WC WD
Warren County
Water District

January 31, 2011

MR JEFF DEROUEN
EXECUTIVE DIRECTOR
PUBLIC SERVICE COMMISSION
P O BOX 615
FRANKFORT KY 40602

RE: Case No. 2011-00220

Dear Mr. Derouen:

Enclosed are the original and ten (10) copies of the Responses to Commission Staff's Second Request for Information on the referenced case.

If you need anything further, please let me know.

Sincerely,

Alan H. Vilines, P.E.
General Manager

AHV:jh

Enclosures

COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

JOINT APPLICATION OF WARREN COUNTY WATER DISTRICT, SIMPSON COUNTY WATER DISTRICT, AND BUTLER COUNTY WATER SYSTEM, INC. FOR A DEVIATION FROM APPROVED METER TESTING PROGRAM	)))))	CASE NO. 2011-00220

RESPONSES TO
COMMISSION STAFF'S SECOND REQUEST FOR INFORMATION
ON BEHALF OF
WARREN COUNTY WATER DISTRICT,
SIMPSON COUNTY WATER DISTRICT,
AND BUTLER COUNTY WATER SYSTEM, INC.

The Warren County Water District, Simpson County Water District, and Butler County Water System, Inc., by counsel, hereby provide answers and responses to the Commission Staff's request for information. An original and ten (10) copies of the answers and responses are filed with the Commission. Alan H. Vilines, PE shall be the witness who will be responsible for responding to questions relating to the information provided:

1. State the average residential water usage for the 2010 calendar year for each of the Joint Applicants.

RESPONSE: The average residential water usage for the 2010 calendar year for each of the Joint Applicants is shown below:

Applicant	2010 Average Residential Water Usage
Butler County Water System, Inc.	4,160 Gallons/Month
Simpson County Water District	5,177 Gallons/Month
Warren County Water District	5,147 Gallons/Month

2. Refer to Joint Applicants' Response to Commission Staff's First Information Request, Item 20. Assume a monthly water usage of 4,160 gallons for each of the Joint Applicants.

a. State whether the incremental water rate for Butler County Water System should be $4.91 per 1,000 gallons. If no, state the correct incremental water rate for Butler County Water System and explain why it is the correct rate.

RESPONSE: The incremental water rate for Butler County Water System is $4.91.

b. State whether the incremental water rate for Simpson County Water District should be $5.17 per 1,000 gallons. If no, state the correct incremental water rate for Simpson County Water District and explain why it is the correct rate.

RESPONSE: The incremental water rate for Simpson County Water District is $5.17. This rate is also applicable for the average monthly usage for Simpson County which is 5,177 gallons.

c. Provide a revised Table 3 for Butler County Water System and Simpson County Water District that reflects the use of the correct incremental water rate for each water utility.

RESPONSE: Tables 3(b) and 3(c) have been revised reflecting the average usage and water rate for Butler County Water System and Simpson County Water District, respectively, and are attached. It should be noted that Table 3 (Exhibit 10) of the Districts' Responses to Commission Staff's First Information Request was computed with the average usage and updated incremental water rate for Warren County Water District.

3. Refer to "Revised Determination of Cost-Effective Meter Testing Frequency." The study assumes water rates will remain constant.

a. Explain why no inflation factor was applied to water rates.

RESPONSE: Inflation was not considered because it is not necessary to include inflation in this analysis to obtain correct conclusions. If an inflation factor were applied to water rates to determine revenue gained by replacing meters, the same factor would have to be applied to the

expenses that are incurred in retrieving and replacing the meters. It should be recognized that over time water rates would be adjusted as expenses incurred by the utility increase. "If all cash flows in an economic comparison of alternatives are inflating at the same rate, inflation can be disregarded in before-tax studies."[1] An analysis would certainly not be valid if water rates were inflated without also inflating expenses.

b. Describe the effect on the study's results if an inflation factor was applied to water rates.

RESPONSE: The effect of applying an inflation factor to water rates without also applying it to expenses would be to reduce the age at which meter replacement is cost-effective. However, as discussed above, inflating the revenue gain without also inflating expenses does not provide a correct analysis. Applying an inflation factor to both the revenue gain and expenses would yield the same conclusion as the original analysis.

4. State the incremental water rate at which the proposed deviation would not be cost-effective.

RESPONSE: The same calculations outlined in Table 3 of Revised Determination of Cost-Effective Meter Testing Frequency were used to determine the incremental water rate at which the proposed deviation would not be cost-effective. An average residential water usage of 61,764 gallons per year was assumed. The calculations indicate that an incremental rate of $4.10 per 1,000 gallons shifts the age at which meters can be cost-effectively replaced from 21 years (the proposed deviation) to 20 years.

5. State the number of years for which the manufacturer currently warrants the operation of Sensus Model SRII meters.

RESPONSE: SRII meters are warranted to perform to AWWA Repaired Meter Accuracy Standards for fifteen (15) years from the date of shipment.

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[1] DeGarmo, E. Paul, John R. Canada, and William G. Sullivan, *Engineering Economy*, New York: Macmillan Publishing Co., Inc., 1979.

6. State whether the manufacturer has lengthened the warranty period for new meters since 1989. If yes state the change in the warranty period and the year the change was made.

RESPONSE: The warranty period of 15 years has not lengthened since 1989.

7. a. State whether the Joint Applicants test new water meters when these meters are purchased.

RESPONSE: The Districts do not normally test new water meters when they are purchased.

b. State whether Joint Applicants, rather than testing water meters at the time of purchase, rely upon the manufacturer's testing of these meters.

RESPONSE: The Districts normally do rely upon the manufacturer's tests for new meters.

c. State when each of the Joint Applicants will first test a water meter after it is placed into service if no complaint is made or suspicions are raised regarding the water meter's performance and the meter is not part of a test sample group.

RESPONSE: The Districts test 5/8 x 3/4 inch meters when they are removed from service for any reason, and after they have been in service for 13 years.

d. State the number of meters that Joint Applicants have tested since January 1, 2002 as a result of a zero consumption detection procedure and a 50 percent consumption procedure. Provide a summary of the results of these tests.

RESPONSE: Meter test data specifically related to zero consumption and 50 percent consumption procedures cannot be generated from the Districts' database. Meters pulled from service as a result of these procedures are coded with a test type of "As Found Shop Test". This test type also includes meters purchased from other utilities and tested before being placed into service, meters removed from an idle service, broken

meter bottoms, broken and foggy registers, and meter tampering situations.

e. State the number of meters that Joint Applicants have tested since January 1, 2002 for any reason other than that the meter was in a test sampling group or flagged as a result of zero consumption detection or 50 percent consumption procedures. Provide a summary of the reasons for the testing of these meters and of the results of these tests.

RESPONSE: A summary of meters tested since January 1, 2002 is provided below. "Periodic Shop Test" is the designation for meters pulled from service and tested as part of our existing, approved meter testing deviation program. "As Found Shop Test" is defined in Response 7 (d). "Repaired Meter Test" is the designation for tests performed on repaired meters to insure they meet accuracy standards prior to being placed back into service.

Meter Test Summary
January 1, 2002 Through December 31, 2011

Meter Test Type:	Number of Meters Tested	WAMA	Percentage Passing Repaired Accuracy Standards
Periodic Testing Program	10,665	99.3	83.1%
Customer Requested Test	3	100.0	100.0%
As Found Shop Test	4,695	94.6	83.7%
Repaired Meter Test	3,250	99.9	98.3%
Total	18,613	98.2	85.9%

8. Refer to Bennett & Williams, Inc., "Calculating the Optimal Meter Testing Frequency" (Nov. 10, 1989). At page 5 of this study, the study's authors identify two purposes of a meter-testing program: fairness and check warranties. Noting that Warren County Water District has a 15-year warranty, the report states: "Thus meter testing frequencies greater than 15 years would be unwise because they would not detect the meters that fail to meet specifications in time to replace them while they are still under warranty." Explain why, given this statement, the proposed testing period of 21 years is not contrary to the purpose of a meter-testing program.

RESPONSE: In the late 1980's when the Bennett & Williams, Inc. report was written, the Districts were using Rockwell SR meters. It was

determined through sample testing and economic analysis that the age at which those meters could be cost-effectively replaced was much earlier if meters were replaced under the manufacturer's warranty program. That premise lead to the statement by Bennett & Williams quoted above.

As stated in Case No. 2003-00391 and again in the application for this case, the SRII meters now being used by the Districts maintain their accuracy much longer than the SR's. Sample testing shows that only 1.69 percent of SRII meters that have been in service for 15 years[2] perform at an accuracy level below warranty standards (see Table 3, "Revised Determination of Cost-effective Meter Testing Frequency"). Therefore, the tactic of testing meters to show that they don't meet the warranty as a way to lower the cost of replacing them is not effective with the SRII's. There is no contradiction between the earlier statement in the Bennett & Williams report and the current proposal because different meters are involved.

9. Refer to "Revised Determination of Cost-Effective Meter Testing Frequency" at 13. The report's authors estimate that the use of a 13-year testing interval will cause the program cost to be approximately $19,400 per year higher than a 21-year testing interval.

a. Show the calculations used to determine that a 13-year testing interval will cause annual program costs to be $19,400 higher.

RESPONSE: Due to an input error in the initial calculation, the annual cost savings of the proposed program compared to the existing program were initially understated. The proposed program will result in an annual savings of $36,415. The calculations used to estimate the savings are shown below.

[2] The warranty for SRII meters expires after a meter has been in service for 15 years.

Comparison of Annual Cost of Current and Proposed Meter Testing Programs

Total Sensus SR II Meters	30,193
Annual Meters Tested For Current (13 Year) Program	2,323
Annual Meters Tested For Proposed (21 Year) Program	1,438

Cost of Current Meter Testing Program

	Unit Retrieval Cost	Unit Test Cost	Unit Repair Cost*	Total Unit Cost	Ratio of Total Meters	Weighted Meter Test Cost
Pass Meter Test	$13.38	$6.18	$21.76	$41.32	96.7%	$39.96
Fail Meter Test	13.38	6.18	0.75	20.31	3.3%	0.67
Weighted Average						$40.63

Cost of Proposed Meter Testing Program

	Unit Retrieval Cost	Unit Replacement Cost	Total Unit Cost
All Meters	$13.38	$26.92	$40.30

Annual Cost of Current Meter Testing Program	$94,357.00	(2,323 @$40.63)
Annual Cost of Proposed Meter Testing Program	57,941.80	(1,438 @$40.30)
Total Annual Savings	**$36,415.20**	

* For meters which fail testing, parts required for repair are provided by the manufacturer at no expense. Reimbursement for labor is not provided by the manufacturer.

b. Assume that testing intervals between 14 and 20 years are under consideration as possible alternatives to the existing 13-year testing interval. State for each alternative the amount of annual program cost savings that Joint Applicants will achieve using a 21-year testing interval instead.

RESPONSE: The total cost per meter of the proposed program is $40.30. The projected annual cost of the proposed program is $57,942. A summary of meter testing intervals between 14 and 20 years, based on a total of 30,193 meters, is shown below:

Testing Interval	Meters Tested per Year	Program Cost with Stated Interval	Annual Program Savings with 21 Year Testing Program
14	2,157	$86,912.71	$28,970.90
15	2,013	81,118.53	23,176.72
16	1,887	76,048.62	18,106.81
17	1,776	71,575.17	13,633.37
18	1,677	67,598.77	9,656.97
19	1,589	64,040.94	6,099.14
20	1,510	60,838.90	2,897.09

10. a. Describe the effect on each of the Joint Applicants of low flows (i.e., flows below 0.25 gallons per minute) on its current non-revenue water level.

RESPONSE: To determine the effect on each of the Joint Applicants of low flows on the non-revenue water level, the average accuracy of meters under the current program was multiplied by the percentage of total volume for low flows as found in Table 1 of Revised Determination of Cost-Effective Meter Testing Frequency. The annual unregistered low flow was then calculated and compared to the total water purchased/produced for 2010. Since no test data was available for low flow meter accuracy for meters aged zero to 12 years, it was assumed that the accuracy would be equal to the tested low flow accuracy of a 13-year old meter which was 97.66 percent. The calculations and results for this analysis are shown below.

Effect of Low Flow Meter Accuracy on Total Non-Revenue Water - Existing Program				
Average Low Flow Meter Accuracy - Current Program	97.66 %			
From Domestic Water Use Profile, Low Flow Percent of Total Volume	7.03 %			
	WCWD	**BCWS**	**SCWD**	
Average Monthly Usage per Meter	5,147	4,160	5,177	Gallons
Average Monthly Low Flow Volume	362	292	364	Gallons
Low Flow Monthly Unregistered Volume per Meter	8.5	6.9	8.5	Gallons
Low Flow Annual Unregistered Volume per Meter	102	82	102	Gallons
Total 5/8" SRII Meters	22,891	4,400	2,902	
Total Annual Low Flow Unregistered Volume	**2,328,975**	**361,819**	**296,976**	**Gallons**
Total Water Purchased/Produced	2,587,371,570	318,652,278	362,411,153	Gallons
Annual Percentage of Total Purchased/Produced	**0.09%**	**0.11%**	**0.08%**	

b. Describe the effect, if any, that extending the testing interval to 21 years would have on meter failure to register low flows.

RESPONSE: See Response 10 (a) above. To determine the effect of extending the testing interval to 21 years on under-registration of low flows, similar calculations were performed for meters aged zero to 21 years. The same assumption for low flow accuracy of meters aged zero to 12 years was made in this calculation. For meters aged 13 to 21 years the

best fit curve of the actual test data was used. The average low flow accuracy over 21 years was computed as the sum of the accuracies in individual years from these two sets of data, divided by 21. The computed unregistered volumes were then compared to the results from the current testing program. The results of both sets of calculations are shown below, indicating a difference between the 13 year program and the 21 year program of 0.04 percent to 0.06 percent of the total purchased or produced water.

Effect of Low Flow Meter Accuracy on Total Non-Revenue Water - Proposed Program				
Average Low Flow Meter Accuracy				
Current Program (Avg. Over 13 Years)	97.66 %			
Proposed Program (Avg. Over 21 Years)	96.49 %			
Difference	**1.17 %**			
From Domestic Water Use Profile,				
Low Flow Percent of Total Volume	7.03 %			
	WCWD	**BCWS**	**SCWD**	
Average Monthly Usage per Meter	5,147	4,160	5,177	Gallons
Average Monthly Low Flow Volume	362	292	364	Gallons
Low Flow Monthly Unregistered Volume per Meter	12.7	10.3	12.8	Gallons
Low Flow Annual Unregistered Volume per Meter	153	123	154	Gallons
Total 5/8" SRII Meters	22,891	4,400	2,902	
Total Annual Low Flow Unregistered Volume				
Current Program	2,328,975	361,819	296,976	Gallons
Proposed Program	3,493,607	542,752	445,483	Gallons
Difference	**1,164,632**	**180,932**	**148,506**	Gallons
Total Water Purchased/Produced	2,587,371,570	318,652,278	362,411,153	Gallons
Annual Percentage of Total Purchase/Produced				
Current Program	0.09%	0.11%	0.08%	
Proposed Program	0.14%	0.17%	0.12%	
Difference	**0.05%**	**0.06%**	**0.04%**	

11. Identify all other jurisdictions in which the state utility regulatory commission has authorized a water utility to use a 21-year interval for testing water meters. Include with the response the statutory, regulatory, or administrative authority for the regulatory commission's actions.

RESPONSE: In response to this question, the District has contacted several state utility regulatory commissions. Of the agencies contacted, three states – Maine, California, and Indiana – allow utilities to request deviations of baseline meter testing. While none of these states have

granted a specific 21-year interval for testing water meters, California regulations allow 20 year testing on all meters less than 1" in size. This testing requirement is defined in General Order 103-A of the Public Utilities Commission of the State of California effective September 10, 2009.

This limited search found considerable precedent from other state regulatory agencies providing a mechanism to request deviations based on economic factors and historical meter accuracy. However, central to the application in this case is Kentucky law (KRS 278.210). The Districts' request for this deviation is appropriate and should be approved based on the test information and cost-effective analyses presented.

DATED this 31st day of January, 2012

COLE & MOORE, P.S.C.
9221 College Street
Bowling Green, KY 42101
(270) 782-6666

BY: _____
Frank Hampton Moore, Jr.

CERTIFICATION OF PERSON PREPARING/SUPERVISING THE PREPARATION OF THE RESPONSE

This is to certify that the undersigned prepared and/or supervised the preparation of this response on behalf of the Joint Applicants and that this response is true and accurate to the best of his knowledge, information, and belief formed after reasonable inquiry.

BY: _____
Alan H. Vilines, PE

COMMONWEALTH OF KENTUCKY

COUNTY OF WARREN

SUBSCRIBED AND SWORN to before me by Alan H. Vilines on the 31 day of January 2012.

_____
Notary Public
My Commission Expires: 1/24/13

CERTIFICATION OF SERVICE

The undersigned herby certifies that a true and correct copy of the foregoing was on the 31st day of Jan, 2012, mailed for overnight delivery, postage prepaid, to the following:

Original and 10 copies to:

Jeff Derouen
Executive Director
Public Service Commission
P O Box 615
Frankfort, KY 40602

Copies to:

Alan H. Vilines
General Manager
Warren County Water District
523 U.S. 31W Bypass
P. O. Box 10180
Bowling Green, KY 42102-4780

_____
Frank Hampton Moore, Jr.

TABLE 3(b) - BUTLER COUNTY WATER SYSTEM
COST-EFFECTIVE DETERMINATION

A	B	C	D	E	F	G	H	I	J
Meter Age	Weighted Average Meter Accuracy (WAMA)[1]	Percent Below Repaired Meter Standards[1]	Unit Retrieval Cost	Unit Replacement Cost	Total Program Cost Per Meter	Water Recovered (gals/yr)	Unit **Annual** Revenue Gain	Unit Present Value of Rev. Gain[2]	Net Present Value of Program per Meter
1	100.05%	0.00%	$13.38	$26.92	$40.30	0	$0.00	$0.00	-$40.30
2	100.05%	0.00%	13.38	26.92	40.30	0	0.00	0.00	-40.30
3	100.05%	0.00%	13.38	26.92	40.30	0	0.00	0.00	-40.30
4	100.05%	0.00%	13.38	26.92	40.30	0	0.00	0.00	-40.30
5	100.05%	0.00%	13.38	26.92	40.30	0	0.00	0.00	-40.30
6	100.05%	0.00%	13.38	26.92	40.30	0	0.00	0.00	-40.30
7	100.05%	0.00%	13.38	26.92	40.30	0	0.00	0.00	-40.30
8	100.05%	0.00%	13.38	26.92	40.30	0	0.00	0.00	-40.30
9	100.05%	0.00%	13.38	26.92	40.30	0	0.00	0.00	-40.30
10	100.05%	0.00%	13.38	26.92	40.30	0	0.00	0.00	-40.30
11	100.05%	0.00%	13.38	26.92	40.30	0	0.00	0.00	-40.30
12	100.05%	0.00%	13.38	26.92	40.30	0	0.00	0.00	-40.30
13	100.05%	0.25%	13.38	26.92	40.30	0	0.00	0.00	-40.30
14	100.01%	0.44%	13.38	26.92	40.30	0	0.00	0.00	-40.30
15	99.93%	1.69%	13.38	26.92	40.30	33	0.16	1.91	-38.39
16	99.82%	4.84%	13.38	26.92	40.30	92	0.45	5.65	-34.65
17	99.65%	9.86%	13.38	26.92	40.30	172	0.84	11.06	-29.24
18	99.45%	16.77%	13.38	26.92	40.30	273	1.34	18.43	-21.87
19	99.21%	25.57%	13.38	26.92	40.30	393	1.93	27.64	-12.66
20	98.93%	36.25%	13.38	26.92	40.30	534	2.62	38.98	-1.32
21	98.61%	48.82%	13.38	26.92	40.30	694	3.41	52.57	**12.27**
22	98.25%	63.27%	13.38	26.92	40.30	873	4.29	68.37	28.07
23	97.85%	79.61%	13.38	26.92	40.30	1,071	5.26	86.49	46.19
24	97.42%	97.83%	13.38	26.92	40.30	1,288	6.32	107.03	66.73
25	96.95%	100.00%	13.38	26.92	40.30	1,522	7.47	130.08	89.78

Unit Costs for District Operations:

Cost per Man-hour (Retrieval)	$17.97
Cost per Man-hour (Admin.)	20.56
Cost per Truck-hour	5.77

Unit Retrieval Cost:

Meters/hr.	1.80	
Unit Cost		$13.21

Unit Admin. Cost:

Meters/hr.	120.00	
Unit Cost		$0.17

Total Unit Retrieval & Test Cost: $13.38

Replacement Costs:

New Meter Cost	$31.88
Scrap Value	4.96
Net Cost	$26.92

Avg. Residential Usage = 49,920 Per Year

Incremental Water Rate = $4.91 per 1,000 gals.

[1] Best fit curve data.

[2] Unit Present Value of Rev. Gain (I) = Unit Annual Revenue Gain (H) * Present Value Factor @ 3.0%.

TABLE 3(c) - SIMPSON COUNTY WATER DISTRICT
COST-EFFECTIVE DETERMINATION

A	B	C	D	E	F	G	H	I	J
Meter Age	Weighted Average Meter Accuracy (WAMA)[1]	Percent Below Repaired Meter Standards[1]	Unit Retrieval Cost	Unit Replacement Cost	Total Program Cost Per Meter	Water Recovered (gals/yr)	Unit **Annual** Revenue Gain	Unit Present Value of Rev. Gain[2]	Net Present Value of Program per Meter
1	100.05%	0.00%	$13.38	$26.92	$40.30	0	$0.00	$0.00	-$40.30
2	100.05%	0.00%	13.38	26.92	40.30	0	0.00	0.00	-40.30
3	100.05%	0.00%	13.38	26.92	40.30	0	0.00	0.00	-40.30
4	100.05%	0.00%	13.38	26.92	40.30	0	0.00	0.00	-40.30
5	100.05%	0.00%	13.38	26.92	40.30	0	0.00	0.00	-40.30
6	100.05%	0.00%	13.38	26.92	40.30	0	0.00	0.00	-40.30
7	100.05%	0.00%	13.38	26.92	40.30	0	0.00	0.00	-40.30
8	100.05%	0.00%	13.38	26.92	40.30	0	0.00	0.00	-40.30
9	100.05%	0.00%	13.38	26.92	40.30	0	0.00	0.00	-40.30
10	100.05%	0.00%	13.38	26.92	40.30	0	0.00	0.00	-40.30
11	100.05%	0.00%	13.38	26.92	40.30	0	0.00	0.00	-40.30
12	100.05%	0.00%	13.38	26.92	40.30	0	0.00	0.00	-40.30
13	100.05%	0.25%	13.38	26.92	40.30	0	0.00	0.00	-40.30
14	100.01%	0.44%	13.38	26.92	40.30	0	0.00	0.00	-40.30
15	99.93%	1.69%	13.38	26.92	40.30	41	0.21	2.51	-37.79
16	99.82%	4.84%	13.38	26.92	40.30	115	0.59	7.41	-32.89
17	99.65%	9.86%	13.38	26.92	40.30	214	1.11	14.61	-25.69
18	99.45%	16.77%	13.38	26.92	40.30	339	1.75	24.07	-16.23
19	99.21%	25.57%	13.38	26.92	40.30	490	2.53	36.24	-4.06
20	98.93%	36.25%	13.38	26.92	40.30	665	3.44	51.18	**10.88**
21	98.61%	48.82%	13.38	26.92	40.30	864	4.47	68.91	28.61
22	98.25%	63.27%	13.38	26.92	40.30	1,087	5.62	89.57	49.27
23	97.85%	79.61%	13.38	26.92	40.30	1,333	6.89	113.30	73.00
24	97.42%	97.83%	13.38	26.92	40.30	1,602	8.28	140.23	99.93
25	96.95%	100.00%	13.38	26.92	40.30	1,894	9.79	170.47	130.17

Unit Costs for District Operations:

Cost per Man-hour (Retrieval)	$17.97	
Cost per Man-hour (Admin.)	20.56	
Cost per Truck-hour	5.77	
Unit Retrieval Cost:		
Meters/hr.	1.80	
Unit Cost		$13.21
Unit Admin. Cost:		
Meters/hr.	120.00	
Unit Cost		$0.17
Total Unit Retrieval & Test Cost:		$13.38

Replacement Costs:

New Meter Cost	$31.88
Scrap Value	4.96
Net Cost	$26.92

Avg. Residential Usage = 62,124 Per Year

Incremental Water Rate = $5.17 per 1,000 gals.

[1] Best fit curve data.

[2] Unit Present Value of Rev. Gain (I) = Unit Annual Revenue Gain (H) * Present Value Factor @ 3.0%.