Division of Public Utilities
Data Request – Set 4
February 20, 2020

DIV 4-1: Reference Schedule HJS-15b:

a. Please explain why wholesale customers are assigned 0 percent of water quality and testing non-revenue water.

b. Provide the supporting calculations for the assignment of leakage to transmission and distribution mains.

c. Please explain how the 3 percent estimate for metering inaccuracy was determined, including why the inaccuracy is assumed to be an under measurement of actual usage.

RESPONSE:

a. Upon further review, these volumes relate to maintaining the water quality of all customers. Accordingly, a portion of these volumes should be assigned to wholesale customers. This will be incorporated in Harold Smith's rebuttal testimony.

b. These calculations are indicated in HJS-13c and HJS-15b. As indicated in HJS-15b, the total losses due to leakage are 1,850,470 HCF. These were assigned to transmission and distribution based on the length of pipe for each as indicated on HJS-13c. Mains which are larger than 12 inches are considered transmission. Mains which are 12 inches and smaller, including an assumption of 225 miles of customer service lines, are considered distribution. Using these definitions, transmission and distribution mains are 89.18% and 10.82% of the total respectively. These percentages are applied to the 1,850,470 HCF to determine the leakage on transmission and distribution mains.

c. 3% is the default estimate for this metric using AWWA's Water Audit software. It is assumed to be an under measurement of usage because the inaccuracy is generally a function of the age of meters. As meters age, they tend to under record, rather than over record, usage.

Division of Public Utilities
Data Request – Set 4
February 20, 2020

DIV 4-2: Reference Schedule HJS-16a:

a. Reference cells K18..K20. Please explain how it was determined that the maximin hour peaking factor should be two times the maximum day factor for each retail class.

b. Please explain how the total fire protection maximum day was determined and explain why this demand is reasonable for a city the size of Providence.

RESPONSE:

a. This is an estimate for this factor in the absence of specific data. The resultant maximum hour peaking factor for the class in total (see HJS-16A) of 3.2 times average day is reasonable given typical water system design criteria for meeting maximum hour demand (i.e. 3 to 4 times average day).

b. Total fire protection maximum day demand is based on 6,000 gallons per minute, for 6 hours, divided by 748 (to convert to HCF/d). These fire flow assumptions have been used since Docket 3163. This aligns with the maximum required fire flow for a single event as identified in "AWWA Manual M1 – Distribution System Requirements for Fire Protection (4th Edition, Page 3)" of 12,000 gallons per minute for 3 hours, which also equates to 2,888 HCF/d as indicated in HJS-16a.

Division of Public Utilities
Data Request – Set 4
January 30, 2020

DIV 4-3: Reference the response to PUC-Data Request 2-1. Please explain the low service, high service, and extra-high service main designations. Also explain how the incremental and operating costs of each main designation differ.

Response:

The low service water mains are pressurized by gravity from the Treatment Plant, Aqueduct Storage Reservoir, and Neutaconkanut Storage Reservoir.

The high service water mains are pressurized from the Neutaconkanut Pumping Station, Bath Street Pumping Station, and Longview Storage Reservoir.

The extra-high service water mains are pressurized from the Fruit Hill Avenue Pumping Station and Ridge Road Storage Tank.

The low service system is supplied by gravity while the high and extra-high service systems require pumping. The pumping stations do have additional operation & maintenance costs such as utilities, pump and building maintenance, etc.

Division of Public Utilities
Data Request – Set 4
February 20, 2020

DIV 4-4:

Reference the Excel file: DIV 2-2 and 2-7 Wholesale Demand and Class Demand Factors, tab DIV 2-7 Retail Monthly. Please provide the same information for 2017.

RESPONSE:

Please see attached excel file entitled "DIV 4-4."

	Billed							System Max Day Adjustment											
Month	Max Month	Days	Avg. Day in Max Month (ADMD)	Days	Annual Usage	Annual Average Day (AAD)	Ratio: ADMM AAD	Avg. Day in Max Month (ADMM)	Annual Average Day (AAD)	Ratio: ADMM AAD	Actual Max Day (MD)	Ratio: MD AAD	Adjustment	Max Day Factor	Max Day Total	Max Day Extra	Max Hour Factor	Max Hour Total	Max Hour Extra
Units			Ccf/Day		Ccf	Ccf/Day	Ccf/Day	Ccf/Day	Ccf/Day	Ccf/Day	Ccf/Day	Ccf/Day							
Days																			
Residential																			
2017	986,204	31	31,813	365	8,190,206	22,439	1.42	108,280	78,236	1.38	136,805	1.75	1.26	1.79	40,194	17,755	3.58	80,388	62,633
2018	874,467	31	28,209	365	8,030,974	22,003	1.28	94,181	77,084	1.22	119,840	1.55	1.27	1.63	35,894	13,891	3.26	71,787	57,896
2019	955,567	31	30,825	365	8,103,732	22,202	1.39	107,606	76,829	1.40	130,348	1.70	1.21	1.68	37,339	15,137	3.36	74,679	59,541
						22,102									36,616	14,514		73,233	58,719
Commercial																			
2017	450,593	31	14,535	365	3,923,978	10,751	1.35	108,280	78,236	1.38	136,805	1.75	1.26	1.71	18,364	7,614	3.42	36,729	29,115
2018	453,952	30	15,132	365	4,043,827	11,079	1.37	94,181	77,084	1.22	119,840	1.55	1.27	1.74	19,254	8,175	3.48	38,508	30,333
2019	479,018	31	15,452	365	4,031,169	11,044	1.40	107,606	76,829	1.40	130,348	1.70	1.21	1.69	18,718	7,674	3.39	37,436	29,762
						11,062									18,986	7,924		37,972	30,048
Industrial																			
2017	19,966	30	666	365	175,696	481	1.38	108,280	78,236	1.38	136,805	1.75	1.26	1.75	841	360	3.49	1,682	1,322
2018	19,674	31	635	365	189,997	521	1.22	94,181	77,084	1.22	119,840	1.55	1.27	1.55	808	287	3.10	1,615	1,328
2019	17,937	31	579	365	164,973	452	1.28	107,606	76,829	1.40	130,348	1.70	1.21	1.55	701	249	3.10	1,402	1,153
						486									754	268		1,508	1,240

Division of Public Utilities
Data Request – Set 4
January 30, 2020

DIV 4-5: Reference PUC-Data Request 2-1:

a. Does the PWSB agree that, given the location of these customers, significantly more infrastructure is required to serve certain wholesale customers (Greenville Water District, Lincoln Water Commission, Bristol County Water Authority, Smithfield Water District) than the other wholesale customers? If no, why not?

b. If response to subpart (a) is yes, please explain why the PWSB maintains a single wholesale rate schedule.

Response:

a. The Greenville Water District, Lincoln Water Commission, and Smithfield Water District are all served by the High Service system which requires the use of pumps and an increase in operation and maintenance costs. The high service system is comprised of the Neutaconkanut Pumping Station, Bath Street Pumping Station, and Longview Storage Reservoir.

   The Bristol County Water Authority, East Providence Water Department, Warwick Water Department, and Kent County Water Authority are all served by the Low Service system that is fed by gravity. The low service system is comprised of the Aqueduct Storage Reservoir, and Neutaconkanut Storage Reservoir.

b. PWSB has proposed a single wholesale rate schedule to be consistent with prior rate filings and Commission approvals. PWSB is open to studying separate wholesale rates if the Division and Commission believe this is an appropriate course of action. PWSB suggests, if the Division and Commission believe PWSB should explore the matter, then evaluating the desirability of individual wholesale rates could be part of PWSB's next full rate filing.

Division of Public Utilities
Data Request – Set 4
February 20, 2020

DIV 4-6:

Reference response to DIV 2-14. Please confirm that inch-miles are not used in the allocation of non-revenue water to retail and wholesale customers. If inch-miles are used, please identify how they are used.

RESPONSE:

Inch-miles are not used in the allocation of non-revenue water to retail and wholesale customers.

Division of Public Utilities
Data Request – Set 4
January 30, 2020

DIV 4-7: Reference the response to DIV 2-13, the WSSMP Annual Reports. Please explain why Process Water at Treatment Plants declined significantly during the period July 2018 – June 2019 from prior periods, and why Water Quality and Other Testing increased significantly from prior periods.

Response:

The Process Water at Treatment Plants value (103,680,000) previously identified for July 2018 – June 2019 is not correct due to a calculation error. The correct value is (636,040,000) as shown on the revised Section #7 Data Sheet for July 2018 – June 2019 attached. The decline in Process Water at the Treatment Plant from the prior periods is due to lower system demand and subsequent lower required plant influent to process from the supply during this period.

During the period of July 2018 – June 2019, Water Quality and Other Testing uses increased significantly due to continuous flushing at our Aqueduct Reservoir to reduce the water age in the storage tank. Due to declines in water demand/usage across the system over the years, the water age in this storage tank has increased resulting in the water to become stagnant over time. To keep the water fresh within this tank, the current short term solution is to continuously flush water from the tank on a daily basis. The potential long term solution will be to install a mixing system in the tank which is currently being studied. In addition, during this period we installed a mixing system in our Ridge Road Storage Tank which required dewatering the tank, filling the tank, and flushing the tank during the chlorination and testing period. These combined operations significantly increased our Water Quality and Other Testing uses during this period.

Division of Public Utilities
Data Request – Set 4
January 30, 2020

DIV 4-8: Reference the response to DIV 2-17:

a. With respect to Account 63660 repairs to streets. Is this largely the costs associated with street paving in conjunction with main replacements/repairs? If no, please explain the nature of these costs.

b. Please provide a detailed breakdown of the costs included in Account 63680, Maintenance and Services.

RESPONSE:

a. The *Repairs to Streets* costs allocated to Account 63660 are not associated with main replacements. The street paving costs apportioned to this line are precisely related to T&D operations and include paving as a result of new service installations, new gate valve installations, new hydrant installations, new blow-off assembly installations, repairs of mains, and repairs of service leaks.

b. Please see attached Schedule DIV 4-8 (b) reflecting a breakdown of the *Maintenance and Services* costs allocated to Account 63680.

Schedule DIV 4-8 (b)
Providence Water
Breakdown of Maintenance & Services Included in Account 63680

WATER SUPPLY DETAILED CONTRACT COSTS
Account 63680 Contractual Services Other - AG&O
Maintenance & Services Breakdown
Fiscal Year 2017 through Fiscal Year 2019

		Description	Fiscal Year 2017	Fiscal Year 2018	Fiscal Year 2019
63680	**Contract Services Other - AG&O**				
	Maintenances and Services				
		Engineering Software Technology	38,851	29,768	29,587
		Copier Leases	55,340	53,123	62,914
		Vehicle GPS Service	52,392	45,498	53,221
		Security Maintenance	60,000	61,800	63,425
		Building Maintenance	19,148	122,248	99,078
		Vehicle Maintenance	4,384	4,907	2,388
		Information Technology Maintenance & Support	174,163	199,769	381,519
		Total Maintenance & Services 63680	**$ 404,278**	**$ 517,113**	**$ 692,131**

Division of Public Utilities
Data Request – Set 4
January 30, 2020

DIV 4-9: Reference Schedule HJS-14a:

a. Please identify the accounts in which laboratory water quality testing expenses are located and the amounts.

b. Identify the laboratory water quality tests conducted by PWSB and the frequency of each test. Identify those tests what are conducted on time interval basis and on a water quantity basis.

RESPONSE:

a. The laboratory water quality tesing expenses are located in Account 67530. The amount paid for water quality testing in FY19 was $105,755.94.

b. Please see the attached schedule DIV 4-9(b) for details on the parameters and frequency of the water quality testing conducted by the laboratory. The frequency of the lab testing is not influenced by quantity.

Schedule DIV 4-9 (b)
Providence Water
Water Quality Testing Details

Treatment Plant Analysis		
Parameter	**Frequency**	**Type**
pH	Daily	Time Interval
Temp	Daily	Time Interval
Acidity	Daily	Time Interval
Total Alkalinity	Daily	Time Interval
Color	Daily	Time Interval
Chloride	Daily	Time Interval
Nitrite	Daily	Time Interval
Iron	Daily	Time Interval
Manganese	Daily	Time Interval
Turbidity	Daily	Time Interval
Total Hardness	Daily	Time Interval
Total Chlorine	Daily	Time Interval
Free Chlorine	Daily	Time Interval
Fluoride	Daily	Time Interval
UV254	Daily	Time Interval
Total Coliform	Daily	Time Interval
E.Coli	Daily	Time Interval
HPC	Daily	Time Interval
TOC	Daily	Time Interval

Distribution System Analysis		
Parameter	**Frequency**	**Type**
pH	Daily	Time Interval
Temp	Daily	Time Interval
Total Alkalinity	Daily	Time Interval
Color	Daily	Time Interval
Chloride	Daily	Time Interval
Iron	Daily	Time Interval
Fluoride	Daily	Time Interval
Free Chlorine	Daily	Time Interval
Manganese	Daily	Time Interval
Hardness	Daily	Time Interval
Turbidity	Daily	Time Interval

Schedule DIV 4-9 (b)
Providence Water
Water Quality Testing Details

Watershed Analysis		
Parameter	**Frequency**	**Type**
pH	Monthly	Time Interval
Temp	Monthly	Time Interval
Acidity	Monthly	Time Interval
Total Alkalinity	Monthly	Time Interval
Color	Monthly	Time Interval
Chloride	Monthly	Time Interval
Turbidity	Monthly	Time Interval
Nitrite	Monthly	Time Interval
Nitrate	Monthly	Time Interval
Ortho-Phosphate	Monthly	Time Interval
Total Coliform	Monthly	Time Interval
E.Coli	Monthly	Time Interval
HPC	Monthly	Time Interval

Chlorination New Main Analysis		
Parameter	**Frequency**	**Type**
Free Chlorine	As Needed	Time Interval
Iron	As Needed	Time Interval
Total Coliform	As Needed	Time Interval
E.Coli	As Needed	Time Interval
HPC	As Needed	Time Interval

City Water Analysis		
Parameter	**Frequency**	**Type**
pH	As Needed	Time Interval
Temp	As Needed	Time Interval
Total Alkalinity	As Needed	Time Interval
Color	As Needed	Time Interval
Chlorides	As Needed	Time Interval
Iron	As Needed	Time Interval
Fluoride	As Needed	Time Interval
Ammonia	As Needed	Time Interval
Free Chlorine	As Needed	Time Interval
Total Chlorine	As Needed	Time Interval
Turbidity	As Needed	Time Interval
Hardness	As Needed	Time Interval
Manganese	As Needed	Time Interval

Schedule DIV 4-9 (b)
Providence Water
Water Quality Testing Details

Lead Analysis		
Parameter	**Frequency**	**Type**
Turbidity	Daily	Time Interval
Total Lead	Daily	Time Interval
Total Copper	Daily	Time Interval
Dissolved Lead	Daily	Time Interval

Ortho-phosphate Analysis		
Parameter	**Frequency**	**Type**
pH	Weekly	Time Interval
Temp	Weekly	Time Interval
Free Chlorine	Weekly	Time Interval
Turbidity	Weekly	Time Interval
Alkalinity	Weekly	Time Interval
Conductivity	Weekly	Time Interval
Ortho-phosphate	Weekly	Time Interval
Iron	Weekly	Time Interval
Total Coliform	Weekly	Time Interval
ORP	Weekly	Time Interval
DO	Weekly	Time Interval
ATP	Weekly	Time Interval
HPC	Weekly	Time Interval
Chloride	Weekly	Time Interval
Hardness	Weekly	Time Interval
DOC	Weekly	Time Interval

Schedule DIV 4-9 (b)
Providence Water
Water Quality Testing Details

Water Quality Complaints		
Parameter	**Frequency**	**Type**
pH	As Needed	Time Interval
Temp	As Needed	Time Interval
Total Alkalinity	As Needed	Time Interval
Color	As Needed	Time Interval
Chlorides	As Needed	Time Interval
Iron	As Needed	Time Interval
Fluoride	As Needed	Time Interval
Ammonia	As Needed	Time Interval
Free Chlorine	As Needed	Time Interval
Total Chlorine	As Needed	Time Interval
Turbidity	As Needed	Time Interval
Hardness	As Needed	Time Interval
Manganese	As Needed	Time Interval
Total Coliform	As Needed	Time Interval
E.Coli	As Needed	Time Interval
HPC	As Needed	Time Interval

Hydrant Flushing		
Parameter	**Frequency**	**Type**
Color	As Needed	Time Interval

RIPDES Analysis		
Parameter	**Frequency**	**Type**
Iron	Monthly	Time Interval
Total Chlorine	Monthly	Time Interval
Turbidity	Monthly	Time Interval
TSS	Monthly	Time Interval
pH	Monthly	Time Interval
Total Lead	Monthly	Time Interval
Dissolved Lead	Monthly	Time Interval

Corrosion Lead Analysis		
Parameter	**Frequency**	**Type**
pH	Monthly	Time Interval
Temp	Monthly	Time Interval
Turbidity	Monthly	Time Interval
Ortho-phosphate	Monthly	Time Interval

Schedule DIV 4-9 (b)
Providence Water
Water Quality Testing Details

RET Monthly Metals		
Parameter	**Frequency**	**Type**
Mercury	Monthly	Time Interval
Antimony	Monthly	Time Interval
Arsenic	Monthly	Time Interval
Chromium	Monthly	Time Interval
Copper	Monthly	Time Interval
Thallium	Monthly	Time Interval
Zimc	Monthly	Time Interval
Total Lead	Monthly	Time Interval
Dissolved Lead	Monthly	Time Interval

RET Quarterly Metals		
Parameter	**Frequency**	**Type**
Calcium	Quarterly	Time Interval
Iron	Quarterly	Time Interval
Magnesium	Quarterly	Time Interval
Manganese	Quarterly	Time Interval
Potassium	Quarterly	Time Interval
Sodium	Quarterly	Time Interval
Mercury	Quarterly	Time Interval
Aluminum	Quarterly	Time Interval
Antimony	Quarterly	Time Interval
Arsenic	Quarterly	Time Interval
Barium	Quarterly	Time Interval
Beryllium	Quarterly	Time Interval
Cadmium	Quarterly	Time Interval
Chromium	Quarterly	Time Interval
Copper	Quarterly	Time Interval
Nickel	Quarterly	Time Interval
Selenium	Quarterly	Time Interval
Silver	Quarterly	Time Interval
Thallium	Quarterly	Time Interval
Zinc	Quarterly	Time Interval
Lead	Quarterly	Time Interval

Schedule DIV 4-9 (b)
Providence Water
Water Quality Testing Details

Sanitary Chemicals		
Parameter	**Frequency**	**Type**
Ammonia	Yearly	Time Interval
Nitrate	Yearly	Time Interval
Sulfate	Yearly	Time Interval
Silica	Yearly	Time Interval

Sodium Analysis		
Parameter	**Frequency**	**Type**
Sodium	Yearly	Time Interval

DBP Wholesaler Analysis		
Parameter	**Frequency**	**Type**
Total THM's	Monthly	Time Interval
Total HAA's	Monthly	Time Interval

DBP Stage 2 Analysis		
Parameter	**Frequency**	**Type**
Total THM's	Quarterly	Time Interval
Total HAA's	Quarterly	Time Interval

UCMR 4 Analysis		
Parameter	**Frequency**	**Type**
AM1: Metals, Pesticides, Alcohols, & SVOC's	Quarterly	Time Interval
AM2: HAA's, Bromide, TOC	Quarterly	Time Interval
AM3: Cyanotoxins	Quarterly	Time Interval

Division of Public Utilities
Data Request – Set 4
January 30, 2020

DIV 4-10: Reference Schedule HJS-13g. Please explain the activities conducted in each of the following office spaces:

a. 1st Floor Engineering;
b. 1st Floor Commercial Services; and
c. 1st Floor T&D.

Response:

a. 1st Floor Engineering is where all the management and union personnel in the Engineering Department are located. Daily activities include but are not limited to the following.

Project management for the projects on the Infrastructure Replacement Plan Program and Capital Improvement Program.

Management of and execution of construction inspection services.

Planning and design of the Water Main Rehabilitation/Replacement Program construction plans.

Updating and Management of Providence Water's electronic and paper records through Geographic Information System (GIS).

Updating and Management of Providence Water's Asset Management and Work Order Program (Cityworks).

Receives and addresses water calls quality issues and complaints.

Management of Providence Water's Lead Service Replacement Program.

Management and execution of Providence Water's Unidirectional Flushing Program.

Management of Providence Water's Service Application and Main Extension Program.

Management of Providence Water's Cross Connection Program.

b. 1st Floor Customer Services is where all the management and union personnel in the Customer Service Department are located. Daily activities include but are not limited to the following.

   All large and small meter related services which includes AMR (processing, scheduling, installing, reading, leak detection, testing and data entry).

   All billing related activities (customer contact, processing, reviewing, producing and data entry).

   All collection related activities (customer contact, processing, reviewing, terminate, restore and conduct a lien sale).

   Provide organizational support to other departments. (Safety, T&D, Engineering, Water Quality, and Inventory).

c. 1st Floor T&D is where all the management and union personnel in the Transmission & Distribution (T&D) Department are located. The T&D department conducts the following activities.

   Maintenance of all water distribution mains and appurtenances 12-inches and below.

   Identification of all Providence Water underground assets as required by Digsafe.

   Installation of new services 12-inches or below.