes caused the allocation ratio between LD and HD pipes to go to 28% / 72% respectively in the 2017 update from 35% LD / 65% HD in the 2016 update.

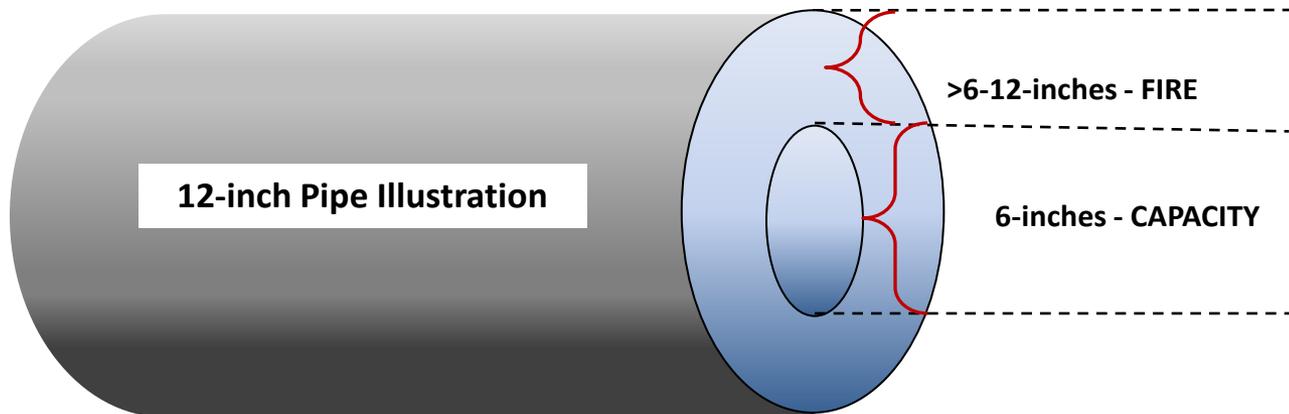
Assumption Change 1 – Upsizing Based on 6-inch Pipe

PIPE UPSIZED FOR FIRE PROTECTION - Calculation of Percentage used to Allocate Total T&D Costs between Capacity and Fire										
Diameter (Inch)	Feet of Pipe in 2010	Add (Replaced) 2011-2016	Total Feet of Pipe 12/31/16	Total Feet of Pipe in 2016	2016 Direct Costs - per ft	Cost of Pipe 6" and less	Cost Increment > 6"	Total Pipe Value in 2016 (Col 6 * Col 7)	Base Pipe Inflat Value in 2016 (Col 6 * Col 8)	Total Upsizing Value (Col 6 * Col 9)
<= 6	312,791	(3,830)	308,961	308,961	\$ 30	\$ 30	\$ 0	\$ 9,268,830	\$ 9,268,830	-
8 - Capacity Only	150		150	150	\$ 42	\$ 30	\$ 12	\$ 6,300	\$ 6,300	
8 - Upsized for Fire	98,811	1,423	100,234	100,234	\$ 42	\$ 30	\$ 12	\$ 4,209,828	\$ 3,007,020	1,202,808
10	10,995		10,995	10,995	\$ 55	\$ 30	\$ 25	\$ 604,725	\$ 329,850	274,875
12	63,660	16,972	80,632	80,632	\$ 70	\$ 30	\$ 40	\$ 5,644,240	\$ 2,418,960	3,225,280
16	1,823	1,635	3,458	3,458	\$ 101	\$ 30	\$ 71	\$ 349,258	\$ 103,740	245,518
20	508		508	508	\$ 132	\$ 30	\$ 102	\$ 67,056	\$ 15,240	51,816
TOTAL	488,738	16,200	504,938	504,938				\$ 20,150,237	\$ 15,149,940	\$ 5,000,297
PERCENTAGES FOR THE ALLOCATION OF COMBINED PIPE COSTS BETWEEN CAPACITY AND FIRE								100%	75%	25%

The impact of using 6-inch pipes as the base capacity size of pipes changed the allocation to 25% to Fire to 75% to Capacity. The 2016 method resulted in 38% allocated to Fire and 62% allocated to Capacity.

Illustration of a Hypothetically Embedded Pipe for Capacity

The upsizing of pipe between 6-inches and 12-inches is to meet fire flow requirements.



An Important Clarification

- The allocation of existing pipe values (*2016 amounts obtained from HD Fowler*) is only to develop allocations factors for the actual cost of pipe.
- In the prior screen the total pipe value at the end of 2016 was:
 - Total Pipe Value \$ 20,150,237
 - Allocation to Capacity \$ 15,149,940 - 75.18%
 - Allocation to Fire \$ 5,000,297 - 24.82%
- The above percentages are then used to allocate total pipe costs.
 - Total Pipe Costs \$ 16,187,208
 - Allocation to Capacity \$ 12,169,543 ($\$ 16,187,208 \times 75.18\%$)
 - Allocation to Fire \$ 4,017,665 ($\$ 16,187,208 \times 24.82\%$)

Allocation factors are needed because the District does not track pipe costs at the time of installation by the percentage of the pipe that is needed for capacity and the percentage of the pipe that is being upsized for fire suppression.

Some would argue for that reason all the costs for any pipe upsized for fire should all be allocated to fire. However, the District takes the position that embedded in the upsized pipe is a hypothetically smaller pipe to provide for the capacity needs. Only an allocation factor can be used since actual costs are not tracked.

Assumption Change 2 – Allocation of Storage

STORAGE ELEMENTS 2017	2.0 Reservoir (MGals)	3.7 Reservoir (MGals)	TOTAL GAL OF STORAGE	CAPACITY FUNCTIONS			FIRE FUNCTION	AS ALL OTHER
				BASE	PEAK	TOTAL		
Operational Storage	0.70	1.88	2.58		100%	100%		
Equalizing Storage (to meet peak demands)	0.00	0.00	0.00		100%	100%		
Fire Suppression	0.63	1.08	1.71		0%	0%	100%	
Standby Storage (for Emergencies)	0.08	0.74	0.82	100%		100%		
Surplus (/excess) (to provide for growth)	0.59	0.00	0.59			0%		100%
Dead Storage (n/a with pump redesign)			0.00			0%		
Storage bf Redistribution of Surplus	2.0	3.7	5.7	14%	45%	60%	30%	10%
TOTAL MGALS OF STORAGE BY FUNCTIONS				0.8	2.6	3.4	1.7	0.6
Percentile Allocation of "As All Other" to Capacity and Fire Functions				16%	51%	67%	33%	
TOTAL STORAGE ALLOCATIONS TO FUNCTIONS				16%	51%	67%	33%	

Operational storage is not required but is used during summer months – so included under peak.

According to the required DOH calculation for stored water for peak usage this is zero.

Fire suppression is the only storage element maintained the same as the previous update

Standby storage is 100% allocated to capacity rather than 50/50 capacity and fire

Surplus storage is 100% allocated as all other

Net impact is to essentially reverse the allocation between Capacity and Fire

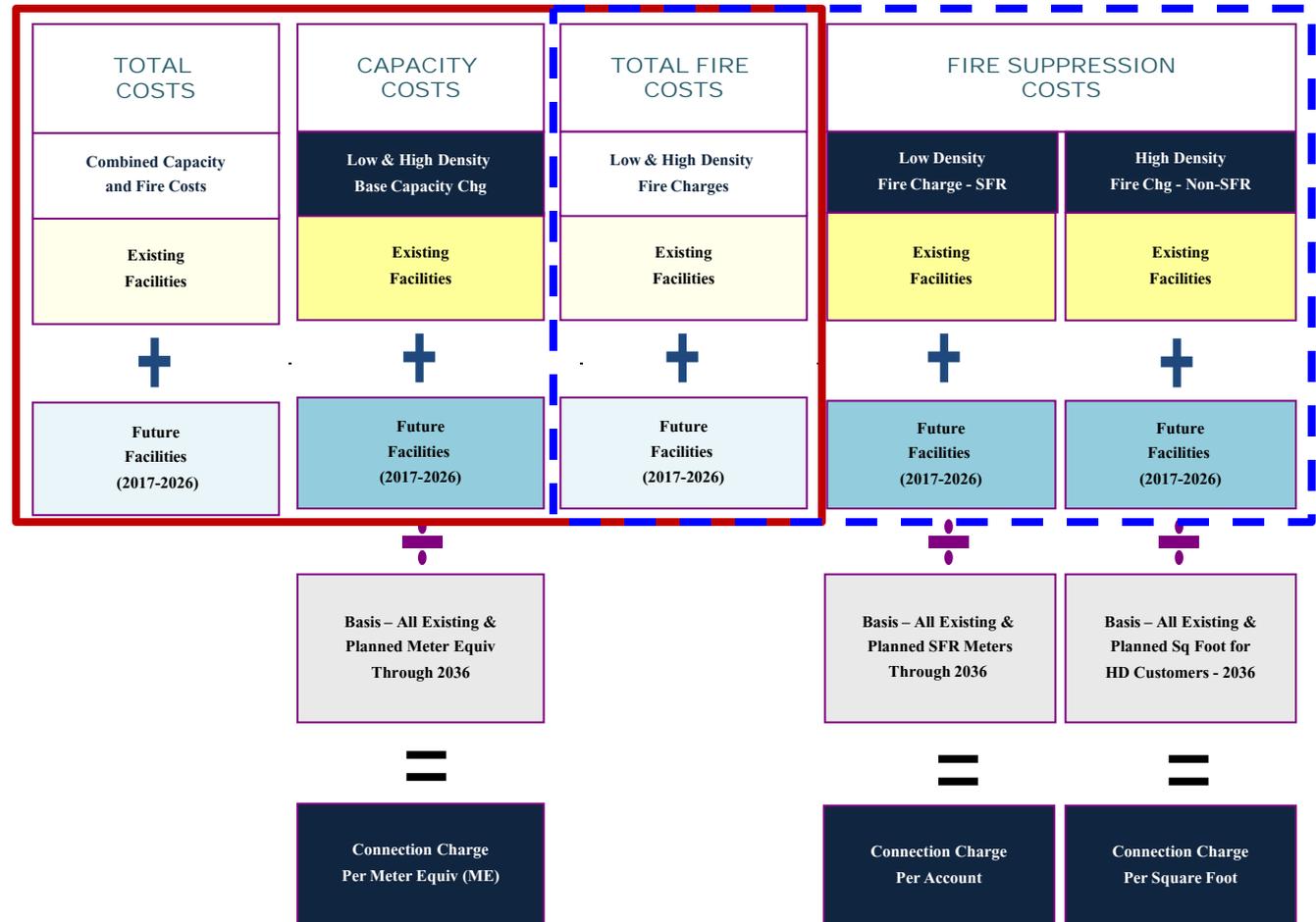
STORAGE ELEMENTS 2016	2.0 Reservoir (MGals)	3.7 Reservoir (MGals)	TOTAL GAL OF STORAGE	CAPACITY FUNCTIONS			FIRE FUNCTION	AS ALL OTHER
				BASE	PEAK	TOTAL		
Operational Storage (n/a due to SPU contracted amount)	0	0	0.00	100%		100%		
Equalizing Storage (to meet peak demands for water)	0.07	0.16	0.23		100%	100%		
Fire Suppression	0.63	1.08	1.71			0%	100%	
Standby Storage (for Emergencies)	0.46	1.64	2.10	50%		50%	50%	
Surplus (Excess) (to provide for growth)	0.84	0.82	1.66			0%		100%
Dead Storage (n/a with pump redesign)	0	0	0.00			0%		
Storage bf Redistribution of Surplus	2.0	3.7	5.7	18%	4%	22%	48%	29%
TOTAL MGALS OF STORAGE BY FUNCTIONS				1.1	0.2	1.3	2.8	1.7
Percental Allocation of "As All Other" to Capacity and Fire Functions				26%	6%	32%	68%	
TOTAL STORAGE ALLOCATIONS TO FUNCTIONS				26%	6%	32%	68%	

Where are we so far

- The prior assumptions related to pipe upsizing and storage only impact the allocation of costs between **Capacity** and **Fire**
- The next step is to allocate the costs allocated to Fire between Low and High Density customers.

Low Density (*Single Family Residential (SFR) customers*) – **a share of costs** to provide fire suppression at 1,500 gpm for 2 hours duration – generally 8-inch mains

High Density (*Non-SFR) customers*) – **a share of costs** to provide fire suppression at 1,500 gpm for 2 hours duration and **all incremental costs** to provide fire suppression at 3,500 gpm for 3 hours duration – 12-inch mains or large

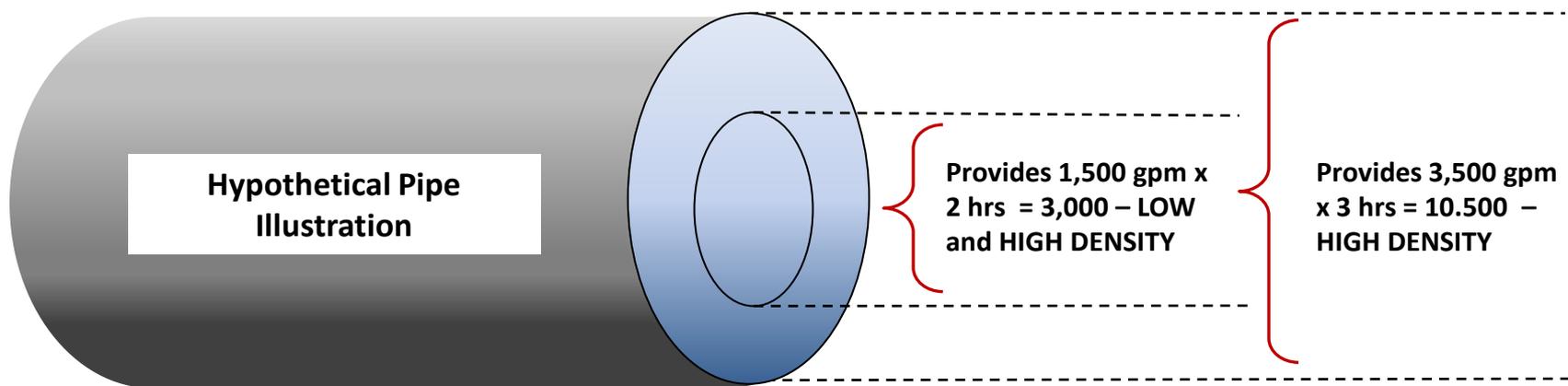


Allocation of Fire Plant to Low and High Density Customers

Illustration of Pipes only

Customer Classes	Flow - gpm	Duration - hours	Flow x Duration	Allocation Percentages
Low Density Fire flow requirements	1,500	2	3,000	$3,000 / 10,500 = 28.57\%$
High Density Fire flow requirements	3,500	3	10,500	$100\% - 28.57\% = 71.43\%$

NOTE : The flow times duration is not additive. The 3,000 flow times duration is imbedded in the flow times duration of 10,500. In other words, the ratios are not computed with $3,000/13,500$ but rather $3,000/10,500$.



The portion of the pipe that provides 1,500 gpm for 2 hours is shared by Low and High Density customers

Illustration of the Allocation of Pipe Costs for Fire to Low and High Density Customers

Customer Classes	Flow - gpm	Duration - hours	Flow x Duration	Percentage Allocation
Low Density Fire flow requirements	1,500	2	3,000	$3,000 / 10,500 = 28.57\%$
High Density Fire flow requirements	3,500	3	10,500	$100\% - 28.57\% = 71.43\%$
Total Pipe Upsizing Costs for Fire Supression	\$4,017,665			
Costs allocated to High Density	\$2,869,818		$\$4,017,665 * 71.43\%$	
Costs allocated to All customers	\$1,147,847		$\$4,017,665 * 28.57\%$	

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Allocation of Fire Plant to Low and High Density Customers

<i>Customer Classes</i>	<i>Flow - gpm</i>	<i>Duration - hours</i>	<i>Flow x Duration</i>	<i>Percentage Allocation</i>
Low Density Fire flow requirements	1,500	2	3,000	3,000 / 10,500 = 28.57%
High Density Fire flow requirements	3,500	3	10,500	100% - 28.57% = 71.43%
Total Pipe Upsizing Costs for Fire Supression	\$4,017,665			
Costs allocated to High Density	\$2,869,818		\$4,017,665 * 71.43%	
Costs allocated to All customers	\$1,147,847		\$4,017,665 * 28.57%	
<i>Customer Classes</i>	<i>Per King County</i>			
	<i>Sq Footage</i>			
Existing Low Density for SFR	17,023,435		75.25% ← includes garages and basements	
Existing High Density - Non-SFR	5,598,520		24.75% ←	
Total Square Footage	22,621,955			
Costs allocated to All customers	\$1,147,847			
Costs allocated to Low Density	\$863,776		\$1,557,209 * 75.25%	
Costs allocated to High Density	\$284,071		\$1,557,209 * 24.75%	
Total Fire Costs Allocated to High Density	\$2,869,818		\$5,450,233 * 71.43%	
Incremental amount added to High Density	\$2,869,818		\$5,450,233 * 71.43%	
Allocation from All customers	\$284,071		\$1,557,209 * 24.75%	
Total Fire costs Allocated ot High Density Customers	\$3,153,889			

SUMMARY

Fire Suppression costs allocated to Low Density Customers	\$863,776
Fire suppression costs allocated to High Density Customers	\$3,153,889
Total Fire Suppression costs	\$4,017,665

Changes to the Bases of the Charges

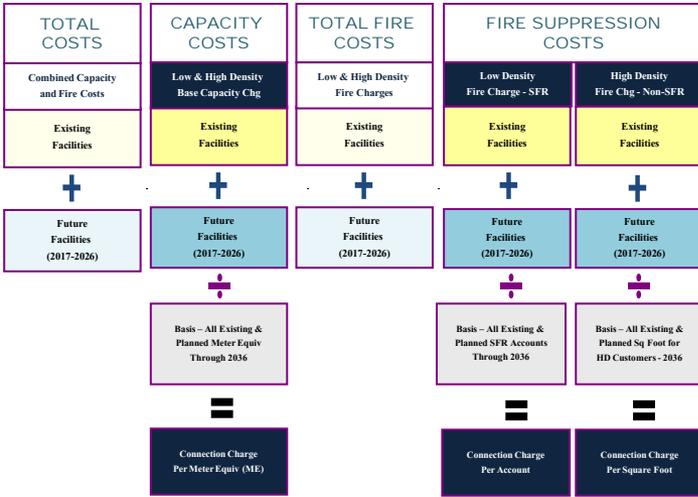
- Where the square footage was higher in the King County records, these were used instead of lower amounts used by the District.
- The growth period was extended to 2036 making the growth period 20 years rather than 15 year used in the last update.
- Several new potential customers were added to the growth forecast.

Net impact is a higher denominator, and thus a lower charge, for all charges except the Low Density account charge for Fire.

Summary of Connection Charge Calculations



Full Charges CONNECTION CHARGES - 2017 UPDATE Calculation of Connection Fees



CALCULATION AND ALLOCATION COMPONENTS	TOTAL ALLOCABLE COSTS	CAPACITY		FIRE SUPPRESSION	
		All Customer Capacity Chg	Total Fire Alloc	Low Density (SFR) Fire Chg	High Density Fire Chg
I. ALLOCABLE COSTS - EXISTING FACILITIES:					
Utility Plant-in-Service at 12/31/2016	\$ 42,173,960	\$ 31,485,693	\$ 10,708,267	\$ 2,903,132	\$ 7,805,135
plus: Projects Under Construction at year-end	8,438,863	6,170,718	2,268,145	614,920	1,653,225
Total Allocable Plant b/f Adjustments	50,612,823	37,636,411	12,976,412	3,518,052	9,458,360
less: Developer Donated Assets (Contributions in Aid of Construction (CIAC))	(2,069,755)	(1,578,596)	(521,159)	(141,292)	(379,867)
less: Expected Replacements in 10-Year CIP with interest	(8,718)	(6,483)	(2,235)	(600)	(1,629)
plus: Accumulated Interest on Existing Plant	14,001,792	10,425,503	3,576,289	969,572	2,606,716
Total Allocable Plant b/f Net Outstanding Debt	62,506,141	46,476,835	16,029,306	4,345,726	11,683,580
<i>Allocation to Capacity and Fire Plant (per Allocable Plant 2016)</i>		74%	26%	27%	73%
less: Debt Outstanding net of Cash Balances					
Debt Outstanding - 12/31/16	18,574,362				
Cash Balances - 12/31/16	(12,818,485)				
Maximum Zero or Net Debt	5,755,877	(5,755,877)	(4,279,818)	(1,476,058)	(1,075,882)
TOTAL ALLOCABLE COSTS - EXISTING FACILITIES	\$ 56,750,265	\$ 42,197,017	\$ 14,553,248	\$ 3,945,550	\$ 10,607,698
		74%	26%	27%	73%
II. ALLOCABLE COSTS - FUTURE FACILITIES:					
Future Capital Requirements (10 Year CIP 2017-2026)	\$ 11,519,117	\$ 8,297,672	\$ 3,221,446	\$ 1,085,425	\$ 2,136,021
Total Allocable Plant b/f Net Outstanding Debt	11,519,117	8,297,672	3,221,446	1,085,425	2,136,021
<i>Allocation to Capacity and Fire Plant (per Allocable CIP 2017-2026)</i>		72%	28%	34%	66%
less: Debt Outstanding net of Applicable Cash Balances					
Debt Outstanding for CIP - 12/31/26	10,386,460				
Cash Balances - 12/31/26	(7,500,000)				
Maximum Zero or Net Debt	2,886,460	(2,886,460)	(2,079,230)	(271,988)	(535,244)
TOTAL ALLOCABLE COSTS - FUTURE FACILITIES	8,632,657	6,218,441	2,414,216	813,439	1,600,777
		72%	28%	34%	66%
III. TOTAL ALLOCABLE COSTS (I + II.)	\$65,382,922	\$48,415,458	\$16,967,464	\$4,758,989	\$12,208,475
		74%	26%	28%	72%
IV. METER EQUIV (ME) ALLOCATION FOR BASE CAPACITY COSTS:					
Total Low Density (SFR) Meter Equivalents (MEs)		7,969			
Total High Density (Non-SFR) Meter Equivalents (MEs)		2,353			
Total Existing Meter Equivalents (MEs)		10,321			
Growth in MEs During Planning Period - Low Density		15			
Growth in MEs During Planning Period - High Density		320			
Total Growth		335			
Total Projected Capacity in Meter Equivalents (ME)		10,656			
V. BASE CAPACITY CHARGE PER ME FOR ALL CUSTOMERS			\$4,544 per ME		
		Existing	\$3,960		
		Future	\$4,884		
VI. METER ALLOCATION FOR FIRE COSTS - LOW DENSITY (SFR):*					
Low Density (SFR) Meters 12/31/2016				7,530	
Growth in Meters During Planning Period - Low Density				14	
Total Projected Low Density (SFR) Meters				7,563	
VII. FIRE CHARGE PER METER FOR LOW DENSITY CUSTOMERS (III. / VI.)					\$630 / Accr
			Existing	\$522	
			Future	\$408	
VIII. SQUARE FOOT ALLOCATION FOR FIRE COSTS - HIGH DENSITY:					
Total High Density (Non-SFR) Square Footage 12/31/2016					5,598,520
Growth in Sq Ft During Planning Period - High Density					1,732,361
Total Projected Square Footage for High Density Customers					7,330,881
IX. FIRE CHARGE PER SQ FT FOR HIGH DENSITY CUSTOMERS (III. / VIII.)					\$1.67 / SQ FT
			Existing	\$1.45	
			Future	\$0.22	

- 1) We began by reviewed the Existing Facilities (Plant) and the allocation between Capacity and Fire costs.
- 2) Next we looked at the Total Allocable Costs for Existing Facilities by adding or subtracting the donated capital, interest and outstanding debt.
- 3) The next step was our review of the allocation of fire costs for Existing Facilities between low and high density customers.
- 4) The first three steps concluded the cost elements of the Existing Facilities and then we repeated the process for Future Facilities.
- 5) By adding the allocable costs for Existing and Future Facilities we derived the Total Allocable Costs, which became the numerator of the final connection charges.
- 6-8) The final three steps derived the basis of each charge – ME for Capacity, Account for Low Density Fire, and Square Footage for High Density Fire, and then divided the basis of the charge (denominator) into the Total Allocable Costs (numerator) for each element to arrive at the connection charges per unit.

* Accounts exclude irrigation and fire accounts

CONNECTION CHARGES - 2017 UPDATE

Full Charges

LOW DENSITY SFR ⁽¹⁾ CUSTOMERS	
Low Density Capacity Charge ⁽²⁾	Per ME ⁽³⁾
Existing Costs	\$ 3,960
Future Costs	\$ 584
Total Low Density Capacity Charge ⁽⁶⁾	\$ 4,544
Low Density Fire Charge ⁽⁴⁾	Per Account
Existing Costs	\$ 522
Future Costs	\$ 108
Total Low Density Fire Charge	\$ 630

2016 Charge

\$3,900

2016 Charge

\$1,238

HIGH DENSITY NON-SFR CUSTOMERS	
High Density Capacity Charge ⁽²⁾	Per ME ⁽³⁾
Existing Costs	\$ 3,960
Future Costs	\$ 584
Total High Density Capacity Charge ⁽⁶⁾	\$ 4,544
High Density Fire Charge	Per SQ FT ⁽⁵⁾
Existing Costs	\$ 1.44
Future Costs	\$ 0.22
Total High Density Fire Charge	\$ 1.67

2016 Charge

\$3,900

2016 Charge

\$3.12

1) SFR = Single Family Residential

2) Capacity charges do not apply to fire sprinkler meters for both low and high density customers.

3) ME = Meter Equivalent

4) Low density fire charges per meter do not apply to irrigation or fire line meters.

5) Square Footage (SQ FT) is gross square footage with the exception of parking garages where the square footage is computed on the single largest floor only.

6)

METER EQUIVALANCY CHARGE BY METER SIZE		
Meter Size	ME Factor	Charge
5/8" x 3/4" Meter	1	\$ 4,544
1" Meter	2.5	\$ 11,360
1 1/2" Meter	5	\$ 22,720
2" Meter	8	\$ 36,352
3" Meter	16	\$ 72,704
4" Meter	25	\$ 113,600

**THE COSTS FOR INSTALLATION
AND THE SPU FACILITIES CHARGE
ARE IN ADDITION TO THE DISTRICT'S
CONNECTION CHARGE!**

Why Consider Phasing in the Charges

- The District has had a decades-long policy of phasing-in service rates if any class or sub-class of customers is too onerously affected by a change in methodology or shifts in costs of service.
- In the past, connection charges were not phased in, but in the past a completely different theoretical construct was not underlying them either - one which dramatically changes the charges for certain classes of customers – *specifically high density customers with minimal capacity needs and high fire suppression needs.*
- For both these reasons, it is recommended that the District phase in the new connection charges over a three periods.

Phasing Options

- Actual rates will not be phased but rather two assumptions will be changed over three periods to affect a gradual shift in the charges from capacity to fire and from low density to high density customers.
- The two assumptions that will be changed are:
 - **The allocation of the water available for fire suppression in the reservoir will be charged 50% to capacity and 50% to fire for the first period. It will change to 100% to fire after that.**
 - **The duration of fire flow in the allocations of fire costs between low and high density customers will be maintained at 1 hour, instead of 2 and 3 hours, for two periods.**
- By the third update of the connection charges, all assumptions about storage allocations and the hours of duration of fire flow will be at full value.

Phasing Options

Assumption 1 - fire suppression storage will be allocated to 50% Capacity / 50% Fire for one period

STORAGE ALLOCATION - Calculation of Percentage used to Allocate Storage Costs between Capacity and Fire

STORAGE ELEMENTS	2.0 Reservoir (MGals)	3.7 Reservoir (MGals)	TOTAL GAL OF STORAGE			FIRE FUNCTION	AS ALL OTHER	GRAND TOTAL
				PEAK	TOTAL			
Operational Storage	0.70	1.88	2.58	100%	100%			100%
Equalizing Storage (to meet peak demands)	0.00	0.00	0.00	100%	100%			100%
Fire Suppression	0.63	1.08	1.71	50%	50%	50%		100%
Standby Storage (for Emergencies)	0.08	0.74	0.82		100%			100%
Surplus (/excess) (to provide for growth)	0.59	0.00	0.59		0%		100%	100%
Dead Storage (n/a with pump redesign)			0.00		0%			0%
Storage bf Redistribution of Surplus	2.0	3.7	5.7	60%	75%	15%	10%	100%
TOTAL MGALS OF STORAGE BY FUNCTIONS				3.4	4.3	0.9	0.6	5.7
Percentile Allocation of "As All Other" to Capacity and Fire Functions				67%	83%	17%		100%
TOTAL STORAGE ALLOCATIONS TO FUNCTIONS				67%	83%	17%		100%

The full charge of 67% to Capacity and 33% to Fire will be 83% to Capacity and 17% to Fire for the first update

Assumption 2 - the duration of fire flow will be maintained at one hour for two periods

Customer Classes	Flow - gpm	Duration - hours	Flow x Duration	Allocation Percentages
Low Density Fire flow requirements	1,500	1	1,500	$1,500 / 3,500 = 43\%$
High Density Fire flow requirements	3,500	1	3,500	$100\% - 42.85\% = 57\%$

The full charge of 29% to All customers and an extra 71% to High Density customers will be 43% and 57% respectively for the first update

Summary of Connection Charge Calculations

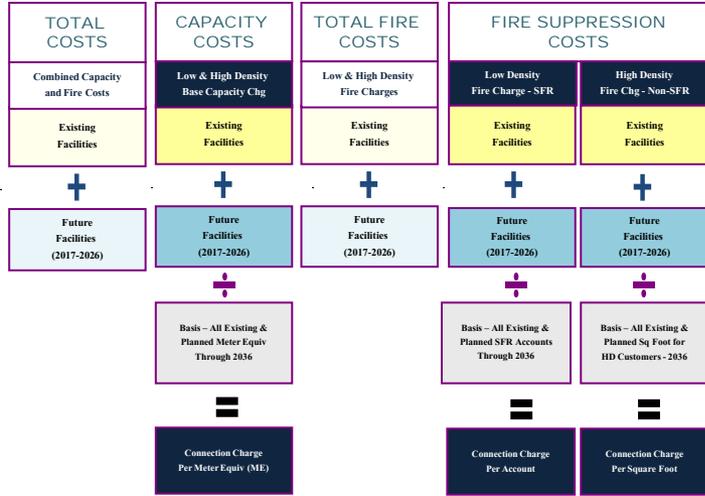


Phase 1 Charges CONNECTION CHARGES - 2017 UPDATE Calculation of Connection Fees

CALCULATION AND ALLOCATION COMPONENTS	TOTAL ALLOCABLE COSTS	CAPACITY		FIRE SUPPRESSION	
		All Customer Capacity Chg	Total Fire Alloc	Low Density (SFR) Fire Chg	High Density Fire Chg
I. ALLOCABLE COSTS - EXISTING FACILITIES:					
Utility Plant-in-Service at 12/31/2016	\$ 42,173,960	\$ 33,025,873	\$ 9,148,087	\$ 3,421,405	\$ 5,726,682
plus: Projects Under Construction at year-end	8,438,863	6,533,021	1,905,842	712,789	1,193,053
Total Allocable Plant b/f Adjustments	50,612,823	39,558,894	11,053,929	4,134,194	6,919,735
less: Developer Donated Assets (Contributions in Aid of Construction (CIAC))	(2,069,755)	(1,578,596)	(521,156)	(194,915)	(326,245)
less: Expected Replacements in 10-Year CIP with interest	(6,718)	(6,814)	(1,904)	(712)	(1,192)
plus: Accumulated Interest on Existing Plant	14,001,792	11,078,019	2,923,773	1,093,498	1,830,276
Total Allocable Plant b/f Net Outstanding Debt	62,506,141	49,051,503	13,454,639	5,032,065	8,422,574
<i>Allocation to Capacity and Fire Plant (per Allocable Plant 2016)</i>		78%	22%	37%	63%
less: Debt Outstanding net of Cash Balances					
Debt Outstanding - 12/31/16	18,574,362				
Cash Balances - 12/31/16	(12,818,485)				
Maximum Zero or Net Debt	5,755,877	(5,755,877)	(4,518,907)	(1,238,970)	(775,593)
TOTAL ALLOCABLE COSTS - EXISTING FACILITIES	\$ 56,750,265	\$ 44,534,595	\$ 12,215,669	\$ 4,568,687	\$ 7,646,981
		78%	32%	37%	63%
II. ALLOCABLE COSTS - FUTURE FACILITIES:					
Future Capital Requirements (10 Year CIP 2017-2026)	\$ 11,519,117	\$ 8,618,862	\$ 2,900,255	\$ 1,198,668	\$ 1,701,587
Total Allocable Plant b/f Net Outstanding Debt	11,519,117	8,618,862	2,900,255	1,198,668	1,701,587
<i>Allocation to Capacity and Fire Plant (per Allocable CIP 2017-2026)</i>		75%	25%	41%	59%
less: Debt Outstanding net of Applicable Cash Balances					
Debt Outstanding for CIP - 12/31/26	10,386,460				
Cash Balances - 12/31/26	(7,500,000)				
Maximum Zero or Net Debt	2,886,460	(2,886,460)	(2,159,714)	(300,362)	(426,384)
TOTAL ALLOCABLE COSTS - FUTURE FACILITIES	8,632,657	6,459,148	2,173,509	898,306	1,275,203
		75%	25%	41%	59%
III. TOTAL ALLOCABLE COSTS (I + II.)	\$65,382,922	\$50,993,744	\$14,389,178	\$5,466,994	\$8,922,185
		78%	30%	39%	62%
IV. METER EQUIV (ME) ALLOCATION FOR BASE CAPACITY COSTS:					
Total Low Density (SFR) Meter Equivalents (MEs)		7,969			
Total High Density (Non-SFR) Meter Equivalents (MEs)		2,353			
Total Existing Meter Equivalents (MEs)		10,321			
Growth in MEs During Planning Period - Low Density		15			
Growth in MEs During Planning Period - High Density		320			
Total Growth		335			
Total Projected Capacity in Meter Equivalents (ME)		10,656			
V. BASE CAPACITY CHARGE PER ME FOR ALL CUSTOMERS			\$4,786 per ME		
		Existing	\$4,179		
		Future	\$6,068		
VI. METER ALLOCATION FOR FIRE COSTS - LOW DENSITY (SFR): *					
Low Density (SFR) Meters 12/31/2016				7,539	
Growth in Meters During Planning Period - Low Density				14	
Total Projected Low Density (SFR) Meters				7,553	
VII. FIRE CHARGE PER METER FOR LOW DENSITY CUSTOMERS (III. / VI.)					\$724 / Acc
				Existing	\$605
				Future	\$119
VIII. SQUARE FOOT ALLOCATION FOR FIRE COSTS - HIGH DENSITY:					
Total High Density (Non-SFR) Square Footage 12/31/2016					5,598,520
Growth in Sq Ft During Planning Period - High Density					1,732,361
Total Projected Square Footage for High Density Customers					7,330,881
IX. FIRE CHARGE PER SQ FT FOR HIGH DENSITY CUSTOMERS (III. / VIII.)					\$1.22 / SQ FT
				Existing	\$1.04
				Future	\$0.17

* Accounts exclude irrigation and fire accounts

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- 3) The next step was our review of the allocation of fire costs for Existing Facilities between low and high density customers.
- 4) The first three steps concluded the cost elements of the Existing Facilities and then we repeated the process for Future Facilities.
- 5) By adding the allocable costs for Existing and Future Facilities we derived the Total Allocable Costs, which became the numerator of the final connection charges.
- 6-8) The final three steps derived the basis of each charge – ME for Capacity, Account for Low Density Fire, and Square Footage for High Density Fire, and then divided the basis of the charge (denominator) into the Total Allocable Costs (numerator) for each element to arrive at the connection charges per unit.





CONNECTION CHARGES - 2017 UPDATE

LOW DENSITY SFR ⁽¹⁾ CUSTOMERS	
Low Density Capacity Charge ⁽²⁾	Per ME ⁽³⁾
Existing Costs	\$ 4,179
Future Costs	\$ 606
Total Low Density Capacity Charge ⁽⁶⁾	\$ 4,786
Low Density Fire Charge ⁽⁴⁾	Per Account
Existing Costs	\$ 605
Future Costs	\$ 119
Total Low Density Fire Charge	\$ 724

Full Charge
\$4,544
Full Charge
\$630

HIGH DENSITY NON-SFR CUSTOMERS	
High Density Capacity Charge ⁽²⁾	Per ME ⁽³⁾
Existing Costs	\$ 4,179
Future Costs	\$ 606
Total High Density Capacity Charge ⁽⁶⁾	\$ 4,786
High Density Fire Charge	Per SQ FT ⁽⁵⁾
Existing Costs	\$ 1.03
Future Costs	\$ 0.17
Total High Density Fire Charge	\$ 1.22

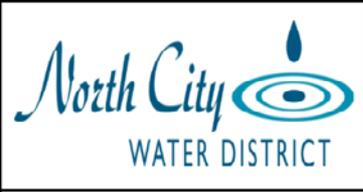
Full Charge
\$4,544
Full Charge
\$1.67

- 1) SFR = Single Family Residential
- 2) Capacity charges do not apply to fire sprinkler meters for both low and high density customers.
- 3) ME = Meter Equivalent
- 4) Low density fire charges per meter do not apply to irrigation or fire line meters.
- 5) Square Footage (SQ FT) is gross square footage with the exception of parking garages where the square footage is computed on the single largest floor only.

6)

METER EQUIVALANCY CHARGE BY METER SIZE		
Meter Size	ME Factor	Charge
5/8" x 3/4" Meter	1	\$ 4,786
1" Meter	2.5	\$ 11,965
1 1/2" Meter	5	\$ 23,930
2" Meter	8	\$ 38,288
3" Meter	16	\$ 76,576
4" Meter	25	\$ 119,650

THE COSTS FOR INSTALLATION AND THE SPU FACILITIES CHARGE ARE IN ADDITION TO THE DISTRICT'S CONNECTION CHARGE!



CONNECTION CHARGES - 2017 UPDATE

Sample Customers at Period 1 – Phased-in Charges

TYPE OF CUSTOMER	INPUT AREA			LD & HD CAPACITY CHARGE			LD FIRE CHARGE			HD FIRE CHARGE		Total Connection Charge	COMP TO FULL CHARGE		COMP TO 2016 CHARGE		COMP TO 2007-2015 CHARGE	
	Selected Meter Size	No of Units	Gross Square Footage	No. of MEs	Rate per ME	Total Base Charge	Applicable No. of Meters	LD Fire Rate per Meter	Total LD Fire Charge	HD Fire Rate per Sq Ft	Total HD Fire Charge		Charge at 2017 Full Rates		Charge at 2016 Rates		Charge at 2007-2015 Rates	
													Difference	Difference	Difference	Difference		
Single Family - Stand Alone	5/8" Meter			1	\$4,786	\$4,786	1	\$724	\$724			\$4,786	\$ 4,544	\$ 3,900			Low Density Fire for Grow \$ 295	
Capacity Meter Charge												\$ 630		\$ 1,238			General Char \$ 3,301	
Fire Suppression Charge (from Hydrants)					\$0	\$0											Total Per ERU \$ 3,596	
Total Single Family - Stand Alone					\$4,786	\$4,786		\$724	\$724			\$5,510	\$ 5,174	\$ 336	\$ 5,138	\$ 372	\$ 3,596	\$ 1,914
Single Family with Flow-thru Meter	1" Meter			1	\$4,786	\$4,786	1	\$724	\$724			\$4,786	\$ 4,544	\$ 3,900				
Capacity Meter Charge												\$ 630		\$ 1,238				
Fire Suppression Charge (from Hydrants)					\$0	\$0												
Total Single Family with Flow-thru Meter					\$4,786	\$4,786		\$724	\$724			\$5,510	\$ 5,174	\$ 336	\$ 5,138	\$ 372	\$ 3,596	\$ 1,914
SFR Irrigation Capacity Meter Charge	1" Meter			2.5	\$4,786	\$11,965						\$11,965	\$ 11,360	\$ 605	\$ 9,750	\$ 2,215	\$ 8,990	\$ 2,975
Storage Building - 4" Sprinkler Meter	5/8" Meter			1	\$4,786	\$4,786						\$4,786	\$ 4,544	\$ 3,900				
Capacity Meter Charge (water from Meters)	4" Meter				\$0	\$0						\$0	-	-				
Sprinkler Meter Charge		107,465			\$0	\$0			\$1.22	\$131,107	\$131,107	179,467		335,291				
Fire Suppression Charge (water from Hydrants)					\$0	\$0												
Total Storage Building					\$4,786	\$4,786						\$135,893	\$ 184,011	\$ (48,117)	\$ 339,191	\$ (203,298)	\$ 557,795	\$ (421,901)
Parking Garage⁽¹⁾	5/8" Meter			1	\$4,786	\$4,786						\$4,786	\$ 4,544	\$ 3,900				
Capacity Meter Charge	4" Meter				\$0	\$0						\$0	-	-				
Sprinkler Meter Charge		25,000			\$0	\$0			\$1.22	\$30,500	\$30,500	41,750		78,000				
Fire Suppression Charge (from Hydrants)					\$0	\$0												
Total Parking Garage					\$4,786	\$4,786						\$35,286	\$ 46,294	\$ (11,008)	\$ 81,900	\$ (46,614)	\$ 130,800	\$ (95,514)

Summary of Feedback from a Potential Customer

Customer Feedback	District Response/Resolution
<p>Using 840 sq feet to equal one Equivalent Residential Unit (ERU) is too small to use as the basis of the calculation since it is unrepresentative of actual property sizes.</p>	<p>The use of ERUs was changed as the basis in both the 2016 and 2017 connection charges. Actual square footage obtain from King County or from District records was used instead.</p>
<p>Using square footage as the basis of the fire component of the connection charge is too limited as other variables are used to determine the actual fire flow requirements for individual customers.</p>	<p>The fire flow requirements of an individual customer does not impact the size of pipe installed by the District. The District installs pipe that will facilitate 1,500 gpm for two hours for residential customers and 3,500 gpm for a three hour duration for non-residential customers. Only if the International Fire codes are changed could the District plan for the construction or replacement of existing pipe with smaller pipe providing less flow and duration. The district builds to the requirements of the highest land use codes.</p>
<p>There is no basis to support that three inch pipe is adequate to provide sufficient domestic water.</p>	<p>Until the District can show through hydraulic modeling that 3-inch pipes can adequately provide all non-fire suppression water needs, the charges will be based on 6-inch pipe being the base size for non-fire suppression water (capacity or domestic) use.</p>
<p>The amount of storage allocated to fire plant is overstated due to what potentially could occur at any given point, which is far smaller than stipulated in the charge calculation.</p>	<p>The amount of storage allocated to fire suppression is based on the calculations of the DOH and not under the District's control. The District does have the option of nesting it with standby for total storage requirements but that is not to say that the amount available for fire suppression can be ignored. However, as part of the phasing-in of the charges, all fire storage will be allocated 50% to Capacity and 50% to Fire in the first update period (2017). After that, 100% will be allocated to Fire.</p>

Summary of Feedback from a Potential Customer

Customer Feedback	District Response/Resolution
<p>Allocating pumping cost in the same manner as piping costs is only expedient. It is not accurate or valid.</p>	<p>Since pumping is used to fill the reservoir as well as directly from the Cedar River into the mains, the allocation of pumping plant was changed to a weighted average of S storage and T&D Plant.</p>
<p>Perhaps an "incremental cost" analysis should be done to determine how much general plant should be added to fire plant. The approach used in developing the charge seems arbitrary and unrealistic.</p>	<p>An incremental approach would probably be a valid method of allocating general plant costs if it weren't for the fact that the underlying change in the theoretic framework of the connection charges is that the fire suppression function is no longer an "incremental;" or tangential service provided by the District. The steadily increasing costs over several decades to provide fire suppression services has made it a significant primary service. Therefore the cost sharing approach is the approach to use.</p>
<p>Hydrant costs should not follow the same methodology as pipes for allocating fire plant between low and high density customers.</p>	<p>The District modified the approach to allocate hydrant costs based on a simple average, which shifted much of the hydrant costs to low density customers.</p>
<p>This District is inaccurately segregating pipes between pipes specifically identified as low and high density pipes and then adding an increment to high density on top of it.</p>	<p>The District did away with this two step approach and is using a weight average approach based on the required gallons per minute and the duration required as specified by the International Fire code. It is a more establish methodology and is also consistent with what is used to allocated costs between high and low density customers in the service rates.</p>
<p>The low density square footage used to calculate the connection charges is too low at average of 1,711 sq feet per household. The impact is that it understates the total square footage used in the computation.</p>	<p>The Districted increased the total square footage used for low density customers to include garages and basements. The total square footage went from approximately 12 million sq ft to 17 million sq ft. or an average of 2,300 sq feet for existing SFR customers. Future customers were computed using 2,500 sq feet.</p>

What's Next

June 21, 2017 – June 27, 2017

- ✓ *Review of the current connection charge calculation.*
- ✓ *Calls may be made to the Finance Manager at 425-478-5385 about the calculation, assumptions, or possible alternative approaches.*

June 27, 2017 – 3:00 p.m.

- ✓ *Work session to go over customer questions and/or feedback.*

July 5, 2017

- ✓ *Approval of the 2017 update of the connection charges.*



End