

**Pennichuck Water Works
2020 Refunding Analysis**

LDG-3

Appendix 1 - Attachment A Pro Forma Financial Net Debt Service Cash Flow

1) Taxable Bonds with Level Debt Service

Bond Year								(A)				(B)				(A)-(B)	
Current Annual Debt Service								Total Aggregate				Total Debt Service:				Estimated New	
Ending Dec. 31	2014A	2014B	2015A	2015B	2018A	2018B	Total Debt Service	2020 Refunding	Total Savings:	2020 New Money	AULI	2020 New Money	Total Refunding	Aggregate DS	Cash Flow Savings	Cash Flow Savings	
	Total	Total	Total	Total	Total	Total	Total	2020 Refunding	2020 Refunding	Debt Service (2)	Savings	+ Refunding DS	Savings				
2021	2,789,469	320,150	1,459,238	193,375	204,375	190,000	5,156,606	3,224,420	1,217,661	279,616	32,328	3,504,036	1,249,990	4,186,232	970,374		
2022	2,793,344	320,088	1,462,363	192,500	204,375	200,000	5,172,669	3,219,023	1,229,183	277,418	34,088	3,496,441	1,263,271	4,186,816	985,853		
2023	2,793,969	319,800	1,463,738	191,375	204,375	210,000	5,183,256	3,218,001	1,231,080	280,153	30,412	3,498,154	1,261,492	4,201,917	981,340		
2024	2,786,469	324,175	1,458,488	190,000	204,375	220,000	5,183,506	3,220,999	1,213,957	277,799	31,714	3,498,799	1,245,671	4,215,635	967,871		
2025	2,790,594	323,213	1,461,488	193,250	204,375	230,000	5,202,919	3,222,425	1,222,906	280,311	32,988	3,502,737	1,255,894	4,227,336	975,582		
2026	2,786,094	322,025	1,462,488	191,125	204,375	240,000	5,206,106	3,222,340	1,217,366	277,695	34,219	3,500,035	1,251,585	4,232,216	973,890		
2027	2,787,844	320,613	1,466,363	193,625	204,375	250,000	5,222,819	3,221,234	1,226,598	279,993	35,344	3,501,227	1,261,941	4,240,871	981,948		
2028	2,790,469	323,863	1,458,238	190,750	204,375	260,000	5,227,694	3,218,470	1,220,986	277,151	31,488	3,495,621	1,252,475	4,252,370	975,324		
2029	2,783,969	321,775	1,462,988	192,500	336,000		5,097,231	3,218,951	1,220,505	279,164	32,648	3,498,116	1,253,153	4,123,243	973,989		
2030	2,788,094	324,350	1,460,363	193,750	339,000		5,105,556	3,223,135	1,219,071	276,086	33,692	3,499,221	1,252,763	4,128,880	976,676		
2031	2,787,469	321,588	1,465,238	189,625	336,625		5,100,544	3,221,701	1,220,630	277,553	30,640	3,499,254	1,251,270	4,126,826	973,718		
2032	2,782,969	323,488	1,461,644		338,875		4,906,975	3,219,559	1,025,054	278,487	33,438	3,498,046	1,058,492	4,126,970	780,005		
2033	2,790,169	320,050	1,460,000		335,750		4,905,969	3,220,773	1,029,396	279,249	31,122	3,500,021	1,060,518	4,124,699	781,270		
2034	2,788,869	321,275	1,461,338		337,250		4,908,731	3,220,257	1,029,950	279,837	33,692	3,500,094	1,063,642	4,124,927	783,805		
2035	2,779,269	322,050	1,460,550		338,250		4,900,119	3,218,011	1,021,808	280,253	31,148	3,498,263	1,052,956	4,127,415	772,704		
2036	2,781,169	322,375	1,457,638		338,750		4,899,931	3,218,948	1,019,858	280,495	33,490	3,499,443	1,053,348	4,127,078	772,853		
2037	1,156,859	322,250	444,125		333,875		2,257,109	3,222,896	(1,621,912)	275,651	30,718	3,498,547	(1,591,194)	4,123,954	(1,866,845)		
2038	1,157,519	321,675	445,738		338,500		2,263,431	3,224,768	(1,621,512)	275,721	32,832	3,500,489	(1,588,680)	4,127,832	(1,864,400)		
2039	1,156,734	320,650	441,788		338,344		2,257,516	3,214,737	(1,616,215)	275,617	34,718	3,490,354	(1,581,497)	4,114,630	(1,857,114)		
2040	1,154,506	324,063	442,275		338,569		2,259,413	3,222,630	(1,625,849)	280,254	31,490	3,502,884	(1,594,359)	4,134,025	(1,874,613)		
2041	1,155,731	321,913	442,088		338,369		2,258,100	3,221,293	(1,623,474)	279,467	33,148	3,500,759	(1,590,326)	4,127,892	(1,869,792)		
2042	1,155,306	324,200	441,225		337,744		2,258,475	3,225,563	(1,629,032)	278,336	34,578	3,503,899	(1,594,454)	4,131,265	(1,872,790)		
2043	1,158,128	320,925	444,575		336,694		2,260,322	3,217,272	(1,614,568)	277,023	30,894	3,494,294	(1,583,674)	4,121,019	(1,860,697)		
2044	1,154,197	322,088	442,138		335,047		2,253,469	3,216,418	(1,620,084)	275,526	32,096	3,491,944	(1,587,988)	4,116,982	(1,863,514)		
2045	1,158,409		443,913		337,688		1,940,009	3,222,637	(1,620,315)	278,755	33,070	3,501,392	(1,587,245)	3,806,009	(1,866,000)		
2046			444,788		334,781		779,569	3,220,836	(2,776,048)	276,710		3,497,545	(2,776,048)	3,832,326	(3,052,758)		
2047					336,328		336,328	3,225,924	(3,225,924)	279,390		3,505,313	(3,225,924)	3,841,641	(3,505,313)		
2048					337,219		337,219	3,217,901	(3,217,901)	276,795		3,494,696	(3,217,901)	3,831,914	(3,494,696)		
2049								3,221,675	(3,221,675)	278,926		3,500,601	(3,221,675)	3,500,601	(3,500,601)		
2050								3,221,973	(3,221,973)	275,783		3,497,755	(3,221,973)	3,497,755	(3,497,755)		
2051								3,218,793	(3,218,793)	277,365		3,496,158	(3,218,793)	3,496,158	(3,496,158)		
2052								3,221,954	(3,221,954)	278,581		3,500,534	(3,221,954)	3,500,534	(3,500,534)		
2053								3,221,271	(3,221,271)	279,431		3,500,702	(3,221,271)	3,500,702	(3,500,702)		
2054								3,221,654	(3,221,654)	279,915		3,501,569	(3,221,654)	3,501,569	(3,501,569)		
2055								3,222,920	(3,222,920)	280,033		3,502,952	(3,222,920)	3,502,952	(3,502,952)		

(1) 2020 Refunding Bonds assumed to be dated and delivered on Sept. 1, 2020. Last prior bond interest payment is due on July 1, 2020.
Proposed refinancing assumes that the 2020 Refunding includes accrued interest from Sept. 1, 2020 until April 1, 2021 principal payment.
(2) \$5.5 million Rate Stabilization Fund.

+ 100 basis point increases to the Taxable Bond Refunding Scenarios

Appendix 1 - Attachment A Pro Forma Financial Net Debt Service Cash Flow

1) Taxable Bonds with Level Debt Service

Bond Year	Current Annual Debt Service							(A) Total Aggregate Debt Service	(B)						
	Ending Dec. 31	2014A Total	2014B Total	2015A Total	2015B Total	2018A Total	2018B Total		Total Debt Service: 2020 Refunding	Total Savings: 2020 Refunding	2020 New Money Debt Service (2)	AULI Savings	2020 New Money + Refunding DS	Total Refunding Savings	Estimated New Aggregate DS
2021	2,789,469	320,150	1,459,238	193,375	204,375	190,000	5,156,606	3,947,222	779,505	317,017	28,096	4,264,239	807,601	4,666,022	490,585
2022	2,793,344	320,088	1,462,363	192,500	204,375	200,000	5,172,669	3,923,147	787,802	319,521	26,097	4,242,668	813,899	4,678,291	494,378
2023	2,793,969	319,800	1,463,738	191,375	204,375	210,000	5,183,256	3,913,397	791,323	316,935	28,563	4,230,331	819,886	4,680,305	502,951
2024	2,786,469	324,175	1,458,488	190,000	204,375	220,000	5,183,506	3,907,407	776,084	319,239	25,979	4,226,647	802,062	4,700,683	482,823
2025	2,790,594	323,213	1,461,488	193,250	204,375	230,000	5,202,919	3,904,496	782,266	321,309	28,400	4,225,805	810,666	4,713,561	489,357
2026	2,786,094	322,025	1,462,488	191,125	204,375	240,000	5,206,106	3,894,718	779,315	318,235	25,816	4,212,954	805,131	4,719,211	486,895
2027	2,787,844	320,613	1,466,363	193,625	204,375	250,000	5,222,819	3,888,539	786,515	320,054	28,166	4,208,592	814,681	4,728,191	494,627
2028	2,790,469	323,863	1,458,238	190,750	204,375	260,000	5,227,694	3,880,249	779,326	316,717	25,510	4,196,966	804,836	4,739,575	488,119
2029	2,783,969	321,775	1,462,988	192,500	336,000	336,000	5,097,231	3,874,722	777,749	318,222	27,845	4,192,944	805,594	4,609,860	487,372
2030	2,788,094	324,350	1,460,363	193,750	339,000	339,000	5,105,556	3,872,340	775,777	319,519	25,109	4,191,859	800,886	4,624,189	481,367
2031	2,787,469	321,588	1,465,238	189,625	336,625	336,625	5,100,544	3,858,891	782,247	320,274	27,703	4,179,165	809,949	4,610,868	489,676
2032	2,782,969	323,488	1,461,644	338,875	338,875	338,875	4,906,975	3,854,129	582,187	320,479	25,615	4,174,608	607,801	4,619,653	287,322
2033	2,790,169	320,050	1,460,000	335,750	335,750	335,750	4,905,969	3,846,916	587,852	320,462	28,413	4,167,377	616,264	4,610,166	295,803
2034	2,788,869	321,275	1,461,338	337,250	337,250	337,250	4,908,731	3,837,252	590,449	320,221	26,097	4,157,473	616,545	4,612,407	296,324
2035	2,779,269	322,050	1,460,550	338,250	338,250	338,250	4,900,119	3,834,913	575,297	319,758	23,781	4,154,670	599,077	4,620,799	279,320
2036	2,781,169	322,375	1,457,638	338,750	338,750	338,750	4,899,931	3,824,788	577,305	319,071	26,351	4,143,859	603,655	4,615,347	284,584
2037	1,156,859	322,250	444,125	333,875	333,875	333,875	2,257,109	3,811,993	(2,054,826)	318,162	28,693	4,130,154	(2,026,133)	4,601,404	(2,344,294)
2038	1,157,519	321,675	445,738	338,500	338,500	338,500	2,263,431	3,811,189	(2,058,854)	317,029	25,921	4,128,218	(2,032,934)	4,613,394	(2,349,963)
2039	1,156,734	320,650	441,788	338,344	338,344	338,344	2,257,516	3,802,155	(2,061,658)	320,562	28,035	4,122,717	(2,033,623)	4,611,701	(2,354,185)
2040	1,154,506	324,063	442,275	338,569	338,569	338,569	2,259,413	3,799,778	(2,068,126)	318,761	25,035	4,118,538	(2,043,091)	4,621,264	(2,361,852)
2041	1,155,731	321,913	442,088	338,369	338,369	338,369	2,258,100	3,787,072	(2,061,486)	316,576	26,921	4,103,648	(2,034,566)	4,609,242	(2,351,142)
2042	1,155,306	324,200	441,225	337,744	337,744	337,744	2,258,475	3,778,838	(2,061,644)	318,887	28,579	4,097,725	(2,033,065)	4,610,427	(2,351,952)
2043	1,158,128	320,925	444,575	336,694	336,694	336,694	2,260,322	3,776,407	(2,060,145)	320,732	25,123	4,097,139	(2,035,023)	4,616,077	(2,355,755)
2044	1,154,197	322,088	442,138	335,047	335,047	335,047	2,253,469	3,769,547	(2,066,758)	317,228	26,553	4,086,775	(2,040,205)	4,610,902	(2,357,433)
2045	1,158,409	443,913	443,913	337,688	337,688	337,688	1,940,009	3,758,255	(2,056,583)	318,374	27,755	4,076,629	(2,028,828)	4,287,211	(2,347,201)
2046		444,788	444,788	334,781	334,781	334,781	779,569	3,688,780	(3,244,194)	319,054		4,007,834	(3,244,194)	4,342,816	(3,563,247)
2047				336,328	336,328	336,328	336,328	3,690,659	(3,690,860)	319,268		4,009,926	(3,690,860)	4,346,456	(4,010,127)
2048				337,219	337,219	337,219	337,219	3,687,178	(3,687,379)	319,016		4,006,194	(3,687,379)	4,343,614	(4,006,395)
2049							3,688,106	3,688,307	(3,688,307)	318,298		4,006,403	(3,688,307)	4,006,604	(4,006,604)
2050							3,688,092	3,688,293	(3,688,293)	317,114		4,005,205	(3,688,293)	4,005,406	(4,005,406)
2051							3,682,020	3,682,221	(3,682,221)	320,347		4,002,367	(3,682,221)	4,002,568	(4,002,568)
2052							3,689,424	3,689,625	(3,689,625)	317,998		4,007,422	(3,689,625)	4,007,623	(4,007,623)
2053							3,689,838	3,690,039	(3,690,039)	320,067		4,009,904	(3,690,039)	4,010,105	(4,010,105)
2054							3,688,145	3,688,346	(3,688,346)	321,436		4,009,581	(3,688,346)	4,009,782	(4,009,782)
2055							3,688,997	3,689,198	(3,689,198)	317,223		4,006,220	(3,689,198)	4,006,421	(4,006,421)

(1) 2020 Refunding Bonds assumed to be dated and delivered on Sept. 1, 2020. Last prior bond interest payment is due on July 1, 2020.
Proposed refinancing assumes that the 2020 Refunding includes accrued interest from Sept. 1, 2020 until April 1, 2021 principal payment.
(2) \$5.5 million Rate Stabilization Fund.



CORPORATE SECRETARY'S CERTIFICATE

PENNICHUCK WATER WORKS, INC.

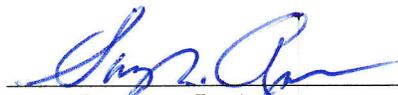
I, Suzanne L. Ansara, do hereby certify that I am the duly elected Corporate Secretary of Pennichuck Water Works, Inc. (the "Company"), a New Hampshire corporation, and that I am authorized to execute and deliver this Certificate on behalf of the Company. In that capacity, I do hereby further certify that:

1. The following resolution was adopted by the Board of Directors of the Company on February 28, 2020; and such resolution has not been altered, amended or repealed, and is in full force and effect, as of the date hereof:

Resolved: that management is hereby authorized to proceed with the following process and approvals required to complete the refinance of the 2014 Series A and 2015 Series A&B bonded debt, the refill of the rate stabilization fund, and the refinance of the AULI Note Payable:

- (1) obtain New Hampshire Business Finance Authority (NHBFA) approval to issue taxable or tax-exempt bonds sufficient to fund the debt restructuring;
- (2) file a financing petition with the New Hampshire Public Utilities Commission to seek approval to complete the financing activity;
- (3) file a shareholder approval request with the City of Nashua to seek approval to complete the financing activity;
- (4) file a joint approval request with the NHBFA to the State of New Hampshire Governor and Council, approving the funding of the taxable or tax-exempt bonds through the NHBFA; and
- (5) complete the entire bond issuance and documentation process with the investment bankers and respective counsels.

In Witness Whereof, I have hereunto set my hand this 21st day of April, 2020.


Suzanne L. Ansara
Corporate Secretary



PENNICHUCK CORPORATION

CORPORATE SECRETARY'S CERTIFICATE

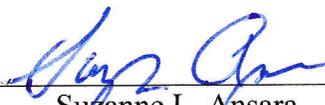
I, Suzanne L. Ansara, do hereby certify that I am the duly elected Corporate Secretary of Pennichuck Corporation (the "Company"), a New Hampshire corporation, and that I am authorized to execute and deliver this Certificate on behalf of the Company. In that capacity, I do hereby further certify that:

1. The following is a true and correct excerpt from the minutes of the Pennichuck Corporation Board of Directors meeting held on February 28, 2020:

"Pennichuck Water Works, Inc. - Debt Restructuring Plan

L. Goodhue reported that management is recommending that Pennichuck Water Works issue taxable or tax-exempt bonds of up to \$75 million to fund: (a) the refinancing of the currently outstanding balances of the 2014 Series A and 2015 Series A&B bonds; (b) the refinancing of the \$2.4 million note payable to American United Life Insurance which has a current interest rate of 7.4%; (c) the financing of \$5.5 million to refill the Rate Stabilization Fund; and (d) the cost of issuance for the bonds. This financing would eliminate the current bullet maturity obligation of the AULI note and replace with a lower interest rate; refill the Rate Stabilization Fund to its imprest level; and provide necessary cash flow savings to establish the proposed Material Operating Expense Supplement (MOES) in the current rate case. L. Goodhue answered several questions regarding the debt restructuring plan from the Board members. After discussion, the Board gave their approval to proceed. It was agreed by the Board that this matter will be voted on by the Pennichuck Water Works Board of Directors at their meeting later today."

In Witness Whereof, I have hereunto set my hand this 21st day of April, 2020.



Suzanne L. Ansara
Corporate Secretary

From: James Key-Wallace <jameskw@nhbfa.com>
Sent: Tuesday, June 23, 2020 12:58 PM
To: Goodhue, Larry <larry.goodhue@PENNICHUCK.com>
Subject: [EXTERNAL] Confirmation of BFA Board Approval

Good afternoon Larry,

This email is to confirm that on May 18th, 2020 the BFA board of directors unanimously approved the issuance of up to \$75,000,000 in bonds for Pennichuck. As always, final issuance is contingent on approval by the NH Governor and Council (G&C).

The G&C meeting to provide final approval for this bond issuance is on June 24th, 2020 at 10am, and we anticipate an approval. The G&C has always been supportive of the BFA's bond issuances, especially for Pennichuck.

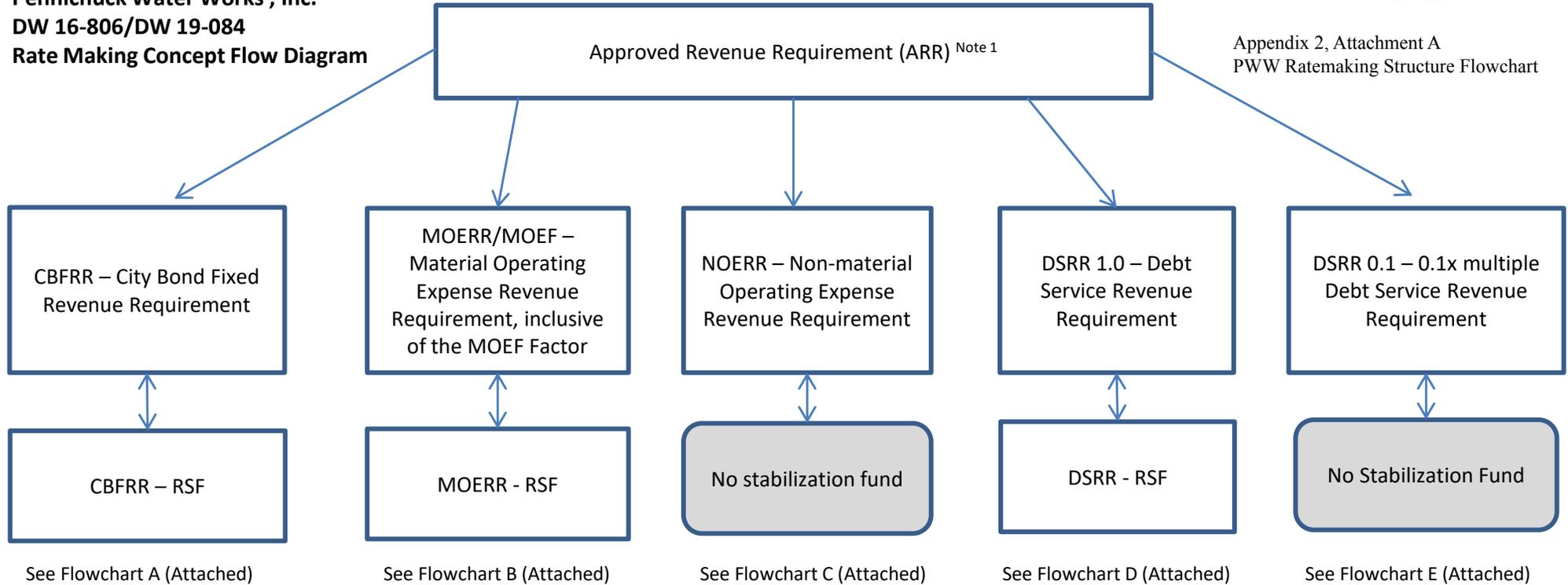
Feel free to reach out if you need any additional information and I'd be happy to provide it.

Regards,

James Key-Wallace
Executive Director
NH Business Finance Authority
2 Pillsbury Street, Suite 201
Concord, NH 03301
603-415-0191
jameskw@nhbfa.com

**Pennichuck Water Works , Inc.
DW 16-806/DW 19-084
Rate Making Concept Flow Diagram**

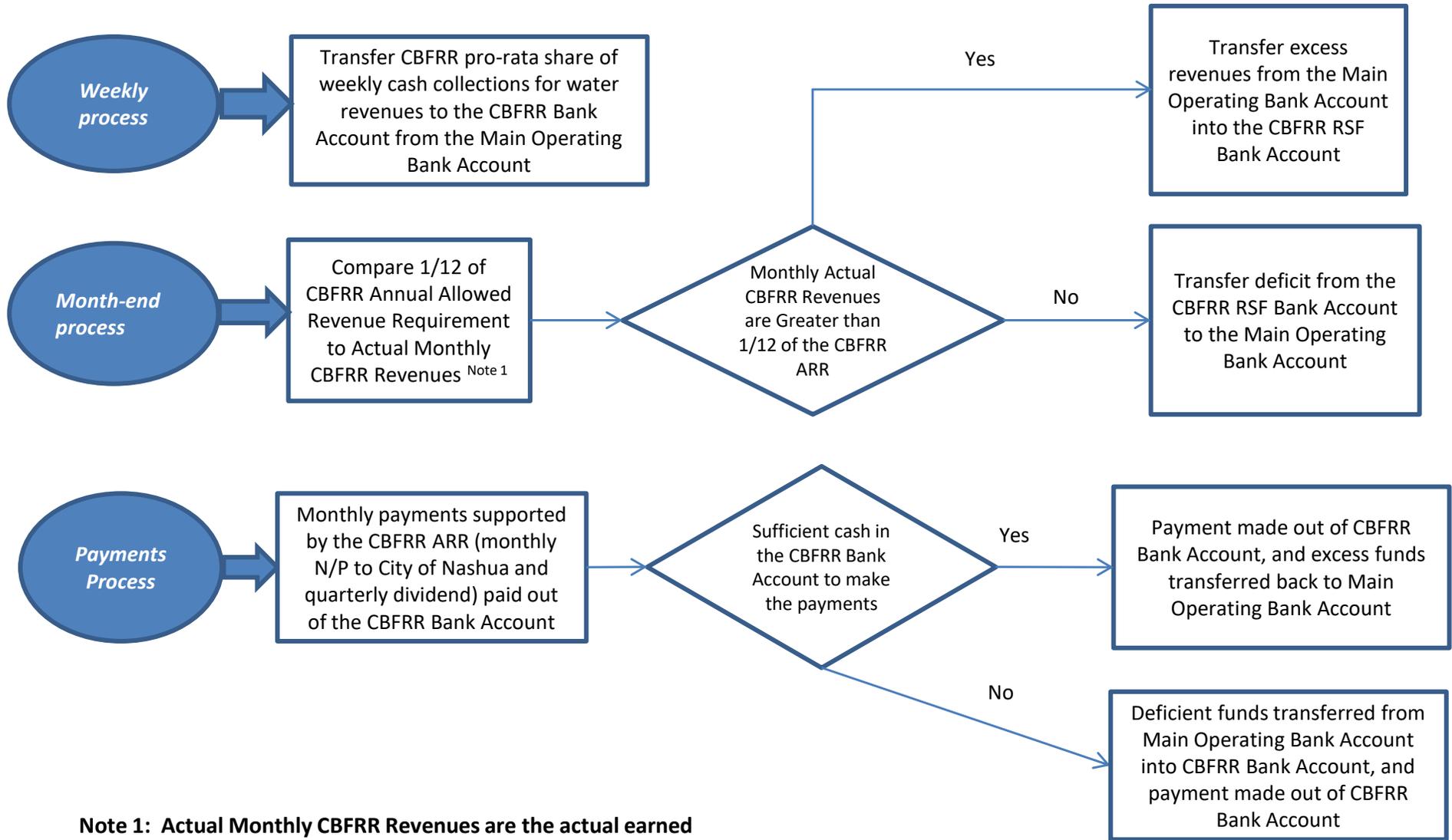
Appendix 2, Attachment A
PWW Ratemaking Structure Flowchart



Note 1 – The Approved Revenue Requirement equals the annual revenue requirement established at the most recent rate case, adjusted annually on or about April 1st (effective date for inclusion/recoupment of the most recently approved annual QCPAC Surcharge), and “trued up” to the actual approved amounts as of the issuance of the QCPAC surcharge increase order. This ARR is divided amongst the component Revenue Requirement items, inclusive of the annual QCPAC increase allocated amounts, into the identified CBFRR, MOERR/MOEF, NOERR, DSRR-1.0 and DSRR 0.1 revenue “buckets.”

**Pennichuck Water Works , Inc. - DW 16-806/DW 19-084
Rate Making Concept Flow Diagram - Flowchart A**

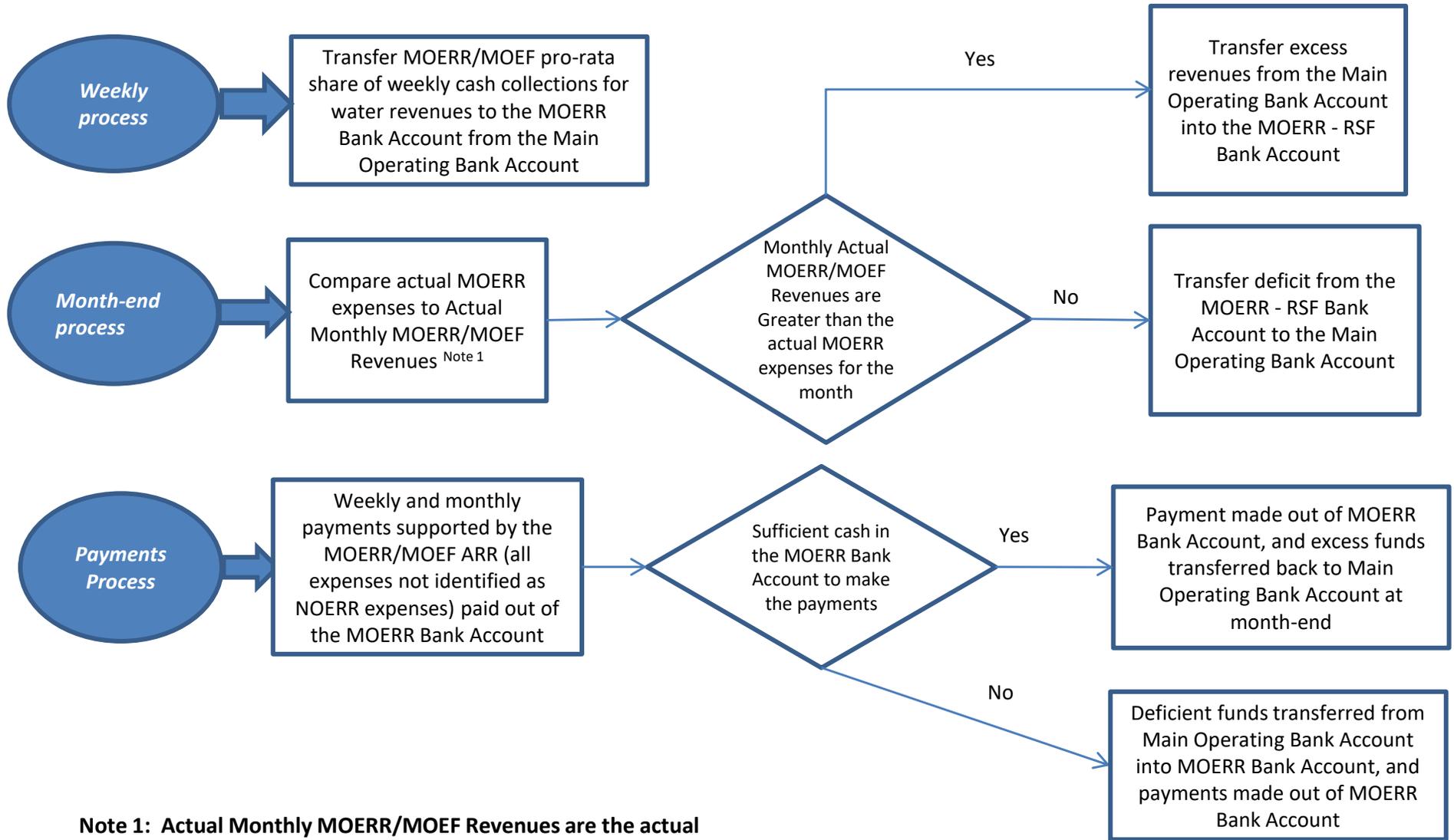
Appendix 2, Attachment A
PWW Ratemaking Structure Flowchart



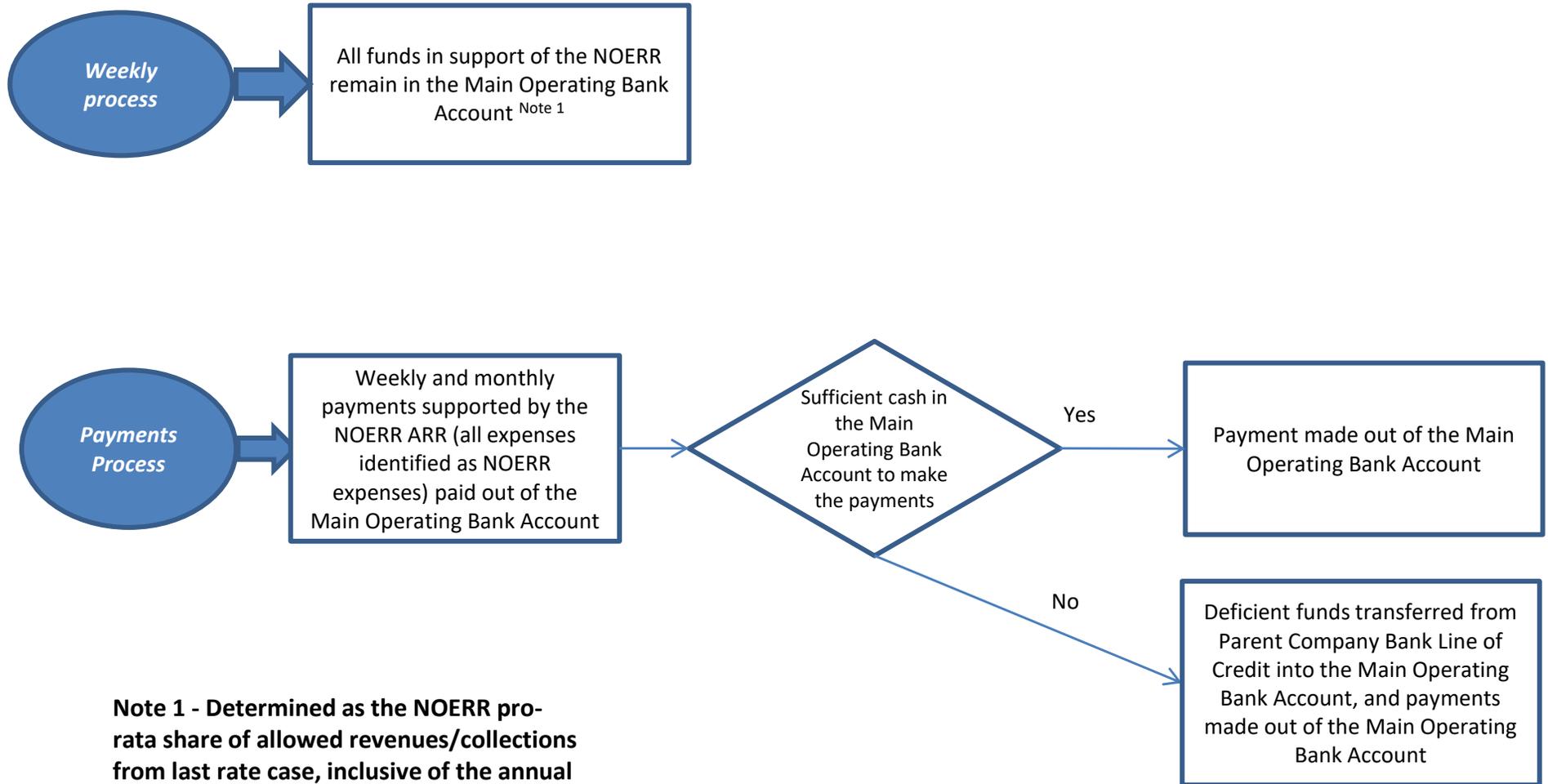
Note 1: Actual Monthly CBFRR Revenues are the actual earned water revenues in the month multiplied times the pro-rata percentage of revenues allocated to the CBFRR, per the last rate case, inclusive of the annual QCPAC increase.

Pennichuck Water Works , Inc. - DW 16-806/DW 19-084
Rate Making Concept Flow Diagram - Flowchart B

Appendix 2, Attachment A
PWW Ratemaking Structure Flowchart



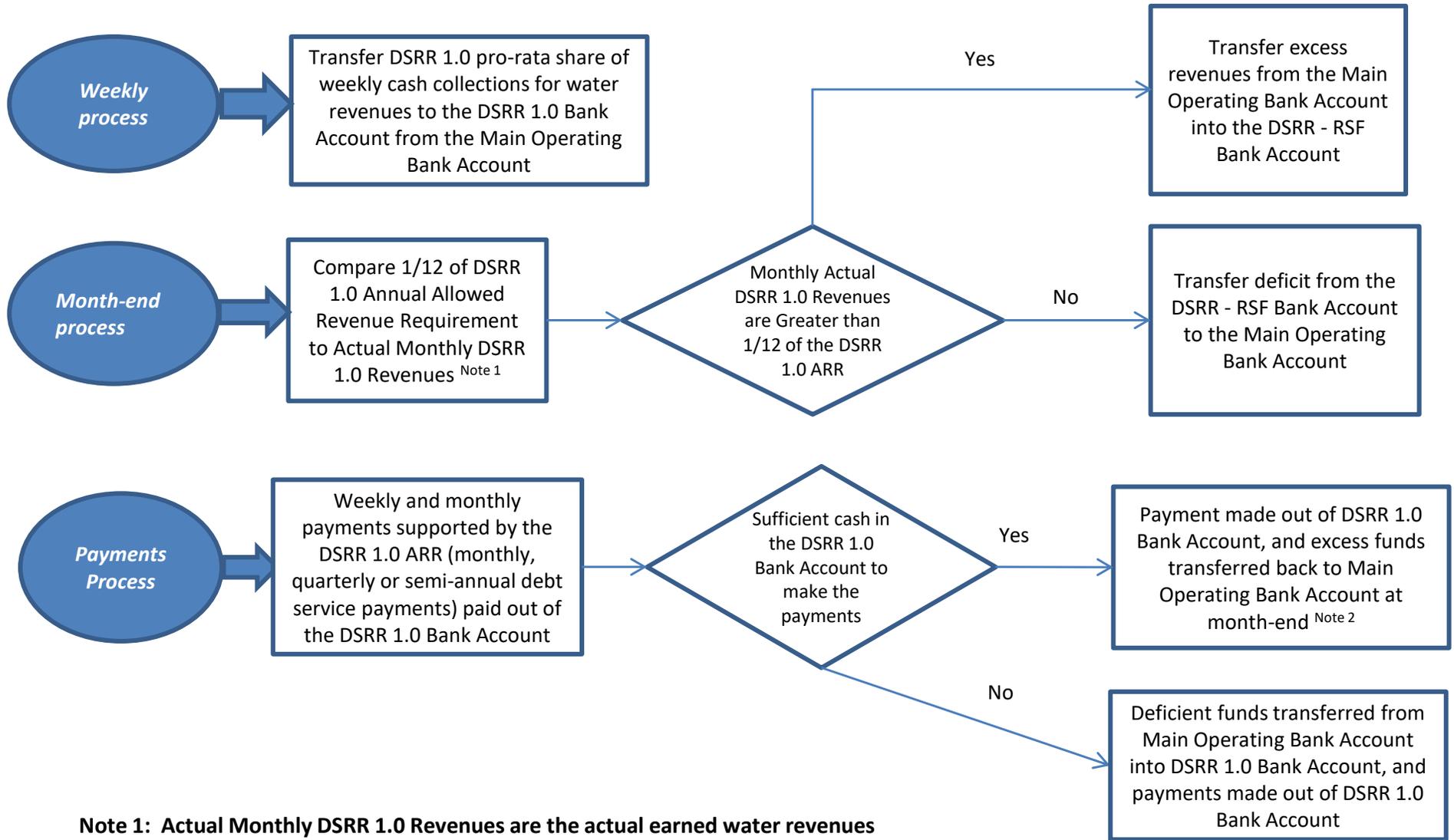
Note 1: Actual Monthly MOERR/MOEF Revenues are the actual earned water revenues in the month multiplied times the pro-rata percentage of revenues allocated to the MOERR/MOEF, per the last rate case, inclusive of the annual QCPAC increase.



Note 1 - Determined as the NOERR pro-rata share of allowed revenues/collections from last rate case, inclusive of the annual QCPAC increase.

**Pennichuck Water Works , Inc. - DW 16-806/DW 19-084
Rate Making Concept Flow Diagram - Flowchart D**

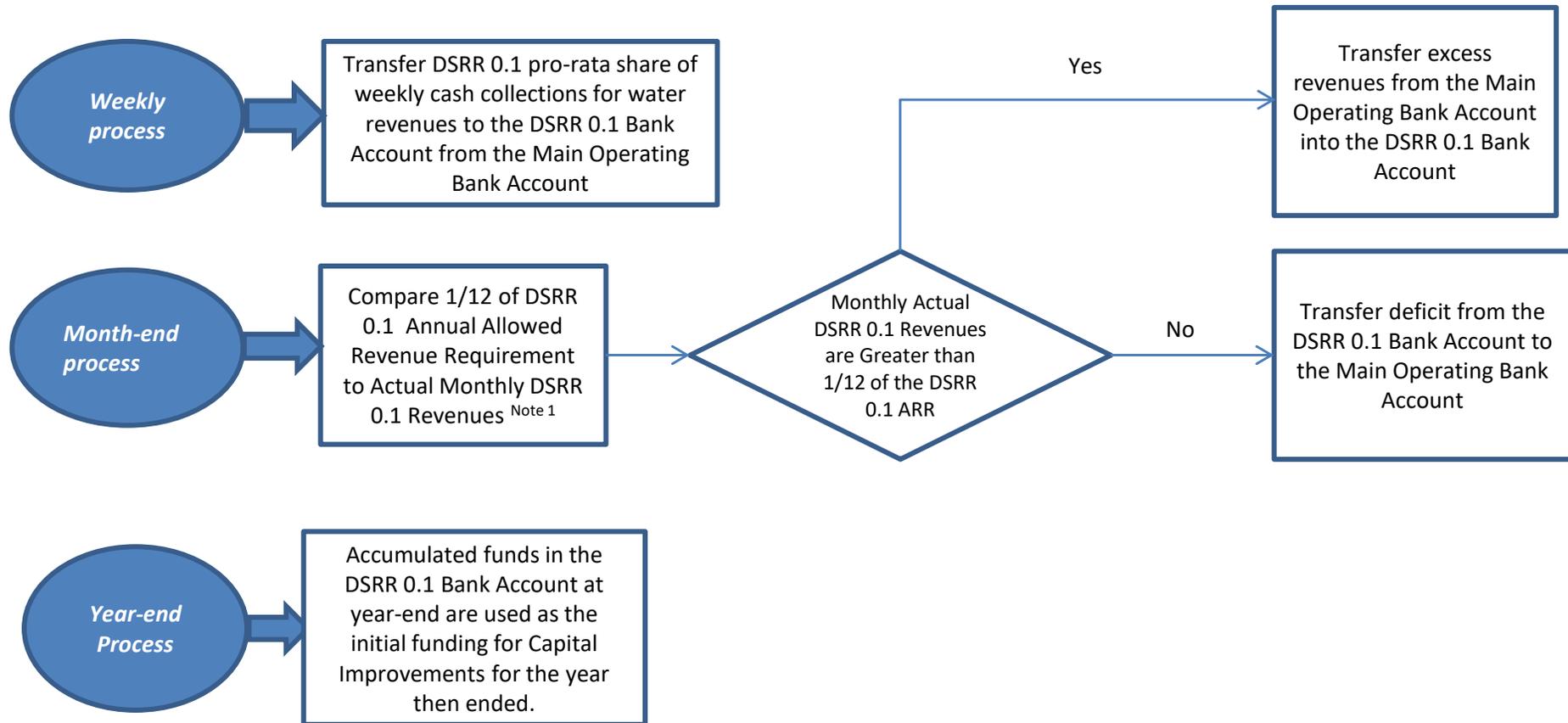
Appendix 2, Attachment A
PWW Ratemaking Structure Flowchart



Note 1: Actual Monthly DSRR 1.0 Revenues are the actual earned water revenues in the month multiplied times the pro-rata percentage of revenues allocated to the DSRR 1.0, per the last rate case, inclusive of the annual QCPAC increase.

Note 2: Adequacy of funds in the DSRR Bank Account each month will be determined as 100% of monthly payment obligations, 33 1/3% of quarterly payment obligations and 1/12 of the annual debt service for semi-annual payment obligations.

**Pennichuck Water Works , Inc. - DW 16-806/DW 19-084
Rate Making Concept Flow Diagram - Flowchart E**



Note 1: Actual Monthly DSRR 0.1 Revenues are the actual earned water revenues in the month multiplied times the pro-rata percentage of revenues allocated to the DSRR 0.1, per the last rate case, inclusive of the annual QCPAC increase.

Pennichuck Water Works , Inc. - DW 16-806/DW 19-084

Definition of Terms

Appendix 2, Attachment A
PWW Ratemaking Structure Flowchart

- **Approved Revenue Requirement:** equals the annual revenue requirement established at the most recent rate case, adjusted annually on or about April 1st and “trued up” to the actual approved amounts as of the issuance of the QCPAC annual surcharge increase order (the QCPAC shall become eligible for annual recoupment from the date for which bonded debt or other financing that is incurred with respect to the specific eligible projects is issued or consummated, anticipated to be approximately April 1 of each year). This ARR is divided amongst the component Revenue Requirement items, inclusive of the annual QCPAC surcharge increase allocated amounts, into the identified CBFRR, OERR and DSRR revenue “buckets.”
- **Actual Revenues and Actual Expenses:** In all cases with regards to the flowcharts and processes included on Flowcharts A thru E, Actual Revenues and Actual Expenses are on a GAAP basis, inclusive of accrued amounts.
- **CBFRR RSF:** Same as the former RSF as authorized and described in DW 11-026 and reaffirmed in DW 16-806. Allows for the maintenance of stable water utility rates, while providing a mechanism to ensure the Company’s ability to meet its obligations under the promissory note to the City.
- **MOERR RSF:** Funds used to provide cash flow for allowable expenses, defined as PWW’s Operation and Maintenance Expenses (less those in the NOERR), Property Tax Expense, Payroll Tax Expense, and Amortization Expense.
- **MOEF and MOERR/MOEF:** The MOEF is a factor embedded in the calculation of overall allowed revenues allocated to the MOERR portion of those revenues from the Company’s last rate case. This factor is included in the pro-rata allocation of allowed revenues by multiplying the allowed MOERR portion of the OERR revenues by a factor inclusive of the allowed MOEF. It calculated as:
 - $(\text{MOERR allowed revenues}) \times (1 + \text{MOEF}) = \text{MOERR/MOEF allowed revenues.}$
- **NOERR:** Funds expenses that are potentially imprudent expenditures within the context of a rate proceeding. The categorization of an expense item in the NOERR does not preclude PWW’s recovery of such in rates, as long as that expense item is found to be prudently incurred within the pro forma test year. They may not, however, be included in any use of or replenishment from the MOERR RSF.
- **DSRR-1.0 RSF:** used to support the payments related to the principal and interest obligations for PWW, in existence as of the most recent rate case test year. The establishment of this DSRR-1.0 RSF bucket is to allow the collection of revenues sufficient to pay the principal and interest of PWW’s debt and to satisfy the debt service coverage ratio requirements of PWW’s bond financings and Pennichuck Corporation’s covenant requirements of its line of credit, which is used by Pennichuck Corporation and its subsidiaries as a “back stop” to short-term working capital needs.
- **DSRR-0.1:** The intended purposes for the establishment of the DSRR-0.1 are 1) to allow for the collection of revenues sufficient to satisfy the debt service coverage ratio requirements of PWW’s bond financings and Pennichuck Corporation’s covenant requirements for its line of credit, which is used by Pennichuck Corporation and its subsidiaries as a “back stop” for short-term capital needs; and 2) to allow PWW to collect revenues over-and-above its actual debt service in order to comply with cash flow coverage requirements which are typical for such financings as well as to meet obligations on new debt incurred between rate filings as supported by the annual QCPAC surcharge.

Rate Stabilization Fund Calculations
Revised 1/24/2020 per Staff Tech DR2's
Resubmitted 2/7/2020 per Staff 3-1
Adjusted per Staff 4-1 on 2/21/2020
Revised 4/1/2020 to reflect Staff DR 4's
Revised 4/9/2020 to reflect Staff Tech 4's
3.67 TIC
Revised 5/20/2020 to reflect tech session and correction of
NOERR expenses; Rev 5/26/20

DLW Exhibit 1

Appendix 2 - Attachment B MOEF Financial Model

PWV Proforma 5 Year Average 2018 Test Year with MOES							Total RSF Funds Required	Available RSF funds on 12/31/2019	
		CBFRR	Material Operating Expense Revenue Requirement (MOERR)	Operating Expense Revenue Requirement (NOERR) ^f	1.0 Debt Service Revenue Requirement (1.0 DSRR) ¹	0.1 Debt Service Revenue Requirement (0.1 DSRR)			
Pro forma Revenue Requirement ¹ -			\$ 35,661,132	9.50% applies against Material Operating Expenses					
Operating Expense Contingency -									
Revenue Requirement ² -		\$ 7,729,032	\$ 20,741,272	\$ 555,346	\$ 6,032,257	\$ 603,226	\$	(1,613,608)	
Percentage of Revenues -		21.67%	58.16%	1.56%	16.92%	1.69%			
1	Year coverage -	\$ 148,602	\$ 1,016,147	\$	\$ 115,979				
2	Year coverage -	\$ 297,204	\$ 2,669,995	\$	\$ 231,958				
3	Years coverage -	\$ 445,806	\$ 4,980,674	\$	\$ 347,937				
Annual Operating Expense increases @ 3.00%									
Calculated Rate Stabilization Fund by Revenue Category for 1 year ^{3,4,9}		\$ 160,000	\$ 1,120,000	\$	\$ 130,000	\$	1,410,000		
Calculated Rate Stabilization Fund by Revenue Category for 2 year ^{3,4,9}		\$ 330,000	\$ 2,940,000	\$	\$ 260,000	\$	3,530,000		
Calculated Rate Stabilization Fund by Revenue Category for 3 years ^{3,4,9}		\$ 490,000	\$ 5,480,000	No Stabilization Fund	\$ 380,000	No Stabilization Fund	6,350,000		
Requested Rate Stabilization Fund levels ⁵ -		\$ 680,000	\$ 2,850,000	\$	\$ 390,000	\$	3,920,000	5,533,608 Required Catch up	
Based on largest variance from five year ave of -		3.40%						As a "one time" borrowed amount to refill the RSF funds awaiting implementation of the MOES	

Revenue Type	2013 PWV Billed Revenue	2014 PWV Billed Revenue	2015 PWV Billed Revenue	2017 PWV Billed Revenue	2018 PWV Billed Revenue
Total Volumetric Charges, includes Unbilled water sales, Unbilled/and Billed Recoupment and abatements	\$ 15,093,982	\$ 15,340,557	\$ 16,357,423	\$ 15,457,194	\$ 17,516,995
Total Meter Charge (fixed) includes fixed portion of special contracts	\$ 8,162,854	\$ 8,243,956	\$ 8,429,316	\$ 8,766,739	\$ 9,437,913
WICA/QCPAC revenues	\$ -	\$ 109,727	\$ 367,548	\$ 705,661	\$ 362,159
Total Private Fire Protection Charges (fixed)	\$ 1,027,245	\$ 1,039,276	\$ 1,058,281	\$ 1,089,205	\$ 1,210,960
Total Municipal Fire Protection Charges (fixed)	\$ 3,047,037	\$ 3,060,346	\$ 3,075,100	\$ 3,116,640	\$ 3,442,774
Total Billed Revenue	\$ 27,331,118	\$ 27,793,862	\$ 29,287,668	\$ 29,133,439	\$ 31,970,800
% of Revenues that are variable	55.2%	55.4%	56.6%	54.4%	55.4%
% of Revenues that are fixed	44.8%	44.6%	43.4%	45.6%	44.6%

Calculation of MOER RSF		
	Increases Over 2019	Revenue Shortfall
2020 -	\$ 619,269	\$ 396,878
2021 -	\$ 1,257,026	\$ 396,821
2022 -	\$ 1,913,917	\$ 396,762
Totals -	\$ 3,790,212	\$ 1,190,462
	\$ 4,980,674	

Maximum percentage of revenues that were variable during the previous 5 years - 56.56%

Expense Type	2013 PWV Actual Variable Expenses	2014 PWV Actual Variable Expenses	2015 PWV Actual Variable Expenses	2017 PWV Actual Variable Expenses	2018 PWV Actual Variable Expenses
Purchased Water	\$ 415,331	\$ 393,060	\$ 462,177	\$ 437,664	\$ 472,407
Electric	\$ 873,619	\$ 898,211	\$ 1,164,461	\$ 1,053,878	\$ 1,152,305
Chemicals	\$ 659,914	\$ 696,650	\$ 668,919	\$ 765,438	\$ 908,982
Sludge Disposal	\$ 246,601	\$ 303,057	\$ 316,654	\$ 385,873	\$ 378,140
Total Variable Costs	\$ 2,195,465	\$ 2,290,978	\$ 2,612,211	\$ 2,642,853	\$ 2,911,834
Variable Expenses as a Percent of Total Revenues	8.0%	8.2%	8.9%	9.1%	9.1%

	2013 PWV Actual Operating Expenses ¹⁰	2014 PWV Actual Operating Expenses ¹⁰	2015 PWV Actual Operating Expenses ¹⁰	2017 PWV Actual Operating Expenses ¹⁰	2018 PWV Actual Operating Expenses ¹⁰
Production Expenses	\$ 3,866,154	\$ 4,099,167	\$ 4,515,441	\$ 4,571,844	\$ 5,074,509
T&D expenses	\$ 1,547,952	\$ 1,868,516	\$ 1,858,477	\$ 2,168,076	\$ 2,848,339
Engineering Expenses	\$ 833,292	\$ 964,081	\$ 1,065,646	\$ 1,169,359	\$ 1,287,747
Customer Acct & Collection Expenses	\$ 436,393	\$ 442,289	\$ 463,937	\$ 447,889	\$ 489,789
Admin and General Expenses	\$ 6,677,427	\$ 6,000,562	\$ 6,364,880	\$ 7,303,584	\$ 7,580,371
Inter Div Mgt Fee Expense	\$ (2,254,305)	\$ (2,270,498)	\$ (2,378,932)	\$ (3,321,124)	\$ (3,288,063)
Amortization Expense ¹¹	\$ 48,059	\$ 140,811	\$ 167,776	\$ 145,441	\$ 134,666
Property Tax Expense	\$ 4,123,297	\$ 4,468,936	\$ 4,617,857	\$ 5,210,697	\$ 4,438,775
Payroll Tax Expense	\$	\$	\$	\$	\$ 698,087
Cash Tax Expense ¹²	\$ 99,000	\$ 100,000	\$ 101,000	\$ 103,000	\$ 103,249
Total Material Operating Expense	\$ 15,377,269	\$ 15,813,864	\$ 16,776,082	\$ 17,798,766	\$ 19,367,469
Percent increase in operating expenses over the prior year		2.84%	6.08%	3.05%	8.81%
Total increase over 5 years -					25.95%
Ave. increase per year (inclusive of compounding) -					4.72%

	2013 Actual CCF's sold by PWV	2014 Actual CCF's sold by PWV	2015 Actual CCF's sold by PWV	2017 Actual CCF's sold by PWV	2018 Actual CCF's sold by PWV
Annual Metered Sales (CCF)	4,948,775	4,988,184	5,349,169	5,056,592	5,242,264
Percentage Variance between Current and High Consumption Year	-8.09%	-7.24%	0.00%	-5.79%	-2.04%

Appendix 2 - Attachment B MOEF Financial Model

Average Consumption (CCF) over the past five years (replacing 2016 with 2013)	5,116,997				
Variance between current and 5 Yr Ave Consumption	-3.40%	-2.58%	4.34%	-1.19%	2.39%

Largest percentage reduction in volumetric sales at PWW of 3.40% over the past five years from the five year average of volumetric sales excluding 2016, including 2013

Results in a Revenue loss of based on 5 year average sales less 2016, including 2013 \$ 636,621 based on current permanent rate of \$ 3.66 per CCF

Results in an Operating Expense reduction of \$ 98,981 based on 2018 variable operating expenses

Results in an Operating Income reduction of \$ 537,640

Notes:

- Based on Debt Service Multiplier of 1.10 per Sch A of 1604.06 schedules
- Revenue requirements per Sch A Perm-Modified of 1604.06 schedules
- Requested Rate Stabilization fund for Operating Expense and P & I Coverage each have a contingency of 10% safety factor
- PWW share of the \$5,000,000 RSF for distribution to the RSF, MOERSF and the P&IRSF is 78.33% based on % of PWW revenues (2012 Case) to % of all three regulated utilities revenues (2012 Cases) or \$ 3,920,000
- Calculation of RSF Percentage based on Revenue requirements from DW13-126, 13-128 and 13-130

PWW Revenue Requirement -	\$ 27,689,214	per DW13-130 Settlement Agreement
PEU Revenue Requirement -	\$ 6,913,261	per DW13-126 Settlement Agreement
PAC Revenue Requirement -	\$ 745,186	per DW13-128 Settlement Agreement
Total Utility Revenue Requirement -	\$ 35,347,661	

- For Calculation of Operating Expense Requirement see Exhibit 1.1
- Inclusive of pro forma to Hudson and Pennichuck East Usage due to the PWW-PEU interconnect - See 1604.06 Schedule 1C
- Request rate stabilization fund levels based on multiple years of coverage for the MOERR and 1.0 DSRF RSF, and to re-establish all RSF funds to their impest levels as determined and approved under DW 16-806.
- WICA/QCPAC revenues are divided between variable and fixed revenues based on the ratio between those revenues without the WICA/QCPAC Revenues per year as follows

Year	Fixed	Variable
2013	44.8%	55.2%
2014	44.6%	55.4%
2015	43.4%	56.6%
2017	45.6%	54.4%
2018	44.6%	55.4%

- Actual year auditted expenses, including non material operating expenses
- Amortization expense for 2013, 2014, 2015 and 2017 as provided by NHPUC Staff
- Cash tax expenses is estimated for 2013, 2014, 2015 and 2017

MOERR RSF Balance Analysis - Increased operating expenses only

Auditted	12/31/2017 MOERR RSF Balance	\$ 2,620,152	
Auditted	2018 MOERR Revenues	\$ 16,699,145	
Auditted	2018 MOERR Expenses	\$ 18,759,594	
Auditted	12/31/2018 MOERR RSF Balance	\$ 559,703	
Based on unauditted PWW 2019 Year End Revenues	2019 MOERR Revenues	\$ 16,360,684	
Based on unauditted PWW 2019 Year End Expenses	2019 MOERR Expenses	\$ 20,293,262	
Based on unauditted PWW 2019 Year End Revenues and Expenses	12/31/2019 MOERR RSF Balance	\$ (3,372,875)	
Amount Subject to Current Rate Case Order	Replenish MOERR RSF	\$ 2,850,000	to desired value
Based on current Rate Case filing schedules with full year of approved MOERR per Cell F13 above per 1604.04 Sch A. This \$\$ amount is less the MOERR and multiplied by the proposed MOERR Contingency Factor plus 75% of property taxes associated with taxable 2019 Capex	2020 MOERR Revenues	\$ 21,050,287	Assumes full year at requested 19-084 rates plus recoupment to 9 months of 2019 QCPAC @ 3.83%
MOES requested in DW19-084 plus operating expense increase of 3% in 2020 plus increase in 2020 property taxes associated with 2019 QCP's	2020 Material Operating Expenses	\$ 20,494,081	
Based on current Rate Case filing MOERR per Cell F13 above. This \$\$ amount plus 25% of property taxes associated with taxable 2019 assets plus 75% of property taxes associated with taxable 2019 and 2020 Capex	12/31/2020 MOERR RSF Balance	\$ 3,406,206	
MOES requested in DW19-084 plus operating expense increases of 3% per year for 2020 and 2021 plus property taxes on 2019 and 2020 QCP's	2021 MOERR Revenues	\$ 21,332,446	Assumes 3 months of 2019 QCPAC plus 9 months of 2020 QCPAC @ 6.46%
	2021 Material Operating Expenses	\$ 21,335,416	
Based on current Rate Case filing MOERR per Cell F13 above. This \$\$ amount plus 25% of property taxes associated with taxable 2019 and 2020 assets plus 75% of property taxes associated with taxable 2019, 2020 and 2021 Capex	12/31/2021 MOERR RSF Balance	\$ 3,403,236	
MOES requested in DW19-084 plus operating expense increases of 3% per year for 2020, 2021 and 2022 plus property taxes on 2019, 2020 and 2021 QCP's	2022 MOERR Revenues	\$ 21,602,875	Assumes 3 months of 2020 QCPAC plus 9 months of 2021 QCPAC @ 10.13%
	2022 Material Operating Expenses	\$ 22,236,898	
Based on 2022 MOE times allowed MOES factor plus 9 months of 2022 property taxes related 2021 QCP's	12/31/2022 MOERR RSF Balance	\$ 2,769,212	
MOES requested in DW22-xx plus operating expense increase of 3% in 2023 plus increase in 2023 property taxes associated with 2022 QCP's	2023 MOERR Revenues	\$ 24,598,183	Assumes full year at requested 22-xxx rates plus recoupment to 9 months of 2022 QCPAC 3%
	2023 Material Operating Expenses	\$ 23,235,712	
	12/31/2023 MOERR RSF Balance	\$ 4,131,684	

Appendix 2 - Attachment B MOEF Financial Model

Pennichuck Water Works, Inc.
Accounts Excluded From MOERR
DW 19-084
Revised per Staff DR 2-37; Rev 5/26/20

(1)

														Test Year	
														<u>2018 Totals</u>	
921002	SENIOR MANAGEMENT VEHICLES	165.33	-	154.01	199.91	1,462.15	563.18	136.13	202.31	-	259.43	231.32	-	3,373.77	3,373.77
921003	SENIOR MGMT - FUEL PURCHASED	268.27	290.78	581.48	292.31	-	29.40	460.43	518.38	478.78	401.56	412.62	352.66	4,086.67	4,086.67
921004	SENIOR MGMT-VEH REGISTRATION	-	-	-	-	-	-	-	-	990.60	-	-	-	990.60	990.60
923000	OUTSIDE SERVICES	26,089.44	52,203.05	18,573.97	35,287.99	39,854.29	44,858.22	23,959.26	20,603.55	22,444.81	47,134.61	24,067.78	30,282.72	385,359.69	385,359.69
926001	OFFICER'S LIFE INSURANCE	386.19	386.19	386.19	386.19	386.19	386.19	386.19	386.19	2,055.19	386.19	386.19	386.19	6,303.28	6,303.28
926500	MISC EMPLOYEE BENEFITS	4,364.64	1,732.33	1,830.57	1,310.04	365.44	2,627.19	720.54	(7,570.39)	1,452.24	1,883.76	2,924.33	(2,881.77)	8,758.92	8,758.92
926501	MISC EMPLOYEE BENEFITS-WELLNESS	-	-	630.70	(1,105.00)	6,715.00	(1,056.52)	(282.08)	(2,770.73)	853.41	(1,109.16)	10.00	1,485.76	3,371.38	3,371.38
926502	MISC EMPLOYEE BENEFITS-ACTIVITIES	-	-	-	-	-	-	-	948.43	354.49	3,102.63	2,500.00	4,768.88	11,674.43	11,674.43
926505	EMPLOYEE RELATIONS	-	-	-	-	-	-	-	-	-	-	-	-	-	-
926600	TUITION REIMBURSEMENTS	6,510.00	-	2,972.84	-	4,088.37	976.85	3,801.00	-	99.70	5,642.87	1,476.90	6,677.77	32,246.30	32,246.30
926610	TRAINING EDUCATIONAL SEMINARS	1,180.00	1,305.00	-	4,016.34	708.00	2,754.50	2,383.98	280.00	11,188.41	19,877.43	606.45	6,667.33	50,967.44	50,967.44
930100	MEETINGS & CONVENTIONS	915.00	5,299.70	5,343.92	5,644.97	526.53	273.33	908.96	33.33	13,381.78	659.00	1,496.66	841.61	35,324.79	35,324.79
930101	MEMBERSHIPS	3,833.91	3,698.91	139.98	4,262.29	3,829.66	3,857.62	2,463.42	3,159.92	2,524.71	2,042.72	3,308.76	2,467.63	35,589.53	35,589.53
930200	PUBLIC RELATIONS	-	429.65	913.96	2,681.64	5,989.22	13,011.91	887.53	535.24	-	443.57	372.60	359.64	25,624.96	25,624.96
930300	MEALS	390.09	610.33	398.83	282.21	411.20	147.01	291.72	396.51	122.94	742.99	382.58	26.93	4,203.34	4,203.34
930410	CHARITABLE CONTRIBUTIONS	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total of Non RSF backed O&M Expenses -														607,875.10	
Adjustment to NOERR expenses per Staff DR's 2-12, 2-30 and 3-5 -														52,529.00	
Proforma 2018 NOERR expenses -														555,346.10	

Rate Stabilization Fund Calculations
Revised 1/24/2020 per Staff Tech DR2's
Resubmitted 2/7/2020 per Staff 3-1
Adjusted per Staff 4-1 on 2/21/2020
Revised 4/1/2020 to reflect Staff DR 4's
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4.67 TIC
Revised 5/20/2020 to reflect tech session and correction of
NOERR expenses; Rev 5/27/20

DLW Exhibit 1

Appendix 2 - Attachment B MOEF Financial Model

PWV Proforma 5 Year Average 2018 Test Year with MOES						
Pro forma Revenue Requirement ¹ -		\$ 35,839,462				
Operating Expense Contingency -		7.66% applies against Material Operating Expenses				
	CBFRR	Material Operating Expense Revenue Requirement (MOERR)	Operating Expense Revenue Requirement (NOERR) ⁶	1.0 Debt Service Revenue Requirement (1.0 DSRR) ¹	0.1 Debt Service Revenue Requirement (0.1 DSRR)	
Revenue Requirement ² -	\$ 7,729,032	\$ 20,391,834	\$ 555,346	\$ 6,512,046	\$ 651,205	
Percentage of Revenues -	21.57%	56.90%	1.55%	18.17%	1.82%	
1 Year coverage -	\$ 148,602	\$ 998,945	\$ -	\$ 125,204	\$ -	
2 Year coverage -	\$ 297,204	\$ 2,634,794	\$ -	\$ 250,407	\$ -	
3 Year coverage -	\$ 445,806	\$ 4,896,352	\$ -	\$ 375,611	\$ -	
Annual Operating Expense increases @ 3.00%						
Calculated Rate Stabilization Fund by Revenue Category for 1 year ^{3,4,9}	\$ 160,000	\$ 1,100,000	\$ -	\$ 140,000	\$ -	\$ 1,400,000
Calculated Rate Stabilization Fund by Revenue Category for 2 year ^{3,4,9}	\$ 330,000	\$ 2,890,000	\$ -	\$ 280,000	\$ -	\$ 3,500,000
Calculated Rate Stabilization Fund by Revenue Category for 3 year ^{3,4,9}	\$ 490,000	\$ 5,390,000	No Stabilization Fund	\$ 410,000	No Stabilization Fund	\$ 6,290,000
Requested Rate Stabilization Fund levels ⁵ -	\$ 680,000	\$ 2,850,000	\$ -	\$ 390,000	\$ -	\$ 3,920,000
Based on largest variance from five year ave of -	3.40%					

Total RSF Funds Required	Available RSF funds on 12/31/2019
\$ -	\$ (964,545)
\$ 3,920,000	\$ 4,884,545

Required Catch up
As a "one time" borrowed amount
to refill the RSF funds awaiting implementation of the MOES

Revenue Type	2013 PWV Billed Revenue	2014 PWV Billed Revenue	2015 PWV Billed Revenue	2017 PWV Billed Revenue	2018 PWV Billed Revenue
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% of Revenues that are fixed	44.8%	44.6%	43.4%	45.6%	44.6%

Calculation of MOER RSF		
	Increases Over 2019	Revenue Shortfall
2020 -	\$ 608,786	\$ 390,160
2021 -	\$ 1,235,746	\$ 390,103
2022 -	\$ 1,881,515	\$ 390,044
Totals -	\$ 3,726,046	\$ 1,170,306
	\$ 4,884,545	\$ 4,884,545

Maximum percentage of revenues that were variable during the previous 5 years - 56.56%

Expense Type	2013 PWV Actual Variable Expenses	2014 PWV Actual Variable Expenses	2015 PWV Actual Variable Expenses	2017 PWV Actual Variable Expenses	2018 PWV Actual Variable Expenses
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Total Variable Costs	\$ 2,195,465	\$ 2,290,978	\$ 2,612,211	\$ 2,642,853	\$ 2,911,834
Variable Expenses as a Percent of Total Revenues	8.0%	8.2%	8.9%	9.1%	9.1%

	2013 PWV Actual Operating Expenses ¹⁰	2014 PWV Actual Operating Expenses ¹⁰	2015 PWV Actual Operating Expenses ¹⁰	2017 PWV Actual Operating Expenses ¹⁰	2018 PWV Actual Operating Expenses ¹⁰
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Amortization Expense ¹¹	\$ 48,059	\$ 140,811	\$ 167,776	\$ 145,441	\$ 134,666
Property Tax Expense	\$ 4,123,297	\$ 4,468,936	\$ 4,617,857	\$ 5,210,697	\$ 4,438,775
Payroll Tax Expense	\$ -	\$ -	\$ -	\$ -	\$ 698,087
Cash Tax Expense ¹²	\$ 99,000	\$ 100,000	\$ 101,000	\$ 103,000	\$ 103,249
Total Material Operating Expense	\$ 15,377,269	\$ 15,813,864	\$ 16,776,082	\$ 17,798,766	\$ 19,367,469
Percent increase in operating expenses over the prior year		2.84%	6.08%	3.05%	8.81%
				Total increase over 5 years -	25.95%
				Ave. increase per year (inclusive of compounding) -	4.72%

	2013 Actual CCF's sold by PWV	2014 Actual CCF's sold by PWV	2015 Actual CCF's sold by PWV	2017 Actual CCF's sold by PWV	2018 Actual CCF's sold by PWV
Annual Metered Sales (CCF)	4,948,775	4,988,184	5,349,169	5,056,592	5,242,264
Percentage Variance between Current and High Consumption Year	-8.09%	-7.24%	0.00%	-5.79%	-2.04%

Appendix 2 - Attachment B MOEF Financial Model

Average Consumption (CCF) over the past five years (replacing 2016 with 2013)	5,116,997				
Variance between current and 5 Yr Ave Consumption	-3.40%	-2.58%	4.34%	-1.19%	2.39%

Largest percentage reduction in volumetric sales at	PWW of	3.40%	over the past five years from the five year average of volumetric sales excluding 2016, including 2013
Results in a Revenue loss of based on 5 year average sales less 2016, including 2013	\$ 636,621	based on current permanent rate of	\$ 3.66 per CCF
Results in an Operating Expense reduction of	\$ 98,981	based on 2018 variable operating expenses	
Results in an Operating Income reduction of	\$ 537,640		

Notes:

- Based on Debt Service Multiplier of 1.10 per Sch A of 1604.06 schedules
- Revenue requirements per Sch A Perm-Modified of 1604.06 schedules
- Requested Rate Stabilization fund for Operating Expense and P & I Coverage each have a contingency of 10% safety factor
- PWW share of the \$5,000,000 RSF for distribution to the RSF, MOERSF and the P&IRSF is 78.33% based on % of PWW revenues (2012 Case) to % of all three regulated utilities revenues (2012 Cases) or \$ 3,920,000
- Calculation of RSF Percentage based on Revenue requirements from DW13-126, 13-128 and 13-130

PWW Revenue Requirement -	\$ 27,689,214	per DW13-130 Settlement Agreement
PEU Revenue Requirement -	\$ 6,913,261	per DW13-126 Settlement Agreement
PAC Revenue Requirement -	\$ 745,186	per DW13-128 Settlement Agreement
Total Utility Revenue Requirement -	\$ 35,347,661	

- For Calculation of Operating Expense Requirement see Exhibit 1.1
- Inclusive of pro forma to Hudson and Pennichuck East Usage due to the PWW-PEU interconnect - See 1604.06 Schedule 1C
- Request rate stabilization fund levels based on multiple years of coverage for the MOERR and 1.0 DSRF RSF, and to re-establish all RSF funds to their impest levels as determined and approved under DW 16-806.
- WICA/QCPAC revenues are divided between variable and fixed revenues based on the ratio between those revenues without the WICA/QCPAC Revenues per year as follows

Year	Fixed	Variable
2013	44.8%	55.2%
2014	44.6%	55.4%
2015	43.4%	56.6%
2017	45.6%	54.4%
2018	44.6%	55.4%

- Actual year auditted expenses, including non material operating expenses
- Amortization expense for 2013, 2014, 2015 and 2017 as provided by NHPUC Staff
- Cash tax expenses is estimated for 2013, 2014, 2015 and 2017

MOERR RSF Balance Analysis - Increased operating expenses only

Auditted	12/31/2017 MOERR RSF Balance	\$ 2,620,152	
Auditted	2018 MOERR Revenues	\$ 16,699,145	
Auditted	2018 MOERR Expenses	\$ 18,759,594	
Auditted	12/31/2018 MOERR RSF Balance	\$ 559,703	
Based on unauditted PWW 2019 Year End Revenues	2019 MOERR Revenues	\$ 16,360,684	
Based on unauditted PWW 2019 Year End Expenses	2019 MOERR Expenses	\$ 20,293,262	
Based on unauditted PWW 2019 Year End Revenues and Expenses	12/31/2019 MOERR RSF Balance	\$ (3,372,875)	
Amount Subject to Current Rate Case Order	Replenish MOERR RSF	\$ 2,850,000	to desired value
Based on current Rate Case filing schedules with full year of approved MOERR per Cell F13 above per 1604.04 Sch A. This \$\$ amount is less the MOERR and multiplied by the proposed MOERR Contingency Factor plus 75% of property taxes associated with taxable 2019 Capex	2020 MOERR Revenues	\$ 20,700,849	Assumes full year at requested 19-084 rates plus recoupment to 9 months of 2019 QCPAC @ 3.83%
MOES requested in DW19-084 plus operating expense increase of 3% in 2020 plus increase in 2020 property taxes associated with 2019 QCP's	2020 Material Operating Expenses	\$ 20,494,081	
	12/31/2020 MOERR RSF Balance	\$ 3,056,767	
Based on current Rate Case filing MOERR per Cell F13 above. This \$\$ amount plus 25% of property taxes associated with taxable 2019 assets plus 75% of property taxes associated with taxable 2019 and 2020 Capex	2021 MOERR Revenues	\$ 20,983,008	Assumes 3 months of 2019 QCPAC plus 9 months of 2020 QCPAC @ 6.46%
MOES requested in DW19-084 plus operating expense increases of 3% per year for 2020 and 2021 plus property taxes on 2019 and 2020 QCP's	2021 Material Operating Expenses	\$ 21,335,416	
	12/31/2021 MOERR RSF Balance	\$ 2,704,360	
Based on current Rate Case filing MOERR per Cell F13 above. This \$\$ amount plus 25% of property taxes associated with taxable 2019 and 2020 assets plus 75% of property taxes associated with taxable 2019, 2020 and 2021 Capex	2022 MOERR Revenues	\$ 21,253,436	Assumes 3 months of 2020 QCPAC plus 9 months of 2021 QCPAC @ 10.13%
MOES requested in DW19-084 plus operating expense increases of 3% per year for 2020, 2021 and 2022 plus property taxes on 2019, 2020 and 2021 QCP's	2022 Material Operating Expenses	\$ 22,236,898	
	12/31/2022 MOERR RSF Balance	\$ 1,720,898	
Based on 2022 MOE times allowed MOES factor plus 9 months of 2022 property taxes related 2021 QCP's	2023 MOERR Revenues	\$ 24,187,957	Assumes full year at requested 22-xxx rates plus recoupment to 9 months of 2022 QCPAC 3%
MOES requested in DW22-xx plus operating expense increase of 3% in 2023 plus increase in 2023 property taxes associated with 2022 QCP's	2023 Material Operating Expenses	\$ 23,235,712	
	12/31/2023 MOERR RSF Balance	\$ 2,673,144	

Pennichuck Water Works, Inc.
Accounts Excluded From MOERR
DW 19-084
Revised per Staff DR 2-37; Rev 5/27/20

Appendix 2 - Attachment B MOEF Financial Model

(1)

														Test Year	
														<u>2018 Totals</u>	
921002	SENIOR MANAGEMENT VEHICLES	165.33	-	154.01	199.91	1,462.15	563.18	136.13	202.31	-	259.43	231.32	-	3,373.77	3,373.77
921003	SENIOR MGMT - FUEL PURCHASED	268.27	290.78	581.48	292.31	-	29.40	460.43	518.38	478.78	401.56	412.62	352.66	4,086.67	4,086.67
921004	SENIOR MGMT-VEH REGISTRATION	-	-	-	-	-	-	-	-	990.60	-	-	-	990.60	990.60
923000	OUTSIDE SERVICES	26,089.44	52,203.05	18,573.97	35,287.99	39,854.29	44,858.22	23,959.26	20,603.55	22,444.81	47,134.61	24,067.78	30,282.72	385,359.69	385,359.69
926001	OFFICER'S LIFE INSURANCE	386.19	386.19	386.19	386.19	386.19	386.19	386.19	386.19	2,055.19	386.19	386.19	386.19	6,303.28	6,303.28
926500	MISC EMPLOYEE BENEFITS	4,364.64	1,732.33	1,830.57	1,310.04	365.44	2,627.19	720.54	(7,570.39)	1,452.24	1,883.76	2,924.33	(2,881.77)	8,758.92	8,758.92
926501	MISC EMPLOYEE BENEFITS-WELLNESS	-	-	630.70	(1,105.00)	6,715.00	(1,056.52)	(282.08)	(2,770.73)	853.41	(1,109.16)	10.00	1,485.76	3,371.38	3,371.38
926502	MISC EMPLOYEE BENEFITS-ACTIVITIES	-	-	-	-	-	-	-	948.43	354.49	3,102.63	2,500.00	4,768.88	11,674.43	11,674.43
926505	EMPLOYEE RELATIONS	-	-	-	-	-	-	-	-	-	-	-	-	-	-
926600	TUITION REIMBURSEMENTS	6,510.00	-	2,972.84	-	4,088.37	976.85	3,801.00	-	99.70	5,642.87	1,476.90	6,677.77	32,246.30	32,246.30
926610	TRAINING EDUCATIONAL SEMINARS	1,180.00	1,305.00	-	4,016.34	708.00	2,754.50	2,383.98	280.00	11,188.41	19,877.43	606.45	6,667.33	50,967.44	50,967.44
930100	MEETINGS & CONVENTIONS	915.00	5,299.70	5,343.92	5,644.97	526.53	273.33	908.96	33.33	13,381.78	659.00	1,496.66	841.61	35,324.79	35,324.79
930101	MEMBERSHIPS	3,833.91	3,698.91	139.98	4,262.29	3,829.66	3,857.62	2,463.42	3,159.92	2,524.71	2,042.72	3,308.76	2,467.63	35,589.53	35,589.53
930200	PUBLIC RELATIONS	-	429.65	913.96	2,681.64	5,989.22	13,011.91	887.53	535.24	-	443.57	372.60	359.64	25,624.96	25,624.96
930300	MEALS	390.09	610.33	398.83	282.21	411.20	147.01	291.72	396.51	122.94	742.99	382.58	26.93	4,203.34	4,203.34
930410	CHARITABLE CONTRIBUTIONS	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total of Non RSF backed O&M Expenses -														607,875.10	
Adjustment to NOERR expenses per Staff DR's 2-12, 2-30 and 3-5 -														52,529.00	
Proforma 2018 NOERR expenses -														555,346.10	

DW 19-084
PENNICHUCK WATER WORKS, INC.
SUMMARY - CALCULATION OF REVENUE REQUIREMENT

Appendix 2, Attachment C

	REVENUE REQUIREMENT PER COMPANY'S ORIGINAL FILING	REVENUE REQUIREMENT PER SETTLEMENT	
		ESTIMATED ¹ (DW 20-055 Financing @ 3.67% Total Interest Cost)	MAXIMUM ² (DW 20-055 Financing @ 4.67% Total Interest Cost)
CITY BOND FIXED REVENUE REQUIREMENT (CBFRR)			
1) City Bond Fixed Revenue Requirement (CBFRR) (Schedule 1)	\$ 7,729,032	\$ 7,729,032	\$ 7,729,032
OPERATING EXPENSE REVENUE REQUIREMENT (OERR) (Schedules 2.1/2.2)			
2) Total Pro Forma Operation & Maintenance Expenses	\$ 14,739,018	\$ 14,581,494	\$ 14,581,494
3) Pro Forma Property Tax Expense	4,547,936	3,968,596	3,968,596
4) Pro Forma Payroll Tax Expense	698,087	698,087	698,087
5) Pro Forma Amortization Expense	415,268	145,720	145,720
6) Pro Forma Income Tax Expense	103,249	103,249	103,249
7) Total Operating Expenses [(2) + (3) + (4) + (5) + (6)]	20,503,558	19,497,146	19,497,146
MATERIAL OPERATING EXPENSE SUPPLEMENT (MOES)			
8) Less: Non-Material Operating Expenses (Schedule 2b)		(555,346)	(555,346)
9) Material Operating Expenses [(7) - (8)]		18,941,800	18,941,800
10) Material Operating Expense Factor (MOEF) per Settlement		x 9.50%	x 7.66%
11) MOEF Calculated Result [(9) x (10)]		1,799,471	1,450,033
12) Operating Expense Revenue Requirement (OERR) [(7) + (11)]	\$ 20,503,558	\$ 21,296,617	\$ 20,947,179
DEBT SERVICE REVENUE REQUIREMENT (DSRR) (Schedule 3)			
13) Pro Forma Test Year Annual Debt Service	\$ 6,999,023	\$ 7,002,631	\$ 7,002,631
14) Debt Service Coverage Requirement	x 1.1	x 1.1	x 1.1
15) Debt Service Revenue Requirement (DSRR) [(13) x (14)]	7,698,925	7,702,894	7,702,894
16) REVENUE REQUIREMENT BEFORE APPLICATION OF DEBT SERVICE SAVINGS RESULTING FROM DW 20-055 FINANCING [(1) + (12) + (15)]	\$ 35,931,515	\$ 36,728,543	\$ 36,379,105
REDUCTION IN REVENUE REQUIREMENT RESULTING FROM DW 20-055 FINANCING			
17) Less: Estimated Debt Service Savings from DW 20-055 Financing (Schedule 3)		(970,374)	(490,585)
18) Debt Service Coverage Requirement		x 1.1	x 1.1
19) Estimated Reduction in Revenue Requirement [(17) x (18)]		(1,067,411)	(539,644)
20) TOTAL PROPOSED REVENUE REQUIREMENT [(16) - (19)]	\$ 35,931,515	\$ 35,661,131	\$ 35,839,461
CALCULATION OF PERCENT INCREASE (DECREASE) IN ANNUAL WATER REVENUES			
21) Total Proposed Revenue Requirement [(20)]	\$ 35,931,515	\$ 35,661,131	\$ 35,839,461
22) Less: Pro Forma Test Year Other Operating Revenues (Schedules 2.1/2.2)	(420,712)	(420,712)	(420,712)
23) Total Proposed Water Revenues from Base Rates [(21) - (22)]	\$ 35,510,803	\$ 35,240,419	\$ 35,418,749
24) Less: Pro Forma Test Year Water Revenues from Base Rates (Schedules 2.1/2.2)	(31,732,664)	(31,649,316)	(31,649,316)
25) Proposed Increase / (Decrease) in Annual Water Revenues from Base Rates [(23) - (24)]	\$ 3,778,139 11.91%	\$ 3,591,103 11.35%	\$ 3,769,433 11.91%
26) Less: Pro Forma Test Year Water Revenues from QCPAC (Schedules 2.1/2.2)	(1,169,488)	(1,248,097)	(1,248,097)
27) Proposed Increase / (Decrease) in Total Annual Water Revenues [(25) - (26)]	\$ 2,608,651 8.22%	\$ 2,343,006 7.40%	\$ 2,521,336 7.97%

Notes:

- (1) Presented under the scenario whereby the Co's proposed DW 20-055 Financing is issued at the currently estimated 3.67% Total Interest Cost resulting in net annual debt service savings of \$970,374 (Sch 3), thereby enabling the Co to include a MOEF of 9.50% in the MOERR component of its overall revenue requirement, resulting in a revenue increase of 11.35%.
- (2) Presented under the scenario whereby the Co's proposed DW 20-055 Financing is issued at an estimated 4.67% Total Interest Cost resulting in net annual debt service savings of \$490,585 (Sch 3), thereby only enabling the Co to include a MOEF of 7.66% in the MOERR component of its overall revenue requirement so as not exceed PWV's originally proposed increase in its revenue requirement of 11.91%.

DW 19-084

PENNICHUCK WATER WORKS, INC.

SCHEDULE 1 - CALCULATION OF PWW'S SHARE OF CITY BOND FIXED REVENUE REQUIREMENT (CBFRR)

Total City Bond	\$	150,570,000
Bond Interest Rate		4.09%
Bond Period		30 yrs.
Total City Bond	\$	150,570,000
Less Rate Stabilization fund	\$	<u>5,000,000</u>
Amount of City Bond to be prorated between Utilities CBFRR	\$	145,570,000
PWW Share of CBFRR		88.12%
PWW Prorate share	\$	<u>128,282,230</u>
Add back PWW Pro Rata Share of Rate Stabilization Reserve	\$	<u>3,920,000</u>
Total PWW Pro Rata Share for CBFRR/MARA	\$	132,202,230
Bond Interest Rate		4.09%
Bond Period		30 yrs.
PWW CBFRR Requirement	\$	<u>7,729,032</u>

Notes:

Pro Rata Calculation as follows:⁽¹⁾

PWW & Southwood Equity (12/31/2011) ⁽²⁾	\$	56,442,675	88.12%
PEU Equity (12/31/2011)	\$	6,540,063	10.21%
PAC Equity (12/31/2011)	\$	1,066,353	1.66%
	\$	<u>64,049,091</u>	<u>100.00%</u>

Calculation of RSF Percentage based on Revenue requirements from DW13-126, 13-128 and 13-130

RSF amount funded by City Bond -	\$	5,000,000
PWW Revenue Requirement -	\$	27,689,214 per DW13-130 Settlement Agreement
PEU Revenue Requirement -	\$	6,913,261 per DW13-126 Settlement Agreement
PAC Revenue Requirement -	\$	745,186 per DW13-128 Settlement Agreement
PWW Share of RSF as a percentage -		78.33%
PWW Share of RSF in \$\$ -	\$	3,920,000

Distribution of RSF funds to Revenue Requirement RSF's⁽³⁾

CBFRR RSF	\$	680,000
MOERR RSF	\$	2,850,000
1.0 DSRR RSF	\$	<u>390,000</u>
	\$	<u>3,920,000</u>

(1) Calculations are from DW11-026

(2) Consists of Equity as of 12/31/2011 as follows:

PWW	\$	54,395,626
Southwood	\$	<u>2,047,049</u>
Total	\$	<u>56,442,675</u>

(3) PWW RSF fund levels as established in DW16-806

DW 19-084
PENNICHUCK WATER WORKS, INC.
SCHEDULE 2.1 - OPERATING INCOME STATEMENT AND DETAILED CALCULATION OF ESTIMATED REVENUE REQUIREMENT

Appendix 2, Attachment C

	Company Proposal per Original Filing			Settlement Proposal			
	(1) Test Year Operating Income	(2) Pro Forma Adj's Per Co's Filing	(3) Pro Forma Operating Income Per Co' Filing (Co's Sch 1)	(4) Adj's per Co Responses to Staff DR's (Sch 2a)	(5) Pro Forma Operating Income Per Settlement	(6) Revenue Increase per Settlement	(7) Revenue Requirement per Settlement
OPERATING REVENUES							
Revenues from Water Sales:							
Water Revenues from Base Rates	\$ 31,608,641	\$ 124,023	\$ 31,732,664	\$ (83,348)	\$ 31,649,316	\$ 3,591,103	\$ 35,240,419
Water Revenues from QCPAC	362,158	807,330	1,169,488	78,609	1,248,097	(1,248,097)	-
Total Water Revenues from Water Sales	<u>31,970,799</u>	<u>931,353</u>	<u>32,902,152</u>	<u>(4,739)</u>	<u>32,897,413</u>	<u>2,343,006</u>	<u>35,240,419</u>
Water Sales for Resale	3,321		3,321		3,321		3,321
Other Operating Revenues	416,551	840	417,391		417,391		417,391
Total Operating Revenues	<u>32,390,671</u>	<u>932,193</u>	<u>33,322,864</u>	<u>(4,739)</u>	<u>33,318,125</u>	<u>2,343,006</u>	<u>35,661,131</u>
OPERATING EXPENSES							
Operation and Maintenance Expenses:							
Production Expense	5,074,509	223,378	5,297,887	8,300	5,306,187		5,306,187
Transmission and Distribution Expense	2,848,339	98,367	2,946,706	(25,258)	2,921,448		2,921,448
Engineering Expense	1,287,747	11,317	1,299,064		1,299,064		1,299,064
Customer Account and Collection Expense	489,789	9,700	499,489		499,489		499,489
Administrative and General Expense	7,580,371	551,328	8,131,699	(231,028)	7,900,671		7,900,671
Inter-Division Management Fee	(3,288,063)	(147,764)	(3,435,827)	90,462	(3,345,365)		(3,345,365)
Total Operation and Maintenance Expenses	<u>13,992,692</u>	<u>746,326</u>	<u>14,739,018</u>	<u>(157,524)</u>	<u>14,581,494</u>	<u>-</u>	<u>14,581,494</u>
Other Operating Expenses:							
Property Tax Expense	4,438,775	109,161	4,547,936	(579,340)	3,968,596		3,968,596
Payroll Tax Expense	698,087		698,087		698,087		698,087
Gain from Forgiveness of SRF Debt	(59,384)	59,384	-		-		-
Depreciation Expense	5,839,694	(5,839,694)	-		-		-
Amortization of Acquisition Adjustment	(27,026)	27,026	-		-		-
Amortization - CIAC	(740,182)	740,182	-		-		-
Amortization Expense	1,965,332	(1,550,064)	415,268	(269,548)	145,720		145,720
Total Other Operating Expenses	<u>12,115,296</u>	<u>(6,454,005)</u>	<u>5,661,291</u>	<u>(848,888)</u>	<u>4,812,403</u>	<u>-</u>	<u>4,812,403</u>
Income Tax Expense:							
State Income Tax Expense	794,209	(690,960)	103,249		103,249		103,249
Federal Income Tax Expense	1,592,022	(1,592,022)	-		-		-
Total Income Tax Expense	<u>2,386,231</u>	<u>(2,282,982)</u>	<u>103,249</u>	<u>-</u>	<u>103,249</u>	<u>-</u>	<u>103,249</u>
Total Operating Expenses	<u>28,494,219</u>	<u>(7,990,661)</u>	<u>20,503,558</u>	<u>(1,006,412)</u>	<u>19,497,146</u>	<u>-</u>	<u>19,497,146</u>
NET OPERATING INCOME	<u>\$ 3,896,452</u>	<u>\$ 8,922,854</u>	<u>\$ 12,819,306</u>	<u>\$ 1,001,673</u>	<u>\$ 13,820,979</u>	<u>\$ 2,343,006</u>	<u>\$ 16,163,985</u>

DW 19-084
PENNICHUCK WATER WORKS, INC.
SCHEDULE 2.1 - OPERATING INCOME STATEMENT AND DETAILED CALCULATION OF ESTIMATED REVENUE REQUIREMENT

Appendix 2, Attachment C

**CALCULATION OF REVENUE DEFICIENCY AND REQUIRED INCREASE @ AN
ESTIMATED DW 20-055 FINANCING TOTAL INTEREST COST OF 3.67%:**

	PER COMPANY	SETTLEMENT ADJUSTMENTS	PER SETTLEMENT	REVENUE INCREASE	PRO FORMA
NET OPERATING INCOME	\$ 12,819,306	\$ 1,001,673	\$ 13,820,979	\$ 2,343,006	\$ 16,163,985
LESS: MATERIAL OPERATING EXPENSE FACTOR (MOEF) CALCULATION					
TOTAL OPERATING EXPENSES	(20,503,558)	1,006,412	(19,497,146)	-	(19,497,146)
LESS: NON-MATERIAL OPERATING EXPENSES	607,875	(52,529)	555,346	-	555,346
MATERIAL OPERATING EXPENSES	(19,895,683)	953,883	(18,941,800)	-	(18,941,800)
x MATERIAL OPERATING EXPENSE FACTOR (MOEF)	9.50% x	9.50% x	9.50% x	9.50% x	9.50%
MOEF CALCULATED RESULT	(1,890,090)	90,619	(1,799,471)	-	(1,799,471)
LESS: CITY BOND FIXED REVENUE REQUIREMENT (CBFRR)	(7,729,032)	-	(7,729,032)	-	(7,729,032)
LESS: DEBT SERVICE REVENUE REQUIREMENT (DSRR)					
PRO FORMA DEBT SERVICE	(6,999,023)	(3,608)	(7,002,631)	-	(7,002,631)
x DEBT COVERAGE REQUIREMENT	1.1 x	1.1 x	1.1 x	1.1 x	1.1
DEBT SERVICE REVENUE REQUIREMENT (DSRR)	(7,698,925)	(3,969)	(7,702,894)	-	(7,702,894)
ADD: ESTIMATED CASH FLOW SAVINGS FROM DW 20-055 FINANCING					
ESTIMATED DEBT SERVICE SAVINGS @ 3.67 TOTAL INTEREST COST	970,374	-	970,374	-	970,374
x DEBT COVERAGE REQUIREMENT	1.1 x	1.1 x	1.1 x	1.1 x	1.1
TOTAL ESTIMATED CASH FLOW SAVINGS FROM DW 20-055 FINANCING	1,067,411	-	1,067,411	-	1,067,411
CALCULATED ESTIMATED REVENUE (DEFICIENCY) / INCREASE	\$ (3,431,330)	\$ 1,088,323	\$ (2,343,006)	\$ 2,343,006	\$ -

Revenue Requirement Component Summary:

City Bond Fixed Revenue Requirement (CBFRR): **\$ 7,729,032**

Operating Expense Revenue Requirement (OERR):

Total O & M Expenses	\$ 14,581,494	
Property Tax Expense	3,968,596	
Payroll Tax Expense	698,087	
Amortization Expense	145,720	
Income Tax Expense	103,249	
Totoal Operating Expenses	19,497,146	
Less: Non-Material Operating Expenses	(555,346)	
Material Operating Expenses	18,941,800	
Material Operating Expense Factor (MOEF) x	9.50%	
MOEF Calculated Result	1,799,471	21,296,617

Debt Service Revenue Requirement (DSRR):

Pro Forma Debt Service	\$ 7,002,631	
Debt Service Coverage Requirement x	1.1	7,702,894

Estimated Cash Flow Savings from DW 20-055 Financing:

Estimated Debt Service Savings @ 3.67% Total Interest Cost	\$ (970,374)	
Debt Service Coverage Requirement x	1.1	(1,067,411)

Total Estimated Revenue Requirement **\$ 35,661,131**

DW 19-084
PENNICHUCK WATER WORKS, INC.
SCHEDULE 2.2 - OPERATING INCOME STATEMENT AND DETAILED CALCULATION OF MAXIMUM REVENUE REQUIREMENT

Appendix 2, Attachment C

	Company Proposal per Original Filing			Settlement Proposal			
	(1) Test Year Operating Income	(2) Pro Forma Adj's Per Co's Filing	(3) Pro Forma Operating Income Per Co' Filing (Co's Sch 1)	(4) Adj's per Co Responses to Staff DR's (Sch 2a)	(5) Pro Forma Operating Income Per Settlement	(6) Revenue Increase per Settlement	(7) Revenue Requirement per Settlement
OPERATING REVENUES							
Revenues from Water Sales:							
Water Revenues from Base Rates	\$ 31,608,641	\$ 124,023	\$ 31,732,664	\$ (83,348)	\$ 31,649,316	\$ 3,769,433	\$ 35,418,749
Water Revenues from QCPAC	362,158	807,330	1,169,488	78,609	1,248,097	(1,248,097)	-
Total Water Revenues from Water Sales	<u>31,970,799</u>	<u>931,353</u>	<u>32,902,152</u>	<u>(4,739)</u>	<u>32,897,413</u>	<u>2,521,336</u>	<u>35,418,749</u>
Water Sales for Resale	3,321		3,321		3,321		3,321
Other Operating Revenues	416,551	840	417,391		417,391		417,391
Total Operating Revenues	<u>32,390,671</u>	<u>932,193</u>	<u>33,322,864</u>	<u>(4,739)</u>	<u>33,318,125</u>	<u>2,521,336</u>	<u>35,839,461</u>
OPERATING EXPENSES							
Operation and Maintenance Expenses:							
Production Expense	5,074,509	223,378	5,297,887	8,300	5,306,187		5,306,187
Transmission and Distribution Expense	2,848,339	98,367	2,946,706	(25,258)	2,921,448		2,921,448
Engineering Expense	1,287,747	11,317	1,299,064		1,299,064		1,299,064
Customer Account and Collection Expense	489,789	9,700	499,489		499,489		499,489
Administrative and General Expense	7,580,371	551,328	8,131,699	(231,028)	7,900,671		7,900,671
Inter-Division Management Fee	(3,288,063)	(147,764)	(3,435,827)	90,462	(3,345,365)		(3,345,365)
Total Operation and Maintenance Expenses	<u>13,992,692</u>	<u>746,326</u>	<u>14,739,018</u>	<u>(157,524)</u>	<u>14,581,494</u>	<u>-</u>	<u>14,581,494</u>
Other Operating Expenses:							
Property Tax Expense	4,438,775	109,161	4,547,936	(579,340)	3,968,596		3,968,596
Payroll Tax Expense	698,087		698,087		698,087		698,087
Gain from Forgiveness of SRF Debt	(59,384)	59,384	-		-		-
Depreciation Expense	5,839,694	(5,839,694)	-		-		-
Amortization of Acquisition Adjustment	(27,026)	27,026	-		-		-
Amortization - CIAC	(740,182)	740,182	-		-		-
Amortization Expense	1,965,332	(1,550,064)	415,268	(269,548)	145,720		145,720
Total Other Operating Expenses	<u>12,115,296</u>	<u>(6,454,005)</u>	<u>5,661,291</u>	<u>(848,888)</u>	<u>4,812,403</u>	<u>-</u>	<u>4,812,403</u>
Income Tax Expense:							
State Income Tax Expense	794,209	(690,960)	103,249		103,249		103,249
Federal Income Tax Expense	1,592,022	(1,592,022)	-		-		-
Total Income Tax Expense	<u>2,386,231</u>	<u>(2,282,982)</u>	<u>103,249</u>	<u>-</u>	<u>103,249</u>	<u>-</u>	<u>103,249</u>
Total Operating Expenses	<u>28,494,219</u>	<u>(7,990,661)</u>	<u>20,503,558</u>	<u>(1,006,412)</u>	<u>19,497,146</u>	<u>-</u>	<u>19,497,146</u>
NET OPERATING INCOME	<u>\$ 3,896,452</u>	<u>\$ 8,922,854</u>	<u>\$ 12,819,306</u>	<u>\$ 1,001,673</u>	<u>\$ 13,820,979</u>	<u>\$ 2,521,336</u>	<u>\$ 16,342,315</u>

DW 19-084
PENNICHUCK WATER WORKS, INC.
SCHEDULE 2.2 - OPERATING INCOME STATEMENT AND DETAILED CALCULATION OF MAXIMUM REVENUE REQUIREMENT

Appendix 2, Attachment C

**CALCULATION OF REVENUE DEFICIENCY AND REQUIRED INCREASE @ AN
ESTIMATED DW 20-055 FINANCING TOTAL INTEREST COST OF 4.67%:**

	PER COMPANY	SETTLEMENT ADJUSTMENTS	PER SETTLEMENT	REVENUE INCREASE	PRO FORMA
NET OPERATING INCOME	\$ 12,819,306	\$ 1,001,673	\$ 13,820,979	\$ 2,521,336	\$ 16,342,315
LESS: MATERIAL OPERATING EXPENSE SUPPLEMENT (MOES)					
TOTAL OPERATING EXPENSES	(20,503,558)	1,006,412	(19,497,146)	-	(19,497,146)
LESS: NON-MATERIAL OPERATING EXPENSES	607,875	(52,529)	555,346	-	555,346
MATERIAL OPERATING EXPENSES	(19,895,683)	953,883	(18,941,800)	-	(18,941,800)
x MATERIAL OPERATING EXPENSE FACTOR (MOEF)	7.66% x	7.66% x	7.66% x	7.66% x	7.7%
MOEF CALCULATED RESULT	(1,523,054)	73,022	(1,450,033)	-	(1,450,033)
LESS: CITY BOND FIXED REVENUE REQUIREMENT (CBFRR)	(7,729,032)	-	(7,729,032)	-	(7,729,032)
LESS: DEBT SERVICE REVENUE REQUIREMENT (DSRR)					
PRO FORMA DEBT SERVICE	(6,999,023)	(3,608)	(7,002,631)	-	(7,002,631)
x DEBT COVERAGE REQUIREMENT	1.1 x	1.1 x	1.1 x	1.1 x	1.1
DEBT SERVICE REVENUE REQUIREMENT (DSRR)	(7,698,925)	(3,969)	(7,702,894)	-	(7,702,894)
ADD: ESTIMATED CASH FLOW SAVINGS FROM DW 20-055 FINANCING					
ESTIMATED DEBT SERVICE SAVINGS @ 4.67 TOTAL INTEREST COST	490,585	-	490,585	-	490,585
x DEBT COVERAGE REQUIREMENT	1.1 x	1.1 x	1.1 x	1.1 x	1.1
TOTAL ESTIMATED CASH FLOW SAVINGS FROM DW 20-055 FINANCING	539,644	-	539,644	-	539,644
CALCULATED MAXIMUM REVENUE (DEFICIENCY) / INCREASE	\$ (3,592,062)	\$ 1,070,726	\$ (2,521,336)	\$ 2,521,336	\$ -

Revenue Requirement Component Summary:

City Bond Fixed Revenue Requirement (CBFRR): **\$ 7,729,032**

Operating Expense Revenue Requirement (OERR):

Total O & M Expenses	\$ 14,581,494	
Property Tax Expense	3,968,596	
Payroll Tax Expense	698,087	
Amortization Expense	145,720	
Income Tax Expense	103,249	
Totoal Operating Expenses	19,497,146	
Less: Non-Material Operating Expenses	(555,346)	
Material Operating Expenses	18,941,800	
Material Operating Expense Factor (MOEF) x	7.66%	
MOEF Calculated Result	1,450,033	20,947,179

Debt Service Revenue Requirement (DSRR):

Pro Forma Debt Service	\$ 7,002,631	
Debt Service Coverage Requirement x	1.1	7,702,894

Estimated Cash Flow Savings from DW 20-055 Financing:

Estimated Debt Service Savings @ 4.67% Total Interest Cost	(490,585)	
Debt Service Coverage Requirement x	1.1	(539,644)

Total Maximum Revenue Requirement **\$ 35,839,461**

DW 19-084
PENNICHUCK WATER WORKS, INC.
SCHEDULE 2a - OPERATING INCOME ADJUSTMENTS PER COMPANY RESPONSES
TO STAFF DATA REQUESTS

OPERATING REVENUES

REVENUES FROM WATER SALES

Water Revenues from Base Rates:

Town of Hudson Sales:	Staff Tech 2-24	\$ 309,436	
	Staff 3-16	<u>(339,391)</u>	\$ (29,955)
Calculation of 5-Year Average:	Staff Tech 2-16		<u>(53,393)</u>
Total Adjustments - Water Revenues from Base Rates			<u>(83,348)</u>

Water Revenues from QCPAC:

Pro-forma Annual QCPAC Revenues:	Staff Tech 2-3		86,989
Calculation of 5-Year Average:	Staff Tech 2-16	26,761	
	Staff 3-16	<u>(35,141)</u>	<u>(8,380)</u>
Total Adjustments - Water Revenues from QCPAC			<u>78,609</u>

TOTAL ADJUSTMENTS - OPERATING REVENUES **\$ (4,739)**

OPERATING EXPENSES

OPERATION AND MAINTENANCE EXPENSES

Production Expense:

Purchased Power:	Staff 2-10	\$ 19,640	
	Staff Tech 2-16	(733)	
	Staff 3-13	<u>(2,218)</u>	\$ 16,689
Purchased Water:	Staff 2-39	17,671	
	Staff Tech 2-16	<u>(24,156)</u>	(6,485)
Chemicals:	Staff Tech 2-16		<u>(1,904)</u>
Total Adjustments - Production Expense			<u>8,300</u>

Transmission and Distribution Expense:

Miscellaneous:	Staff 2-28	(1,769)	
	Staff Tech 3-5	<u>(15,151)</u>	(16,920)
Maintenance of Mains:	Staff Tech 3-5		(4,952)
Maintenance of Services:	Staff Tech 3-5		<u>(3,386)</u>
Total Adjustments - Transmission and Distribution Expense			<u>(25,258)</u>

DW 19-084
PENNICHUCK WATER WORKS, INC.
SCHEDULE 2a - OPERATING INCOME ADJUSTMENTS PER COMPANY RESPONSES
TO STAFF DATA REQUESTS

Appendix 2, Attachment C

Administrative and General Expense:

Salaries and Wages:	Staff 2-13		44,407
Employee Benefits:	Staff 2-13		21,640
Regulatory Commission Expense:	Staff 2-12		(10,085)
Group Health Insurance:	Staff 2-41		(80,200)
Group Dental Insurance:	Staff 2-42		(2,846)
Office Supplies:	Staff 2-50	(12,175)	
	Staff Tech 3-5	<u>(5,750)</u>	(17,925)
Miscellaneous:	Staff 2-50		(25,534)
Outside Services:	Staff 2-30	(5,520)	
	Staff 2-50	(26,626)	
	Staff Tech 3-5	<u>(27,383)</u>	(59,529)
Maintenance - Computer Equipment:	Staff Tech 2-9		<u>(100,956)</u>
Total Adjustments - Administrative and General Expense			<u>(231,028)</u>

Inter-Division Management Fee:

Wages and Salaries:	Staff 2-13		(17,609)
Group Health Insurance:	Staff 4-3		21,382
Group Dental Insurance:	Staff 4-3		759
Office Lease:	Staff Tech 2-4		(4,277)
Maintenance - Computer Equipment:	Staff 4-2	(26,917)	
	Staff Tech 3-2	<u>53,834</u>	26,917
ROI Allocation to Affiliates:	Staff 2-25	62,862	
	Staff Tech 2-7	<u>428</u>	<u>63,290</u>
Total Adjustments - Inter-Division Management Fee			<u>90,462</u>
Total Adjustments - Operation and Maintenance Expenses			<u>(157,524)</u>

DW 19-084
PENNICHUCK WATER WORKS, INC. Appendix 2, Attachment C
SCHEDULE 2a - OPERATING INCOME ADJUSTMENTS PER COMPANY RESPONSES
TO STAFF DATA REQUESTS

OTHER OPERATING EXPENSES

<u>Property Tax Expense:</u>	Staff Tech 3-3		<u>(579,340)</u>
<u>Amortization Expense:</u>			
Deferred Assets (Pre-existing):	Staff 2-16	(14,341)	
	Staff Tech 2-5	<u>6,594</u>	(7,747)
Transmission and Distribution Expenses:	Staff Tech 3-5		7,830
Office Supplies:	Staff Tech 3-5		1,917
Maintenance - Computer Equipment:	Staff Tech 2-9	11,218	
	Staff Tech 3-4	<u>(2,991)</u>	8,227
Outside Services:	Staff Tech 3-5		7,000
Rate Stabilization Fund - Shortfall:	Staff Tech 2-23		<u>(286,775)</u>
Total Adjustments - Amortization Expense			<u>(269,548)</u>
Total Adjustments - Other Operating Expenses			<u>(848,888)</u>
TOTAL ADJUSTMENTS - OPERATING EXPENSES			<u>\$ (1,006,412)</u>
NET OPERATING INCOME ADJUSTMENTS			<u><u>\$ 1,001,673</u></u>

DW 19-084
PENNICHUCK WATER WORKS, INC.
SCHEDULE 2b - NON-MATERIAL OPERATING EXPENSES

Acct No.	Description	Per Co's 2018 Gen'l Ledger	Adj Per Co Resp's to Staff Data Requests	Adjusted Test Year Balances
921002	SENIOR MANAGEMENT VEHICLES	\$ 3,374	\$ -	\$ 3,374
921003	SENIOR MANAGEMENT - FUEL PURCHASED	4,087	-	4,087
921004	SENIOR MANAGEMENTT - VEHICLE REGISTRATION	991	-	991
923000	OUTSIDE SERVICES	385,360	(52,529)	332,831
926001	OFFICER'S LIFE INSURANCE	6,303	-	6,303
926500	MISCELLANEOUS EMPLOYEE BENEFITS	8,759	-	8,759
926501	MISCELLANEOUS EMPLOYEE BENEFITS - WELLNESS	3,371	-	3,371
926502	MISCELLANEOUS EMPLOYEE BENEFITS - ACTIVITIES	11,674	-	11,674
926505	EMPLOYEE RELATIONS	-	-	-
926600	TUITION REIMBURSEMENT	32,246	-	32,246
926610	TRAINING EDUCATIONAL SEMINARS	50,967	-	50,967
930100	MEETINGS & CONVENTIONS	35,325	-	35,325
930101	MEMBERSHIPS	35,590	-	35,590
930200	PUBLIC RELATIONS	25,625	-	25,625
930300	MEALS	4,203	-	4,203
930410	CHARITABLE CONTRIBUTIONS	-	-	-
	TOTAL NON-MATERIAL OPERATING EXPENSES	\$ 607,875	\$ (52,529)	\$ 555,346

Notes:

<u>Adj. Per Sch. 2a - Based on Co Responses to Staff Discovery:</u>	<u>Outside Service Expense</u>		<u>Net</u>
	<u>Admin & Gen'l</u>	<u>Amortization</u>	<u>Adjustment</u>
Co Response to Staff 2-30	\$ (5,520)	\$ -	\$ (5,520)
Co Response to Staff 2-50	(26,626)	-	(26,626)
Co Response to Staff Tech 3-5	(27,383)	7,000	(20,383)
Net Adjustment - Outside Services	\$ (59,529)	\$ 7,000	\$ (52,529)

DW 19-084
PENNICHUCK WATER WORKS, INC.
SCHEDULE 3 - PRO FORMA TEST YEAR DEBT SERVICE
AND ESTIMATED IMPACT OF DW 20-055 FINANCING

Appendix 2, Attachment C

Holder	Term	Maturity	Int Rate	PRO FORMA PRINCIPAL PAYMENTS					PRO FORMA INTEREST PAYMENTS					PRO FORMA AMORTIZED DEBT COSTS			PRO FORMA DEBT SERVICE PER CO FILING	PRO FORMA DEBT SERVICE PER SETTL'MNT	
				OUTSTANDING DEBT	2018 Principal Payments	Pro Forma Adj's per Co Filing	Pro Forma Princ Pmts per Co Filing	Adj's per Co Resp's to Staff DR's	Pro Forma Princ Pmts per Sett'l'mnt	2018 Interest Payments	Pro Forma Adj's per Co Filing	Pro Forma Int Pmts per Co Filing	Adj's per Co Resp's to Staff DR's	Pro Forma Int Pmts per Sett'l'mnt	2018 Amortized Debt Costs	Adj's per Co Resp's to Staff DR's			Pro Forma Amort Costs per Sett'l'mnt
PRO FORMA TEST YEAR DEBT:																			
Outstanding Debt at 12/31/2018:																			
American United Life Insurance (AULI)	25	03/01/21	7.400%	\$ 3,200,000	\$ 400,000		\$ 400,000		\$ 400,000	\$ 241,733		\$ 241,733	\$ (19,733) (a)	\$ 222,000	\$ 8,711	\$ (8,711) (c)	\$ -	\$ 650,444	\$ 622,000
SRF Loan - Hubbard Hill	20	04/01/22	3.800%	72,312	22,250		22,250		22,250	3,206		3,206	(646) (a)	2,360	-		-	25,456	24,610
SRF Loan - Conract # 4 (Water Treatment Plant)	20	10/01/29	4.488%	1,916,605	144,459		144,459	5,120 (a)	149,579	69,595		69,595	(5,120) (a)	64,475	234	(234) (c)	-	214,288	214,054
ARRA Loan - Ashley Commons	20	05/01/31	2.952%	325,533	7,988		7,988	981 (a)	8,969	9,922		9,922	(583) (a)	9,339	131	(131) (c)	-	18,041	18,308
ARRA Loan - French Hill	20	07/01/32	2.864%	1,001,421	20,261		20,261	2,680 (a)	22,941	29,508		29,508	(1,549) (a)	27,959	370	(370) (c)	-	50,139	50,900
ARRA Loan - Glenn Ridge	20	09/01/32	2.864%	76,168	1,494		1,494	202 (a)	1,696	2,243		2,243	(116) (a)	2,127	-		-	3,737	3,823
ARRA Loan - Army (S Nashua Booster Station)	20	01/01/32	2.864%	224,762	4,984		4,984	624 (a)	5,608	6,633		6,633	(367) (a)	6,266	87	(87) (c)	-	11,704	11,874
SRF Loan - Drew Woods	20	06/01/32	2.952%	617,773	36,989		36,989	1,107 (a)	38,096	18,831		18,831	(1,107) (a)	17,724	442	(442) (c)	-	56,262	55,820
SRF Loan - Nashua Core	20	07/01/36	2.464%	1,978,000	89,323		89,323	2,227 (a)	91,550	49,935		49,935	(2,226) (a)	47,709	698	(698) (c)	-	139,956	139,259
SRF Loan - Timberline Booster Station	20	07/01/36	2.616%	297,546	13,237		13,237	350 (a)	13,587	7,972		7,972	(350) (a)	7,622	105	(105) (c)	-	21,314	21,209
SRF Loan - Raw Water Transmission	20	11/01/36	3.168%	3,019,510	107,304		107,304	23,793 (a)	131,097	60,499		60,499	(2,490) (a)	58,009	509	(509) (c)	-	168,312	189,106
SRF Loan - Amherst Street - 2016	30	05/01/47	2.420%	1,383,522	11,019		11,019	8,671 (a)	19,690	33,837		33,837	(621) (a)	33,216	311	(311) (c)	-	45,167	52,906
BNY Mellon - 2014 A Series Bonds	30	01/01/45	Various	38,905,000	1,030,000		1,030,000	45,000 (b)	1,075,000	1,760,318		1,760,318	(47,475) (a)	1,712,843	-		-	2,790,318	2,787,843
BNY Mellon - 2014 B Series Bonds	30	01/01/45	4.500%	5,030,000	95,000		95,000	5,000 (b)	100,000	228,488		228,488	(4,488) (a)	224,000	-		-	323,488	324,000
BNY Mellon - 2015 A Series Bonds	30	01/01/46	Various	19,490,000	545,000		545,000	20,000 (b)	565,000	917,987		917,987	(22,200) (a)	895,787	-		-	1,462,987	1,460,787
BNY Mellon - 2015 B Series Bonds	30	01/01/46	Various	1,840,000	100,000		100,000	5,000 (b)	105,000	94,500		94,500	(5,125) (a)	89,375	-		-	194,500	194,375
BNY Mellon - 2018 A Series Bonds	30	01/01/48	4.900%	4,460,000	-		-	-	-	100,484	103,891		204,375	204,375	-		-	204,375	204,375
BNY Mellon - 2018 B Series Bonds	30	01/01/48	4.900%	1,075,000	-	85,000	85,000	-	85,000	22,886	21,821		44,707	44,707	-		-	129,707	129,707
Sub-total: 2018 Outstanding Debt				84,913,202	2,629,308	85,000	2,714,308	120,755	2,835,063	3,658,577	125,712	3,784,289	(114,396)	3,669,893	11,598	(11,598)	-	6,510,195	6,504,956
New Debt Acquired during 2019:																			
BNY Mellon - 2019 A Series Bonds	30	01/01/49	4.220%	8,080,000	-	141,368	141,368	(49,701) (a)	91,667	-	347,460	347,460	923 (a)	348,383	-		-	488,828	440,050
BNY Mellon - 2019 B Series Bonds	30	01/01/48	4.220%	170,000	-	-	-	56,667 (a)	56,667	-	-	-	958 (a)	958	-		-	-	57,625
Sub-total: 2019 New Debt				8,250,000	-	141,368	141,368	6,966	148,334	-	347,460	347,460	1,881	349,341	-	-	-	488,828	497,675
PRO FORMA TEST YEAR TOTALS				\$ 93,163,202	\$ 2,629,308	\$ 226,368	\$ 2,855,676	\$ 127,721	\$ 2,983,397	\$ 3,658,577	\$ 473,172	\$ 4,131,749	\$ (112,515)	\$ 4,019,234	\$ 11,598	\$ (11,598)	\$ -	\$ 6,999,023	\$ 7,002,631
DW 20-055 FINANCING - NET ESTIMATED DEBT SERVICE SAVINGS:																			
@ 3.67% Total Interest Cost																			
Estimated Annual Debt Service: RSF Replenishment Financing																			
Less: Estimated Annual Debt Service Savings: AULI Loan Refinancing																			
2014A & 2015A/B Bond Refinancing																			
Net Estimated Debt Service Savings @ 3.67% Total Interest Cost																			
ESTIMATED ADJUSTED PRO FORMA TEST YEAR DEBT SERVICE																			
@ 4.67% Total Interest Cost																			
Estimated Annual Debt Service: RSF Replenishment Financing																			
Less: Estimated Annual Debt Service Savings: AULI Loan Refinancing																			
2014A & 2015A/B Bond Refinancing																			
Net Estimated Debt Service Savings @ 4.67% Total Interest Cost																			
ESTIMATED ADJUSTED PRO FORMA TEST YEAR DEBT SERVICE																			

Notes:
(a) Per Co's response to Staff 3-6
(b) Per Co's response to Staff 2-46
(c) Per Co's responses to Staff 2-51 and Staff Tech 2-13

DW 19-084
PENNICHUCK WATER WORKS, INC.
REPORT OF PROPOSED RATE CHANGES - MAXIMUM

Appendix 2 - Attachment D Customer Class and COSS Impact

Rate or Class of Service	Effect of Proposed Change	Average Number Customers	Maximum Change in Annual Revenues from Base Rates					Maximum Change in Total Annual Water Revenues					
			Pro Forma Test Year Water Revenues	Less: Pro Forma Test Year QCPAC Revenues	Pro Forma Test Year Revenues from Base Rates	Maximum Revenue Requirement from Base Rates	Maximum Change in Annual Revenues from Base Rates		Maximum Change in Annual Revenues from Base Rates	Less: Pro Forma Test Year QCPAC Revenues	Maximum Change in Total Annual Water Revenues		
							Amount	% Increase			Amount	% Increase	
G-M Residential Fixed Charges	Increase	27,954	\$ 7,594,339	\$ (289,742)	\$ 7,304,597	\$ 7,878,194	\$ 573,597	7.85%	\$ 573,597	\$ (289,742)	\$ 283,855	3.89%	
All Other G-M Charges	Increase		18,716,095	(714,065)	18,002,030	19,848,111	1,846,081	10.25%	1,846,081	(714,065)	1,132,016	6.29%	
Total G-M Charges		27,954	26,310,434	(1,003,807)	25,306,627	27,726,305	2,419,678	9.20%	2,419,678	(1,003,807)	1,415,871	5.59%	
Private FP	Increase	911	1,260,049	(48,631)	1,211,418	2,084,730	873,312	72.09%	873,312	\$ (48,631)	824,681	68.08%	
FP - Hydrants	Increase	5	3,582,340	(138,262)	3,444,078	3,797,263	353,185	10.25%	353,185	\$ (138,262)	214,923	6.24%	
<u>Anheuser-Busch Contract</u>													
Contract Charges	No Increase	2	371,430	-	371,430	371,430	-	0.00%	-	\$ -	-	0.00%	
Volumetric & Meter Charges	Increase	-	475,941	(19,220)	456,721	503,557	46,836	10.25%	46,836	\$ (19,220)	27,616	6.05%	
<u>Milford Contract</u>													
Contract Charges	No Increase	1	81,000	-	81,000	81,000	-	0.00%	-	\$ -	-	0.00%	
Volumetric Charges	Increase	-	87,652	(6,631)	81,021	89,329	8,308	10.25%	8,308	\$ (6,631)	1,677	2.07%	
<u>Hudson Contract</u>													
Contract Charges	No Increase	1	32,800	-	32,800	32,800	-	0.00%	-	\$ -	-	0.00%	
Volumetric Charges	Increase	-	63,390	(18,002)	45,388	50,042	4,654	10.25%	4,654	\$ (18,002)	(13,348)	-29.41%	
<u>Tynnsborough Contract</u>													
Volumetric & Meter Charge	Increase	1	325,735	(13,544)	312,191	344,205	32,014	10.25%	32,014	\$ (13,544)	18,470	5.92%	
<u>Pennichuck East Utility Contract</u>													
Volumetric & Meter Charge	Increase	1	306,642	-	306,642	338,088	31,446	10.25%	31,446	\$ -	31,446	10.25%	
		28,876	\$ 32,897,413	\$ (1,248,097)	\$ 31,649,316	\$ 35,418,749	\$ 3,769,433	11.91%	\$ 3,769,433	\$ (1,248,097)	\$ 2,521,336	7.97%	

DW 19-084
PENNICHUCK WATER WORKS, INC.
REPORT OF PROPOSED RATE CHANGES - ESTIMATED

Appendix 2 - Attachment D Customer Class and COSS Impact

Rate or Class of Service	Effect of Proposed Change	Average Number Customers	Estimated Change in Annual Revenues from Base Rates					Estimated Change in Total Annual Water Revenues					
			Pro Forma Test Year Water Revenues	Less: Pro Forma Test Year QCPAC Revenues	Pro Forma Test Year Revenues from Base Rates	Estimated Revenue Requirement from Base Rates	Estimated Change in Annual Revenues from Base Rates		Estimated Change in Annual Revenues from Base Rates	Less: Pro Forma Test Year QCPAC Revenues	Estimated Change in Total Annual Water Revenues		
							Amount	% Increase			Amount	% Increase	
G-M Residential Fixed Charges	Increase	27,954	\$ 7,594,339	\$ (289,742)	\$ 7,304,597	\$ 7,851,057	\$ 546,460	7.48%	\$ 546,460	\$ (289,742)	\$ 256,718	3.51%	
All Other G-M Charges	Increase		18,716,095	(714,065)	18,002,030	19,761,680	1,759,650	9.77%	1,759,650	(714,065)	1,045,585	5.81%	
Total G-M Charges		27,954	26,310,434	(1,003,807)	25,306,627	27,612,737	2,306,110	8.77%	2,306,110	(1,003,807)	1,302,303	5.15%	
Private FP	Increase	911	1,260,049	(48,631)	1,211,418	2,042,273	830,855	68.59%	830,855	\$ (48,631)	782,224	64.57%	
FP - Hydrants	Increase	5	3,582,340	(138,262)	3,444,078	3,780,728	336,650	9.77%	336,650	\$ (138,262)	198,388	5.76%	
<u>Anheuser-Busch Contract</u>													
Contract Charges	No Increase	2	371,430	-	371,430	371,430	-	0.00%	-	\$ -	-	0.00%	
Volumetric & Meter Charges	Increase	-	475,941	(19,220)	456,721	501,365	44,644	9.77%	44,644	\$ (19,220)	25,424	5.57%	
<u>Milford Contract</u>													
Contract Charges	No Increase	1	81,000	-	81,000	81,000	-	0.00%	-	\$ -	-	0.00%	
Volumetric Charges	Increase	-	87,652	(6,631)	81,021	88,940	7,919	9.77%	7,919	\$ (6,631)	1,288	1.59%	
<u>Hudson Contract</u>													
Contract Charges	No Increase	1	32,800	-	32,800	32,800	-	0.00%	-	\$ -	-	0.00%	
Volumetric Charges	Increase	-	63,390	(18,002)	45,388	49,824	4,436	9.77%	4,436	\$ (18,002)	(13,566)	-29.89%	
<u>Tynnsborough Contract</u>													
Volumetric & Meter Charge	Increase	1	325,735	(13,544)	312,191	342,706	30,515	9.77%	30,515	\$ (13,544)	16,971	5.44%	
<u>Pennichuck East Utility Contract</u>													
Volumetric & Meter Charge	Increase	1	306,642	-	306,642	336,616	29,974	9.77%	29,974	\$ -	29,974	9.77%	
		28,876	\$ 32,897,413	\$ (1,248,097)	\$ 31,649,316	\$ 35,240,419	\$ 3,591,103	11.35%	\$ 3,591,103	\$ (1,248,097)	\$ 2,343,006	7.40%	

Appendix 2 - Attachment D Customer Class and COSS Impact

Customer Class Rate Impact at Maximum Revenue Requirement

Based on 5/8 meter fixed charge @ 7.85%. Private Fire @ 72.09%, MuniFire, all other meter sizes but 5/8" GM fixed, all GM volumetric at same rate in yr 1. 3% increase yr over yr to munifire
6/19/20

4.67% TIC Overall rate increase of 11.91% with MOES @ 7.66%

Customer Class	COSS ¹ Recommended Percentage Increase in Revenues	Recommended Increase % by Customer class per settlement	Rate increase at 3% to Munifire at end of Yr. One	Rate increase at 3% to Munifire at end of Yr. Two
G-M 5/8" Fixed -	7.85%	7.85%	0.00%	0.00%
G-M , Fixed, All other meter sizes -	7.85%	10.25%	-0.53%	-0.55%
G-M Residential Volumetric -	7.85%	10.25%	-0.53%	-0.55%
G-M Commercial Volumetric -	7.85%	10.25%	-0.53%	-0.55%
G-M Industrial Volumetric -	7.85%	10.25%	-0.53%	-0.55%
G-M Municipal Volumetric -	7.85%	10.25%	-0.53%	-0.55%
Municipal Fire -	24.20%	10.25%	3.00%	3.00%
Private Fire -	72.09%	72.09%	0.00%	0.00%
A-B Annual Fixed Fee -	0.00%	0.00%	0.00%	0.00%
A-B Volumetric -	7.85%	10.25%	-0.53%	-0.55%
A-B Fixed meter -	24.20%	10.25%	-0.53%	-0.55%
Milford Annual Fixed Fee -	0.00%	0.00%	0.00%	0.00%
Milford Volumetric -	7.85%	10.25%	-0.53%	-0.55%
Hudson Annual Fixed Fee -	0.00%	0.00%	0.00%	0.00%
Hudson Volumetric -	7.85%	10.25%	-0.53%	-0.55%
Tyngsborough Volumetric -	7.85%	10.25%	-0.53%	-0.55%
Tyngsborough Fixed Meter -	7.85%	10.25%	-0.53%	-0.55%
Pennichuck East Minimum Volumetric Fee -	7.85%	10.25%	-0.53%	-0.55%
Pennichuck East Volumetric -	7.85%	10.25%	-0.53%	-0.55%
Pennichuck East Fixed Meter -	7.85%	10.25%	-0.53%	-0.55%

1. Cost of Service Study

Appendix 2 - Attachment D Customer Class and COSS Impact

Customer Class Rate Impact at Estimated Revenue Requirement

Based on 5/8 meter fixed charge @ 7.85%. Private Fire @ 72.09%, MuniFire, all other meter sizes but 5/8" GM fixed, all GM volumetric at same rate in yr 1. 3% increase yr over yr to munifire
6/19/20

3.67% TIC Overall rate increase of 11.35% with MOES @ 9.50%

Customer Class	COSS ¹ Recommended Percentage Increase in Revenues	Recommended Increase % by Customer class per settlement	Rate increase at 3% to Munifire at end of Yr. One	Rate increase at 3% to Munifire at end of Yr. Two
G-M 5/8" Fixed -	7.48%	7.48%	0.00%	0.00%
G-M , Fixed, All other meter sizes -	7.48%	9.77%	-0.53%	-0.55%
G-M Residential Volumetric -	7.48%	9.77%	-0.53%	-0.55%
G-M Commercial Volumetric -	7.48%	9.77%	-0.53%	-0.55%
G-M Industrial Volumetric -	7.48%	9.77%	-0.53%	-0.55%
G-M Municipal Volumetric -	7.48%	9.77%	-0.53%	-0.55%
Municipal Fire -	23.06%	9.77%	3.00%	3.00%
Private Fire -	68.70%	68.59%	0.00%	0.00%
A-B Annual Fixed Fee -	0.00%	0.00%	0.00%	0.00%
A-B Volumetric -	7.48%	9.77%	-0.53%	-0.55%
A-B Fixed meter -	7.48%	9.77%	-0.53%	-0.55%
Milford Annual Fixed Fee -	0.00%	0.00%	0.00%	0.00%
Milford Volumetric -	7.48%	9.77%	-0.53%	-0.55%
Hudson Annual Fixed Fee -	0.00%	0.00%	0.00%	0.00%
Hudson Volumetric -	7.48%	9.77%	-0.53%	-0.55%
Tyngsborough Volumetric -	7.48%	9.77%	-0.53%	-0.55%
Tyngsborough Fixed Meter -	7.48%	9.77%	-0.53%	-0.55%
Pennichuck East Minimum Volumetric Fee -	7.48%	9.77%	-0.53%	-0.55%
Pennichuck East Volumetric -	7.48%	9.77%	-0.53%	-0.55%
Pennichuck East Fixed Meter -	7.48%	9.77%	-0.53%	-0.55%

1. Cost of Service Study

Charge Description	Monthly Bill Charges														
	September	October	November	December	January	February	March	April	May	June	July	August	September	October	
5/8 inch Meter Customer Charge (1) -	\$ 22.58	\$ 24.27	\$ 24.27	\$ 24.27	\$ 24.27	\$ 24.27	\$ 24.27	\$ 24.27	\$ 24.27	\$ 24.27	\$ 24.27	\$ 24.27	\$ 24.27	\$ 24.27	
Volumetric Charge based on Usage (2) -	\$ 28.44	\$ 31.24	\$ 31.24	\$ 31.24	\$ 31.24	\$ 31.24	\$ 31.24	\$ 31.24	\$ 31.24	\$ 31.24	\$ 31.24	\$ 31.24	\$ 31.24	\$ 31.24	
QCPAC Surcharge (3) -	\$ 2.07	\$ -	\$ 2.17	\$ 2.17	\$ 2.17	\$ 2.17	\$ 2.17	\$ 2.17	\$ 2.17	\$ 2.17	\$ 2.17	\$ 2.17	\$ 2.17		
Rate Expense Recoupment (4) -	\$ -	\$ -	\$ -	\$ -	\$ 0.94	\$ 0.94	\$ 0.38	\$ 0.38	\$ 0.38	\$ 0.38	\$ 0.38	\$ 0.38	\$ 0.38		
Temporary to Permanent Rate Recoupment (5) -	\$ -	\$ -	\$ -	\$ -	\$ 0.94	\$ 0.94	\$ 0.94	\$ 0.94	\$ 0.94	\$ 0.94	\$ 0.94	\$ 0.94	\$ 0.94		
QCPAC Recoupment (6) -	\$ -	\$ -	\$ 3.26	\$ 3.26	\$ 3.26	\$ 3.26	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -		
Total Bill for month -	\$ 53.09	\$ 55.51	\$ 60.95	\$ 60.95	\$ 61.89	\$ 61.89	\$ 59.00	\$ 59.00	\$ 59.00	\$ 59.00	\$ 59.00	\$ 59.00	\$ 59.00		

Notes:

- (1) Current tariffed 5/8" meter charge - \$ 22.58
- (2) The Volumetric Charge is based on the following data:
 Average Monthly usage for Single Family Residence per month in 2018 - 7.77 CCF
 Current tariffed Rate per CCF - \$ 3.66
 Projected rate increase percentage to GM Residential volumetric charge - 7.48% based on attached Customer Impact tab from the set of 1600 schedules filed in response to Staff Tech 5 DR's
 Projected rate increase percentage to GM Residential 5/8" meter fixed charge - 9.85%
- (3) QCPAC Surcharge in effect (granted in DW19-029) - 4.06%
 QCPAC Surcharge requested in DW20-020 - 3.92% based on revenue requirement established in last set of 1600 schedules filed in response to Staff Tech 5 DR's
- (4) Projected rate case expense of - \$ 130,000 to be recouped over 12 months from 28,876 customer accounts
- (5) Temporary to Permanent Rate Recoupment based on increase of - 3.42% and recoupment amount earned between March 2020 and September 2020. This number is net of QCPAC recovered during this time frame
 recovered over 18 months, beginning in January 2021
- (6) QCPAC recoupment from DW20-020 will be recouped over 4 months after issuance of order and authorization of recoupment