MICHAEL P. VICTORINO
Mayor

JEFFREY T. PEARSON, P.E.
Director

HELENE KAU
Deputy Director

DEPARTMENT OF WATER SUPPLY
COUNTY OF MAUI
200 SOUTH HIGH STREET
WAILUKU, MAUI, HAWAI'I 96793
http://www.mauicounty.gov/water

March 5, 2021

Honorable Michael P. Victorino
Mayor, County of Maui
200 South High Street
Wailuku, Hawaii 96793

APPROVED FOR TRANSMITTAL

Michael P Victorino 3/5/21
Mayor Date

For Transmittal to:

Honorable Keani N.W. Rawlins-Fernandes
Budget, Finance, and Economic Development Committee
Maui County Council
200 South High Street
Wailuku, Hawaii 96793

RECEIVED
2021 MAR -8 PM 2:07
OFFICE OF THE
COUNTY COUNCIL

Dear Chair Rawlins-Fernandez:

SUBJECT: **WATER RATE STUDY** (BFED-23)

In response to your February 24, 2021 request, please find attached the following items:

1. A copy of the 2013 Water Rate Study.

2. A copy of the spreadsheets used by the Department of Water Supply to calculate actual and projected revenue for Fiscal Years 2018,2019, and 2020.

3. A breakdown showing the percentage of consumers from the All General Users category who use over 35,000 gallons of water per month.
   a. FY 2018 - 21.5% *
   b. FY 2019 - 33.1% *
   c. FY 2020 - 23.3% *

   *Consumers that have used over 35,000 gallons per month at least once during the fiscal year.

Should you have any questions, please contact me at Ext. 7834.

Sincerely,

JEFFERY T. PEARSON, P.E.
Director

Attachments
JTP:hh

FY 2013 Water Rate Study

County of Maui
Department of Water Supply

August 2012

SAIC

Brown AND Caldwell

FY 2013 Water Rate Study

County of Maui
Department of Water Supply

August 2012

SAIC

Brown AND Caldwell

FY 2013 Water Rate Study

County of Maui
Department of Water Supply

August 2012

SAIC® Brown AND Caldwell

This report has been prepared for the use of the client for the specific purposes identified in the report. The conclusions, observations and recommendations contained herein attributed to SAIC constitute the opinions of SAIC. To the extent that statements, information and opinions provided by the client or others have been used in the preparation of this report, SAIC has relied upon the same to be accurate, and for which no assurances are intended and no representations or warranties are made. SAIC makes no certification and gives no assurances except as explicitly set forth in this report.

SAIC

August 8, 2012

Dave Taylor, Director
County of Maui, Department of Water Supply
200 South High Street
Wailuku, Maui, HI 96793-2155

Subject: **FY 2013 Water Rate Study – Final Report**

Dear Dave:

SAIC is pleased to submit this final report on the FY 2013 Water Rate Study, conducted for the County of Maui Department of Water Supply (DWS). This report sets forth and summarizes the methodology, assumptions, analyses, and results of the DWS rate review process that occurred from October 2011 through June 2012.

The rate review process was a collaborative effort among SAIC staff, Brown & Caldwell staff, and DWS staff. Andy Baker, Ann Hajnosz and I wish to express our appreciation for the friendly cooperation and assistance of all those who provided the information and review necessary to successfully complete this study. In particular, we want to acknowledge the efforts of Holly Perdido in assisting us in this effort.

Once again, we appreciate the opportunity to be of service to the DWS.

Sincerely,

SAIC Energy, Environment & Infrastructure, LLC

Art Griffith
Project Manager

AJG
Enclosures

cc: H. Perdido, Maui
A. Hajnosz, Brown & Caldwell
A. Baker, SAIC

SAIC Energy, Environment & Infrastructure, LLC

999 Third Avenue, Suite 500 | Seattle, WA 98104 | 206.695.4700 | saic.com/eeandi

FY 2013 Water Rate Study

County of Maui, Department of Water Supply

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General Background

The Department of Water Supply (DWS) is a public agency of the County of Maui (County). The primary function of the DWS is to provide municipal water supply to meet the domestic needs and fire protection requirements for its service area on the islands of Maui and Moloka'i. The island on Lāna'i is part of the County; however, its water system is owned and operated by a private water company.

In Fiscal Year (FY) 2011, the DWS supplied retail water service to approximately 35,500 customer accounts, with water deliveries in FY 2011 of close to 12.3 billion gallons. DWS customers are classified as either General Rate, Agricultural, or Non-Potable.

The DWS works with the Mayor and County Council to set and adjust rates and charges for the furnishing of water and water service so that revenues are sufficient to make the water system financially self-supporting. The DWS schedule of water rates was last amended in July 2011 (FY 2012), an increase of 5.5 percent.

SAIC, Energy, Environment & Infrastructure, LLC and Brown and Caldwell (the project team) were retained by the DWS to complete this FY 2013 Water Rate Study. One of the DWS's goals was to design a more conservation-oriented water rate structure to be made effective in July 2012 (beginning of FY 2013).

Purpose of the Report

The purpose of this report is to document the analyses that were conducted for this project. Specific analyses and results summarized in this report include the following:

- The projection of DWS revenue requirements developed by the project team for the nine-year study period from FY 2012 through FY 2020 (the study period).
- The level of future rate increases that may be necessary to fund future DWS operating and capital needs.
- A cost-of-service analysis.
- A rate options analysis.
- A schedule of proposed water rates for FY 2013.
- Adopted rates for FY 2013, effective July 1, 2012.
- Additional rate-related issues for future consideration by the DWS.

The key assumptions underlying the various projections and analyses prepared in this FY 2013 Water Rate Study are outlined in this report. Conference calls were held with DWS staff and the project team to review assumptions, data used in the study, and preliminary results at important decision points during the study. Appropriate revisions and additions were made to the study as a result of these phone

conversations. After review by DWS staff, the final revenue requirements analysis, cost-of-service analysis and proposed FY 2013 water rate schedules were presented to the Mayor in February 2012, and to the County Council in March 2012. The FY 2013 budget proposal, including the proposed rates, was approved by the County Council in June 2012.

Revenues and Revenue Requirements

A nine-year financial projection was developed to determine revenues, revenue requirements, and rate adjustments for FY 2012 – FY 2020. Over the course of the revenue requirements analysis, it became evident that the DWS faces many critical capital improvement needs. Capital maintenance and replacement of the existing system are critically needed to provide and maintain the desired level of service. The DWS's Capital Improvement Program for the nine-year period includes an average of $36.3 million per year in improvements. To achieve their goal of maintaining and improving the water system, the DWS has increased staffing in their Engineering Division to support their planned CIP, and the revenue requirements projection that the project team developed reflects the costs associated with that staffing increase, as well as the funding for capital improvements.

Projected Rate Increases

The County approves rate increases for only one year, but as part of the revenue requirements analysis, a long-term projection of the level of rate increases was developed for use as a planning tool by the DWS. Figure ES-1 depicts historical rate increases from FY 2009 through projected rate increases in FY 2020.

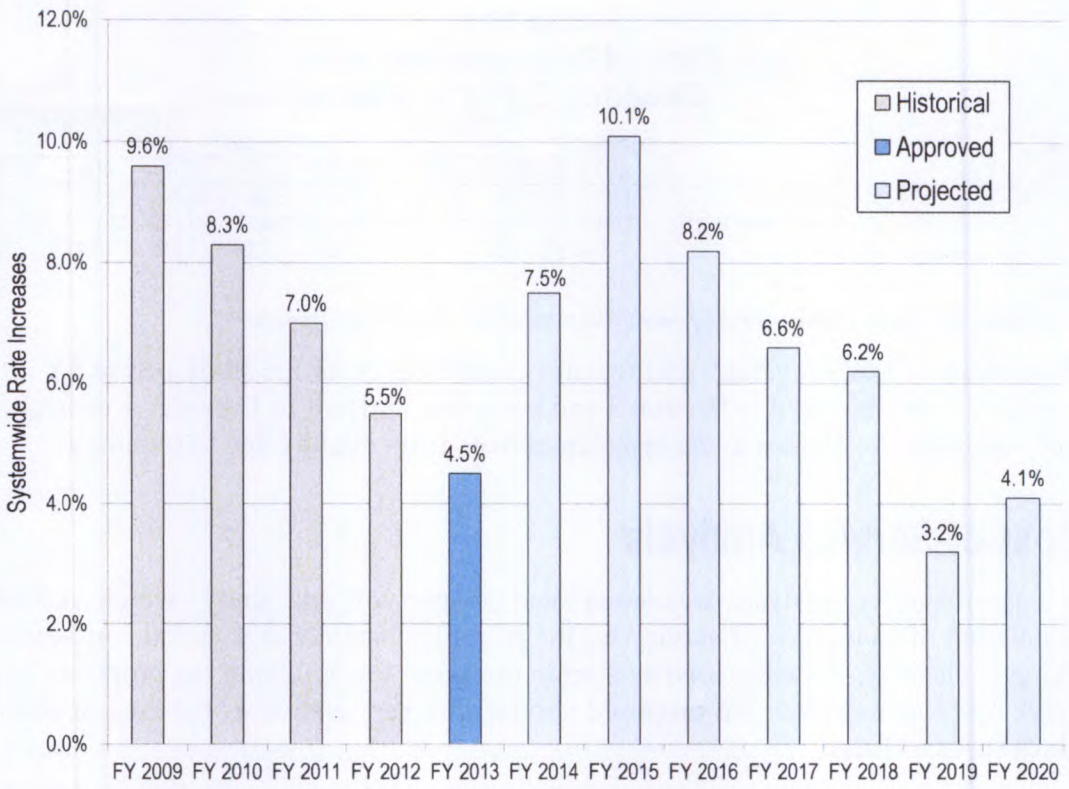


Figure ES-1: Historical and Projected Rate Increases (Fiscal Year Ending June 30)

Financial Performance Indicators

Table ES-1 summarizes three financial performance indicators for FY 2013-FY 2020 that result from the revenue and revenue requirement projections.

- *Annual water rate percent increase.* Approximate system-wide rate increase needed for revenues to cover projected revenue requirements.
- *Example residential bi-monthly water bill.* This example bi-monthly water bill is for a Single Family customer with a 5/8-inch meter using approximately 32,000 gallons every bi-monthly billing period.[1] The water bill for this customer would increase from the current (FY 2012) $109.20 per bi-monthly period to $177.72 per bi-monthly period in FY 2020, or an average annual increase of approximately 6.3 percent. It should be noted that the percent increase for each customer's water bill may vary from the system-wide rate increase. See Section 5 for more information on typical bill impacts.
- *Debt Service Coverage (DSC) Ratio.* Meeting a target DSC ratio of 1.20 was used as a benchmark for setting the level of required rate adjustments. This target is projected to be achieved in FY 2014 – FY 2020, if other elements of the financial planning analysis are achieved.

[1] 16,000 gallons is the average monthly water use for a residential (5/8-inch meter size) customer.

Table ES-1
Financial Performance Metrics
(Fiscal Year Ending June 30)

Line No.		Budgeted 2013	Projected 2014	2015	2016	2017	2018	2019	2020
1	Annual Water Rate % Increase	4.5%	7.5%	10.1%	8.2%	6.6%	6.2%	3.2%	4.1%
2	Example Residential Bi-Monthly Water Bill (1)	$114.11	$122.67	$135.06	$146.13	$155.77	$165.43	$170.72	$177.72
3	Debt Service Coverage Ratio	0.85	1.26	1.21	1.25	1.26	1.28	1.27	1.24

Notes:

(1) Example bi-monthly water bill based on a 5/8-inch meter and 32,000 gallons consumed per bi-monthly billing period.

Projections of DWS revenues and revenue requirements for the study period FY 2012 – FY 2020 are described in Section 3 and presented in detail in Tables A-1 through A-8 of Appendix A. Values in the appendices may differ slightly due to rounding.

Cost-of-Service Analysis

A cost-of-service analysis was completed as part of this study, which included calculation of a unit cost-of-service for the monthly customer charge and consumption charge. These results were used as a reference point for designing the proposed rates. Table ES-2 summarizes the proposed service charges relative to the cost-of-service based service charge.

Table ES-2
Summary of FY 2013 Cost-of-Service
for Monthly Service Charges Analysis

Line No.	Meter Size	Monthly Meter Charge (1)	Monthly Capacity Charge (2)	Monthly Customer Charge (3)	Total COS Service Charge	Proposed Service Charge	Proposed Charge as a % of COS
1	5/8"	$3.59	$8.18	$5.21	$16.98	$11.25	66.3%
2	3/4"	5.39	12.27	5.21	22.87	16.00	70.0%
3	1"	8.98	20.45	5.21	34.64	27.00	78.0%
4	1-1/2"	17.95	40.90	5.21	64.06	55.00	85.9%
5	2"	28.72	65.44	5.21	99.37	75.00	75.5%
6	3"	53.85	122.70	5.21	181.76	145.00	79.8%
7	4"	89.75	204.50	5.21	299.46	260.00	86.8%
8	6"	179.50	409.00	5.21	593.71	490.00	82.5%
9	8"	287.20	654.40	5.21	946.81	800.00	84.5%

Notes:

(1) Based on recovery of meter-related costs.

(2) Based on recovery of extra-capacity, fire protection, and non-potable-related costs.

(3) Based on recovery of customer-related costs.

The cost-of-service consumption charge was calculated at $3.19 per 1,000 gallons of potable water, and $2.62 per 1,000 gallons of non-potable water. Additional information on the cost-of-service analysis can be found later in this report in Section 4, and in detail in Appendix B. Values in the appendices may differ slightly due to rounding.

Existing Schedule of Rates and Charges

Table ES-3 summarizes the existing schedule of water rates and charges for the DWS. This schedule has been in effect since July 1, 2011.

Table ES-3
Existing DWS Water Rate Schedule

Line No.	Service Charge: Meter Size (inches)	Service Charge: Monthly Rate
1	5/8"	$9.25
2	3/4"	14.00
3	1"	24.00
4	1-1/2"	51.00
5	2"	67.50
6	3"	125.00
7	4"	250.00
8	6"	415.00
9	8"	650.00
10		

Usage Charge ($/kGal)	
General Rates:	$/kgal
0 - 5,000 gallons/month	$1.75
5,001 - 15,000 gallons/month	3.20
> 15,001 gallons/month	4.60
Agriculture Rates:	$/kgal
0 - 5,000 gallons/month	$1.75
5,001 - 15,000 gallons/month	3.20
> 15,001 gallons/month	1.05
Non-Potable Rate:	$/kgal
All Usage	$1.05

Proposed General Rate – Single Family Rate Class

One of the main objectives of the 2013 Water Rate Study was the implementation of more conservation-oriented rates and evaluation of the creation of a General Rate – Single Family customer class. One of the goals of creating a General Rate – Single Family customer class was to set the rate blocks and rates in such a way to promote conservation among that subset of customers. Therefore, the General Rate – Single Family rate structure is proposed to be an inverted 4-block rate structure, instead of the existing inverted 3-block rate structure. The rate for the fourth block will be set at a level that is designed to promote the wise use of water for those General Rate – Single Family customers using relatively high levels of water.

Figure ES-2 graphically represents the percent of customers and consumption that falls within the existing and proposed rate blocks for the General Rate – Single Family customers. The first block represents lifeline use, and is currently charged at approximately half the cost-of-service. The second block represents average use, and is typically charged at the cost-of-service. The third block is above-average use, and is charged at approximately 140 percent of the cost-of-service. The newly-added fourth block represents significantly above-average use, and is charged at 165 percent of the cost-of-service.

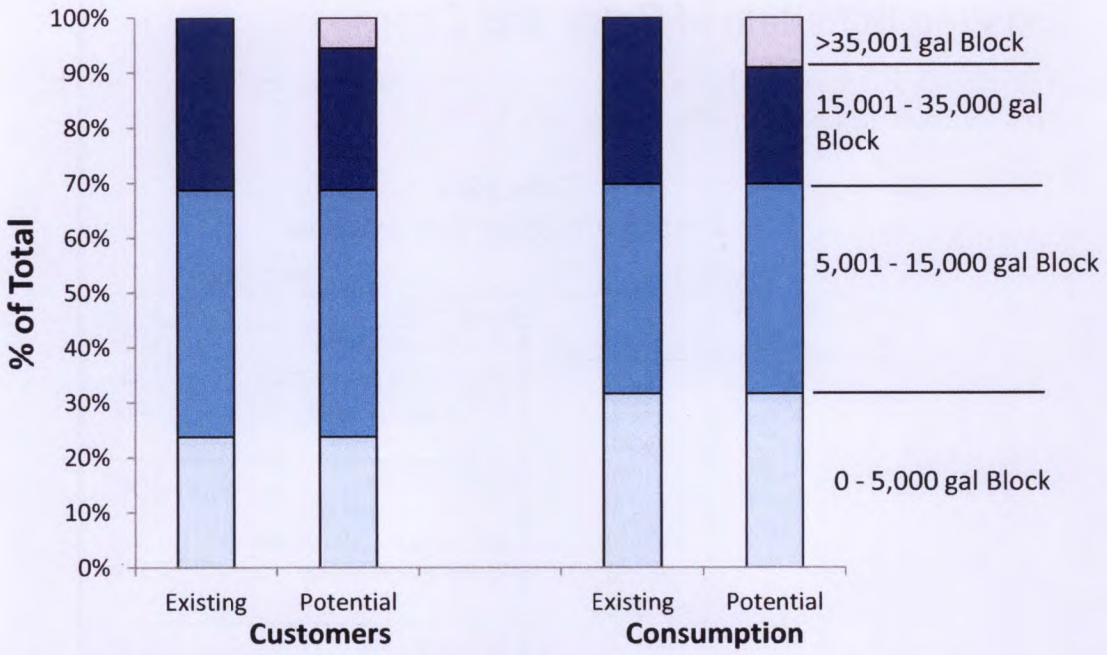


Figure ES-2: Consumption Blocks for General Rate – Single Family Customers

Proposed FY 2013 Schedule of Rates and Charges

Table ES-4 summarizes the proposed schedule of rates and charges for the DWS.

Table ES-4
Proposed DWS Water Rate Schedule

Line No.	Service Charge: Meter Size (inches)	Service Charge: Monthly Rate	Usage Charge ($/kGal)	
			General Rates - Single Family:	$/kgal
1	5/8"	$11.25	0 - 5,000 gallons/month	$1.75
2	3/4"	16.00	5,001 - 15,000 gallons/month	3.20
3	1"	27.00	15,001 - 35,000 gallons/month	4.80
4	1-1/2"	55.00	≥ 35,001 gallons/month	5.25
5	2"	75.00		
6	3"	145.00	General Rates - All Other:	$/kgal
7	4"	260.00	0 - 5,000 gallons/month	$1.75
8	6"	490.00	5,001 - 15,000 gallons/month	3.20
9	8"	800.00	≥ 15,001 gallons/month	4.80
10				
11			Agriculture Rates:	$/kgal
12			0 - 5,000 gallons/month	$1.75
13			5,001 - 15,000 gallons/month	3.20
14			≥ 15,001 gallons/month	1.10
15				
16			Non-Potable Rate:	$/kgal
			All Usage	$1.10

Issues for Further Consideration

During the course of completing this water rate study, several key issues for further consideration were identified. The following is a list of various water rate-related and water planning issues for the DWS to consider in advance of its next review of water rates.

- Work with Honolulu Board of Water Supply to ensure data accuracy for customer accounts, water sales and revenues.
- Continue to examine the appropriateness of the level of the monthly service charge.
- Work closely with County Budget staff to investigate the possibility of passing multi-year rate increases.
- Closely monitor revenue patterns in Fiscal Year 2013 to assess the impact of the new rate structure.

Section 1
INTRODUCTION

1.1 General Background

The Department of Water Supply (DWS) is a public agency of the County of Maui (County). The primary function of the DWS is to provide municipal water supply to meet the domestic needs and fire protection requirements for its service area on the islands of Maui and Moloka'i. The island on Lāna'i is part of the County; however, its water system is owned and operated by a private water company.

In Fiscal Year (FY) 2011, the DWS supplied retail water service to approximately 35,500 customer accounts, with water deliveries in FY 2011 of close to 12.3 billion gallons. DWS customers are classified as either General Rate, Agricultural, or Non-Potable.

The DWS works with the Mayor and County Council to set and adjust rates and charges for the furnishing of water and water service so that revenues are sufficient to make the water system financially self-supporting. The DWS schedule of water rates was last amended in July 2011 (FY 2012), an increase of 5.5 percent.

SAIC, Energy, Environment & Infrastructure, LLC and Brown and Caldwell (the project team) were retained by the DWS to complete this FY 2013 Water Rate Study. One of the DWS's goals was to design a more conservation-oriented water rate structure to be made effective in July 2012 (beginning of FY 2013).

1.2 Project Scope of Services

The project team's scope of services for the FY 2013 Water Rate Study included the following six tasks:

Task 1: Identification of rate study objectives and necessary data

Task 2: Development of projected revenues and revenue requirements

Task 3: Preparation of cost-of-service analysis

Task 4: Development of three alternative rate structures and a final rate proposal

Task 5: Presentation of the results of the rate study

Task 6: Preparation of draft and final reports

1.3 Purpose of the Report

The purpose of this report is to document the analyses that were completed for this project. Specific analyses and results summarized in this report include the following:

- The projection of DWS revenue requirements developed by the project team for the eight-year study period from FY 2013 through FY 2020 (study period)
- The level of future rate increases that may be necessary to fund future DWS operating and capital needs
- A cost-of-service analysis
- A rate options analysis
- A schedule of proposed water rates for FY 2013
- Adopted rates for FY 2013, effective July 1, 2012.
- A list of additional water rate-related and water planning issues for future consideration by the DWS.

The key assumptions underlying the various projections and analyses prepared in this FY 2013 Water Rate Study are discussed in this report. Meetings and phone calls were held among DWS staff and the project team to review assumptions, data used in the study, and the preliminary results and additions were made to the study as a result of these meetings and phone conversations. After review by DWS staff, the final revenue requirements analysis, cost-of-service analysis, and proposed FY 2013 water rate schedules were presented to the DWS and the Mayor in February 2012. The County Council approved the final rate recommendation in June 2012. The adopted rates are shown later in Section 6, Table 6-1.

1.4 Report Organization

This report sets forth the final results of the FY 2013 Water Rate Study prepared by the project team in conjunction with DWS staff. The report is organized into seven sections plus an Executive Summary. Detailed discussions of customer services and water sales projections, revenues and revenue requirement projections, and cost-of-service analysis results are provided in Sections 2, 3, and 4, respectively. A discussion of proposed rate adjustments is presented in Section 5, and the adopted rates are presented in Section 6. Section 7 provides a summary of issues for further consideration. The report appendices provide further documentation of the analyses described in this report.

Section 2
PROJECTION OF CUSTOMER SERVICES AND WATER SALES

2.1 Background

Future financial operating results of the DWS will be influenced by a number of factors including the number and usage characteristics of DWS customers, variations in precipitation amounts, changes in the sources and costs of water supply, and the response of water users to DWS conservation efforts and water pricing policies. In the near future financial operating results could continue to be impacted by the economic recovery.

Although there are a variety of revenue sources available to the DWS, the primary revenue source is derived from its rates and charges for metered water sales. Thus, reliable projections of future customer services and water sales are important components of the rate review process.

2.2 Key Assumptions and Methodology

The following is a summary of the key assumptions that were used to develop the projections of customer services and water sales volume for the study period.

- The growth in customer services and water sales volume was conservatively assumed to be zero percent for FY 2013 through FY 2016 based on historical data and DWS expectations for a continued slow economic recovery in the short term. For the period from FY 2017 through FY 2020 customer services were assumed to increase at 0.50 percent per year, and water sales volume was assumed to increase at 0.25 percent per year.
- Although year-to-year variations in rainfall and temperature are expected to occur and to impact actual water sales volumes, it is assumed that normal or average weather conditions will generally prevail during the study period and are assumed to occur in each year of the study period.
- The creation of a General Rates – Single Family customer class was based on bill frequency data provided by the Honolulu Board of Water Supply (HBWS), which administers billing for the DWS. Approximately 83 percent of the total General Rates customers were identified as General Rates – Single Family customers. Projected customer services reflect the separation of Single Family and All Other General Rate customers effective FY 2013.

Key components of the methodology used to develop customer and water sales projections include the following:

- An analysis of 3 years (FY 2009 – FY 2011) of historical customer services and water sales was undertaken in order to understand historical customer growth and

water usage trends. Any trends and other results from the analyses were discussed with DWS and used to determine growth assumptions for customer and water sales projections.

- The number of projected customer services was developed by applying the assumed annual growth rate to the number of connections by customer class for the previous year.
- Projected water sales volume was developed by applying the assumed annual growth rate to the water sales volume by customer class for the previous year.

2.3 Historical and Projected Customer Services and Water Sales

2.3.1 Customer Services

Table 2-1 summarizes the historical (FY 2009 – FY 2011) number of customer services for the General Rates, Agricultural, and Non-Potable customer classes. This table summarizes data provided by the Honolulu Board of Water Supply (HBWS).

Table 2-1
Historical Number of Customer Services
(Fiscal Year Ending June 30)

Line No.		Historical (1) 2009	2010	2011	'09 - '11 Avg Annual Growth
1	General Rates	34,597	34,359	34,654	0.1%
2	Agricultural (2)	744	760	727	-1.1%
3	Non-Potable	61	64	66	4.0%
4	Total	35,402	35,183	35,447	0.1%

Notes:

(1) Historical customer services from Honolulu Board of Water Supply, Bill Frequency Analysis Data.

(2) Reduction in Agricultural services in FY 2011 due to a change in Agriculutural customer class eligibility rules which took effect that year.

Historical customer service data from FY 2009 to FY 2011 show average annual growth rates for General Rate and Agricultural customer classes of less than 1 percent and -1.1 percent, respectively. The significant reduction in Agricultural customers between FY 2010 and FY 2011 was due to a change in Agricultural customer class eligibility rules which took effect in FY 2011. Overall, a minimal change in the number of Non-Potable customers was observed, although because of the low number of total customers this minor variation is reflected as a 4.0 percent annual increase over the three-year period.

Total customer growth over the three-year period averaged approximately 0.1 percent per year. This trend of low to no growth in customers over the FY 2009 – FY 2011 time period reflects a general trend experienced by water utilities nationwide.

As discussed above, based on the historical results and discussion with DWS staff, the project team assumed that for the period from FY 2012 to FY 2016, there would be zero percent growth in the number of customer services. Because operating results were not yet available for FY 2012, it was assumed that FY 2012 numbers equaled those of FY 2011. For FY 2017 through FY 2020, it was assumed that the number of customer services would increase at a rate of 0.5 percent per year, reflecting a return to normal economic conditions. Table 2-2 summarizes these projected numbers.

Table 2-2 also shows projected customers under the adopted rate structure which separates the General Rates customer class to Single-family customers and All Other customers starting in FY 2013. This rate structure change is described in more detail in Section 5, Proposed Rate Adjustments. As a result of this change in FY 2013, growth rates over the FY 2012 – FY 2016 for the General Rates – Single Family and General Rates – All Others customer classes are shown as "n/a" or not available; growth rates for other customer categories and time periods are consistent with the key assumptions described earlier in this section.

Table 2-2
Projected Number of Customer Services
(Fiscal Year Ending June 30)

Line No.		Budget (1) 2012	Budget (1) 2013	Projected (1) 2014	Projected (1) 2015	Projected (1) 2016	'12 - '16 Avg Annual Growth
1	General Rates - Single Family (2)	0	28,900	28,900	28,900	28,900	n/a
2	General Rates - All Other (2)	34,700	5,800	5,800	5,800	5,800	n/a
3	Agricultural	730	730	730	730	730	0.0%
4	Non-Potable	70	70	70	70	70	0.0%
5	Total	35,500	35,500	35,500	35,500	35,500	0.0%

Line No.		Projected (1) 2017	Projected (1) 2018	Projected (1) 2019	Projected (1) 2020	'17 - '20 Avg Annual Growth
6	General Rates - Single Family (2)	29,000	29,200	29,300	29,500	0.6%
7	General Rates - All Other (2)	5,800	5,800	5,800	5,900	0.6%
8	Agricultural	730	730	740	740	0.5%
9	Non-Potable	70	70	70	70	0.0%
10	Total	35,600	35,800	35,910	36,210	0.6%

Notes:

(1) Budget and Projected customer services based on previous year's results multiplied by the assumed growth rate of 0% for 2012 - 2016, and 0.5% for 2017 - 2020. Historical data does not include the separation of Single Family General Rates from All Other General Rates.

(2) Reclassification of customers dividing the General Rates class to separate Single Family and All Other in FY 2013.

2.3.2 Water Sales

Table 2-3 provides a summary of historical (FY 2009 – FY 2011) water sales for the General Rates, Agricultural and Non-Potable customer classes. This table summarizes data provided by HBWS.

Table 2-3
Historical Number of Water Sales (000 gallons)
(Fiscal Year Ending June 30)

Line No.		Historical (1) 2009 (2)	2010	2011	'09 - '11 Avg Annual Growth
1	General Rates	n/a	12,041,017	11,006,991	n/a
2	Agricultural	n/a	1,175,785	1,062,357	n/a
3	Non-Potable	n/a	227,115	198,028	n/a
4	Total	n/a	13,443,917	12,267,376	n/a

Notes: Notes:

(1) Historical water sales from Honolulu Board of Water Supply, Bill Frequency Analysis Data.

(2) Historical results provided by HBWS for 2009 had unresolvable data errors.

The data for FY 2009 is not reported due to unresolvable data errors in the data provided by HBWS. Additionally, there was an issue with data for FY 2010 that resulted in a double-counting of some water sales associated with cancelled and re-issued bills. The data provided by HWBS for FY 2011 was reviewed by DWS staff, and was consistent with the audited water sales numbers. In light of the data errors in FYs 2009 and 2010, the historical low growth in customer services and the anticipated slow economic recovery, the project team, in consultation with DWS, assumed that FY 2012 water sales would equal those of FY 2011. This was an important assumption since projections for FYs 2013-2020 would be impacted by assumed FY 2012 values.

As discussed above, based on the historical results and discussion with DWS staff, the project team assumed that for the period from FY 2012 to FY 2016, there would be zero percent growth in the volume of water sales. For FY 2017 through FY 2020, it was assumed that the volume of water sales would increase at a rate of 0.25 percent per year, reflecting a return to average economic conditions. This growth rate is lower than the rate assumed for customer services, reflecting an anticipated reduction in consumption associated with ongoing conservation efforts. Table 2-4 summarizes projected water sales.

Table 2-4 also shows projected water sales under the adopted rate structure which separates out Single-family 5/8" meters from the General Rates customer class starting in FY 2013. This rate structure change is described in more detail in Section 5, Proposed Rate Adjustments. As a result of this change in FY 2013, growth rates over the FY 2012 – FY 2016 for the Single-family 5/8" meters and General Rates customer categories are shown as "n/a" or not available; growth rates for other customer categories and time periods are consistent with the key assumptions described earlier in this section.

Table 2-4
Projected Water Sales (000 gallons)
(Fiscal Year Ending June 30)

Line No.		Projected (1) 2012	2013	2014	2015	2016	'12 - '16 Avg Annual Growth
1	General Rates - Single Family (2)	0	4,674,500	4,674,500	4,674,500	4,674,500	n/a
2	General Rates - All Other (2)	11,007,000	6,332,500	6,332,500	6,332,500	6,332,500	n/a
3	Agricultural	1,062,400	1,062,400	1,062,400	1,062,400	1,062,400	0.0%
4	Non-Potable	198,000	198,000	198,000	198,000	198,000	0.0%
5	Total	12,267,400	12,267,400	12,267,400	12,267,400	12,267,400	0.0%

Line No.		Projected (1) 2017	2018	2019	2020	'17 - '20 Avg Annual Growth
6	General Rates - Single Family (2)	4,686,200	4,697,900	4,709,600	4,721,400	0.2%
7	General Rates - All Other (2)	6,348,400	6,364,200	6,380,100	6,396,100	0.2%
8	Agricultural	1,065,000	1,067,700	1,070,300	1,073,000	0.2%
9	Non-Potable	198,500	199,000	199,500	200,000	0.3%
10	Total	12,298,100	12,328,800	12,359,500	12,390,500	0.2%

Notes

(1) Projected water sales based on previous year's results multiplied by the assumed growth rate of 0% for 2012 - 2016, and 0.25% for 2017 - 2020. Historical data does not include the separation of Single Family General Rates from All Other General Rates

(2) Reclassification of customers dividing the General Rates class to separate Single Family and All Other in FY 2013.

Section 3
PROJECTION OF REVENUES AND REVENUE REQUIREMENTS

3.1 Background

To provide for the continued operation of a utility on a sound financial basis, revenues must be sufficient to meet the cash requirements for operation and maintenance (O&M) expenses, debt service requirements, and cash-funded capital expenditures. The sum of these cost components for a given year is referred to as a utility's revenue requirement. Additionally, debt service coverage requirements and additional requirements resulting from DWS and County financial policies must be taken into account.

Projections of DWS revenues and revenue requirements for the study period are described in this section and presented in detail in Tables A-1 through A-8 of Appendix A. Values in the appendices may differ slightly due to rounding.

3.2 Key Assumptions

Key assumptions used in developing the DWS revenue and revenue requirements projections through FY 2020 are described below. Additional assumptions are described throughout this section as the various components of the revenue requirements are presented.

- Projected customer services and consumption by customer class used to project revenues for the study period are described in Section 2.
- The projected annual inflation rate is 2.3 percent per year for the study period, based on the forecast Consumer Price Index for Hawai'i, per Hawai'i Department of Business, Economic Development & Tourism.
- The DWS FY 2012 and FY 2013 budgets are the primary basis for O&M expenditure estimates for FY 2012 and FY 2013 used in this analysis. Projections for FY 2014 – FY 2020 are in general based on the previous years' data increased at the assumed 2.3 percent rate of inflation, unless otherwise noted.
- Projected capital improvements for the FY 2012 – FY 2020 time period are approximately $36.3 million per year.

3.3 Methodology

There are two generally accepted methodologies used in determining the revenue requirements of a water utility. The first method, the "cash basis approach", is determined using the cash flow requirements of the utility. The cost components

analyzed include O&M expenses, debt service requirements, and cash-financed capital improvements. When using the cash basis approach, depreciation, a non-cash expense, is not included in the analysis.

The second method of determining revenue requirements is the "utility basis approach". This approach includes depreciation as an expense and excludes debt service principal and cash-financed capital improvement expenses. Typically, the utility basis approach also includes the calculation of a rate of return on the utility's rate base.

Most government-owned utilities use the cash basis approach in determining revenue requirements. Investor-owned utilities are typically required by a state utility commission or other regulatory body to use the utility basis approach in determining revenue requirements. The cash basis approach is used in this study.

The revenue requirement analysis and financial planning analysis presented in this report are based on meeting certain financial goals including:

- *Debt Service Coverage.* The level of required rate adjustments is based on meeting a minimum debt service coverage ratio (DSC ratio) of 1.20. Even though the County requires a 1.0 debt service target, a 1.2 benchmark was used for financial planning purposes in order to account for potential future changes in key assumptions that could negatively impact debt service coverage.
- *Revenue Fund Ending Balance.* Under current County fiscal policies, the DWS does not plan for cash balances that exceed planned expenditures.
- *Capital Spending Level.* An increased amount of capital projects was identified as a major goal for the DWS. To achieve this higher level of capital improvement activity, the level of capital spending over the study period is projected to be approximately three times higher than historical capital spending levels. The projected funding of the capital program has been designed to provide the DWS as much flexibility as possible in balancing the need for future rate adjustments to continue funding capital projects.

These goals were discussed with DWS staff during the course of the project and it was determined that they were appropriate for this study.

3.4 Revenues

Table 3-1 summarizes operating revenues for historical years FY 2009 – FY 2011. Over 95 percent of DWS operating revenue is water sales revenue from potable and non-potable water customers.

Table 3-1
Historical Operating Revenues
(Fiscal Years Ending June 30)

Line No.		Historical 2009	2010	2011	'09 - '11 Avg Annual Growth
1	**Water Sales Revenues (1,2)**				
2	General Rates	$39,607,406	$41,850,974	$44,368,497	5.8%
3	Agricultural	1,258,159	1,400,223	1,432,620	6.7%
4	Non-Potable	176,235	234,885	234,425	15.3%
5	Total Water Sales Revenues	$41,041,800	$43,486,082	$46,035,542	5.9%
6	**Other Revenues (3)**				
7	Interest Income (4)	$182,825	$426,886	$602,950	81.6%
8	Miscellaneous Receipts	11,425	18,264	86,202	174.7%
9	DWS-Other Income	4,245	13,668	35,490	189.1%
10	Jobbing	116,705	158,791	144,269	11.2%
11	Private Fire Protection	229,133	230,305	295,604	13.6%
12	Laboratory Sales	19,945	0	0	n/a
14	Miscellaneous Program Receipts	(30,294)	0	0	n/a
15	Total Other Revenues	$533,984	$847,914	$1,164,515	47.7%
16	**Interfund Transfers (3)**				
17	Sewer Billing Charges	$326,055	$496,047	$530,683	27.6%
18	Public Fire Protection	230,112	264,870	295,604	13.3%
19	Total Interfund Transfers	$556,167	$760,917	$826,287	21.9%
20	**Total Operating Revenues**	$42,131,951	$45,094,913	$48,026,343	6.8%

Notes

(1) Historical water sales revenue from Honolulu Board of Water Supply. Bill Frequency Analysis Data

(2) An 8.3 percent rate increase was put into effect on July 1, 2009 (FY 2010). A 7.0 percent rate increase was put into effect on July 1, 2010 (FY 2011).

(3) Historical data from FY 2009-FY 2011 Director's Summary Report

(4) Fluctuation in Interest Income due to bond interest rebate received in FY 2011

Between FY 2010 and FY 2011, revenues from water sales increased 5.9 percent, and rates increased 7.0 percent. Between FY 2009 and FY 2010, revenues from water sales increased 6.0 percent, and rates were increased by 8.3 percent. This implies reduced water sales over that period.

Table 3-2 summarizes DWS projected total revenues through FY 2016 (projected revenues for FYs 2017-2020 are shown in Table 3.3), including water sales revenues under existing rates and other revenue sources. Consistent with the growth assumptions discussed in Section 2, projected revenues under existing rates from water sales do not increase over the period from FY 2012 – FY 2016. Projected revenues are also shown with the new customer class category, General Rates - Single Family, starting in FY 2013.

Interest Income was projected to stay at the same rate as that of the FY 2013 budget, per DWS. Miscellaneous Receipts, DWS-Other Income, Jobbing, and the Interfund Transfer for Sewer Billing Charges were increased at the assumed rate of inflation starting in FY 2014. Revenues from Laboratory Sales and Miscellaneous Program Receipts are estimated to be zero for the study period, per DWS.

Table 3-2
Projected Operating Revenues Under Existing Rates: FY 2012 – FY 2016
(Fiscal Year Ending June 30)

Line No.		Budget 2012	Budget 2013	Projected 2014	Projected 2015	Projected 2016	'12 - '16 Avg Annual Growth
1	**Water Sales Revenues (1,2)**						
2	General Rates - Single Family	$44,400,000	$27,530,000	$27,530,000	$27,530,000	$27,530,000	n/a
3	General Rates - All Other	0	16,870,000	16,870,000	16,870,000	16,870,000	n/a
4	Agricultural	1,370,000	1,370,000	1,370,000	1,370,000	1,370,000	0.0%
5	Non-Potable	220,000	220,000	220,000	220,000	220,000	0.0%
6	Total Water Sales Revenues (3)	$46,000,000	$46,000,000	$46,000,000	$46,000,000	$46,000,000	0.0%
7	**Other Revenues**						
8	Interest Income	$500,000	$300,000	$300,000	$300,000	$300,000	-12.0%
9	Miscellaneous Receipts	20,600	22,753	23,280	23,820	24,370	4.3%
10	DWS-Other Income	21,640	21,625	22,120	22,630	23,150	1.7%
11	Jobbing	150,000	150,000	153,450	156,980	160,590	1.7%
12	Private Fire Protection	200,000	200,000	200,000	200,000	200,000	0.0%
13	Laboratory Sales	0	0	0	0	0	0.0%
14	Miscellaneous Program Receipts	0	0	0	0	0	0.0%
15	Total Other Revenues (3)	$892,200	$694,400	$698,850	$703,430	$708,110	-5.6%
16	**Interfund Transfers**						
17	Sewer Billing Charges	$530,683	$540,000	$552,420	$565,130	$578,130	2.2%
18	Public Fire Protection	255,000	255,000	255,000	255,000	255,000	0.0%
19	Total Interfund Transfers (3)	$785,700	$795,000	$807,420	$820,130	$833,130	1.5%
20	**Total Operating Revenues (3)**	$47,677,900	$47,489,400	$47,506,270	$47,523,560	$47,541,240	-0.1%

Notes:

(1) Reclassification of customers dividing the General Rates class to separate Single Family and All Other in FY 2013.

(2) Water Sales Revenue is based on current rate schedule times appropriate customer and usage data (See Tables 2-2 & 2-4 for details).

(3) Totals may differ due to rounding.

Table 3-3 summarizes DWS projected operating revenues under existing rates from FY 2017 – FY 2020. Water sales revenues under existing rates reflect slight increases based on the 0.25 percent and 0.50 percent growth assumptions for water sales and customers, respectively, as discussed in Section 2. The assumptions for increase in Other Revenues were consistent with the assumptions for FY 2012 – FY 2016.

Table 3-3
Projected Operating Revenues Under Existing Rates: FY 2017 – FY 2020
(Fiscal Year Ending June 30)

Line No.		Projected 2017	2018	2019	2020	'17 - '20 Avg Annual Growth
1	**Water Sales Revenues (1)**					
2	5/8" Non-Commercial	$27,600,000	$27,670,000	$27,750,000	$27,820,000	0.3%
3	General Rates	16,920,000	16,970,000	17,020,000	17,070,000	0.3%
4	Agricultural	1,370,000	1,380,000	1,380,000	1,390,000	0.5%
5	Non-Potable	220,000	220,000	220,000	220,000	0.0%
6	Total Water Sales Revenues (2)	$46,121,900	$46,248,000	$46,374,300	$46,501,100	0.3%
7	**Other Revenues**					
8	Interest Income	$300,000	$300,000	$300,000	$300,000	0.0%
9	Miscellaneous Receipts	24,930	25,500	26,090	26,690	2.3%
10	DWS-Other Income	23,680	24,220	24,780	25,350	2.3%
11	Jobbing	164,280	168,060	171,930	175,880	2.3%
12	Private Fire Protection	200,000	200,000	200,000	200,000	0.0%
13	Laboratory Sales	0	0	0	0	0.0%
14	Miscellaneous Program Receipts	0	0	0	0	0.0%
15	Total Other Revenues (2)	$712,890	$717,780	$722,800	$727,920	0.7%
16	**Interfund Transfers**					
17	Sewer Billing Charges	$591,430	$605,030	$618,950	$633,190	2.3%
18	Public Fire Protection	255,000	255,000	255,000	255,000	0.0%
19	Total Interfund Transfers (2)	$846,430	$860,030	$873,950	$888,190	1.6%
20	**Total Operating Revenues (2)**	$47,681,220	$47,825,810	$47,971,050	$48,117,210	0.3%

Notes:

(1) Water Sales Revenue is based on current rate schedule times appropriate customer and usage data (See Tables 2-2 & 2-4 for details)

(2) Totals may differ due to rounding

3.5 Operation and Maintenance Expenditures

The DWS is organized into six divisions, consisting of:

- Engineering
- Planning
- Fiscal and Administration
- Field Operations
- Water Treatment Plants
- Pump/Purification Manager

There are eight cost centers, one for each division plus two additional cost centers for Director's Office and Departmental costs. Table 3-4 summarizes historical O&M expenditures for the DWS. Historical expenditures for FY 2009-FY 2011 were obtained from DWS records.

Table 3-4
Historical Operating & Maintenance Expenditures
(Fiscal Year Ending June 30)

Line No.		Historical (1) 2009	2010	2011	'09 - '11 Avg Annual Growth
1	**O&M Expenses**				
2	Departmental Costs	$5,913,352	$7,299,692	$7,027,990	9.0%
3	Field Operations	6,175,200	6,433,280	6,809,112	5.0%
4	Engineering	400,002	1,741,387	1,690,508	105.6%
5	Planning	1,710,010	2,061,106	1,722,422	0.4%
6	Director's Office	1,370,185	1,091,890	1,188,272	-6.9%
7	Fiscal and Administration	2,106,132	2,268,326	2,230,646	2.9%
8	Water Treatment Plants	4,721,070	5,100,627	6,680,170	19.0%
9	Pump/Purification Manager	13,442,860	12,206,569	18,877,508	18.5%
10	Total O&M Expenditures	$35,838,811	$38,202,877	$46,226,628	13.6%
11	Budget FTEs (2)	219	219	218	n/a

Notes:
(1) Historical data from FY 2009-FY 2011 Director's Report.
(2) Per DWS Budget and discussion with staff.

Overall there was a 13.6 percent increase per year over the historical period, the substantial majority of which was attributed to increases in energy costs associated with lines 8 and 9, Water Treatment Plants and Pump / Purification Manager. The other significant increase was the increase to Engineering wages and salaries in FY 2010 due to the filling of open positions in Engineering Division. See Table A-5 in Appendix A for further details on historical O&M expenditures. Values in the appendices may differ slightly due to rounding. The main reasons for the increases in O&M expenditures are summarized below by cost center.

Departmental Costs

Over the historical period, Employee Benefits and Insurance were the primary reasons for increases in the Departmental Costs category. For the study period, increases to Post-Employee Benefits are projected to make up the largest component of cost increases.

Field Operations

Changes in Services, Materials and Supplies, and miscellaneous Other Costs have accounted for the majority of increases in the cost category over the historical period. Future projections are based on inflation- related increases.

Engineering

A reclassification of personnel expenses was the largest increase to this cost category over the historical period. Future projections are based on inflation- related increases, with the exception of Machinery and Equipment costs, which are projected to increase at 10 percent per year per DWS.

Planning

There was significant variability in costs for the Planning cost category over the historical period, with the majority of increases associated with Services and Wages and Salaries. Future projections are based on inflation-related increases, with the exception of Services, which are projected to increase at 5 percent per year per DWS.

Director's Office

Services and Materials and Supplies were the largest increase in this cost category over the historical period. Future projections are based on inflation- related increases, with the exception of Services, which are projected to increase at 10 percent per year.

Fiscal and Administration

Over the historical period, increases in the cost of Services was the primary source of increase in the Fiscal and Administration cost category. Future projections are based on inflation-related increases.

Water Treatment Plants

Over the historical period, increases in the cost of Utilities, including the cost of power, was the primary source of increases in this cost category. Future projections are based on inflation-related increases, with an additional increase for Utilities costs based on the rate of water sales growth.

Pump/Purification Manager

Increases in utility costs, especially power costs, have accounted for the majority of increases in this cost category over the historical period. Future projections are based on inflation-related increases, with an additional increase for Utilities costs based on the rate of water sales growth.

Staffing Levels

Budgeted staffing levels have remained fairly stable over the last three years and are projected to remain so in the future. Recent vacancy counts are in the 18-20 FTE range. In accordance with County budgeting policy, budgeted positions are fully funded in the budget year and the need for these positions is examined on an annual basis by the DWS. As a result of this policy, the fully funded staffing assumption has been carried forward through the projection period.

Projected O&M expenditures for FYs 2012-2016 are summarized in Table 3-5, and expenditures for FYs 2017-2020 are summarized in Table 3-6. Projected expenditures are based on the DWS FY 2012 and FY 2013 budgets, plus 2.3 percent annual inflation for most costs, unless otherwise noted. Overall O&M expenditures are projected to increase at slightly less than the current annual rate of inflation.

Table 3-5
Projected Operating & Maintenance Expenditures: FY 2012 – FY 2016
(Fiscal Year Ending June 30)

Line No.		Budget (1) 2012	Budget (1) 2013	Projected 2014	Projected 2015	Projected 2016	'12 - '16 Avg Annual Growth
1	**O&M Expenses**						
2	Departmental Costs	$7,133,200	$7,639,700	$7,804,000	$7,972,000	$8,143,800	2.2%
3	Field Operations	6,857,700	7,140,300	7,304,600	7,472,600	7,644,400	2.3%
4	Engineering	1,723,300	1,823,900	1,868,700	1,914,800	1,962,200	2.5%
5	Planning	2,167,400	2,218,900	2,269,000	2,320,600	2,373,700	2.3%
6	Director's Office	1,212,600	1,203,400	1,245,500	1,289,900	1,337,000	3.6%
7	Fiscal and Administration	2,473,300	2,555,700	2,614,500	2,674,600	2,736,100	2.3%
8	Water Treatment Plants	6,658,100	6,258,000	6,451,900	6,600,300	6,759,900	2.6%
9	Pump/Purification Manager	18,511,000	17,011,000	16,957,400	17,347,400	17,780,900	1.5%
10	Total O&M Expenditures	$46,736,600	$45,850,900	$46,515,600	$47,592,200	$48,738,000	2.1%
11	Budget FTEs (2)	218	219	219	219	219	n/a

Notes:
(1) 2012 and 2013 per 'Water - FY2013Board Draft Final.xls'
(2) Per DWS Budget and discussion with staff

Table 3-6
Projected Operating & Maintenance Expenditures: FY 2017 – FY 2020
(Fiscal Year Ending June 30)

Line No.		Projected				'17 - '20 Avg Annual Growth
		2017	2018	2019	2020	
1	**O&M Expenses**					
2	Departmental Costs	$8,319,600	$8,499,500	$8,683,500	$8,871,700	2.2%
3	Field Operations	7,820,200	8,000,100	8,184,100	8,372,400	2.3%
4	Engineering	2,011,100	2,061,500	2,113,500	2,167,200	2.5%
5	Planning	2,428,300	2,484,500	2,542,300	2,601,800	2.3%
6	Director's Office	1,386,900	1,439,900	1,496,200	1,556,200	3.9%
7	Fiscal and Administration	2,799,100	2,863,500	2,929,300	2,996,700	2.3%
8	Water Treatment Plants (2)	6,923,400	7,090,800	7,262,300	7,437,900	2.4%
9	Pump/Purification Manager (2)	18,225,200	18,680,700	19,147,500	19,626,100	2.5%
10	Total O&M Expenditures	$49,913,800	$51,120,500	$52,358,700	$53,630,000	2.4%
11	Budget FTEs (1)	219	219	219	219	n/a

Notes:

(1) Per DWS Budget and discussion with staff

(2) Projection based on previous year times general inflation of 2.30% and growth in consumption of 0.50% per year

Table 5 in Appendix A provides a more detailed presentation of the projected O&M expenditures summarized in Tables 3-4, 3-5 and 3-6, including notes describing specific O&M expenditure line items. Values in the appendices may differ slightly due to rounding.

3.6 Capital Encumbrances

Over the course of prior rate review, it became evident that the DWS faces many critical capital improvement needs. Capital maintenance and replacement of the existing system are critically needed to provide and maintain the desired level of service.

Table 3-7 summarizes the DWS-approved Capital Improvement Program (CIP) by type, for the period from FY 2012 – FY 2020. The nine-year average annual CIP encumbrance is approximately $36.3 million.

While the levels of projected capital improvement encumbrances are approximately three times what the DWS has historically undertaken (based on the DWS's annual reports), given the backlog of maintenance and replacement projects and the urgency of developing new sources, an aggressive approach to completing a higher level of CIP is viewed by the DWS to be essential. To that end, the DWS has in the past year dedicated four full time staff to implementing the capital improvement program.

Table 3-7
Projected Capital Encumbrances ($M)
(Fiscal Year Ending June 30)

Line No.		Estimated (1) 2012	Budgeted (2) 2013	Projected (2) 2014	2015	2016	2017	2018	2019	2020	9-Year Total
1	Facilities	$1.8	$2.0	$2.0	$2.1	$4.3	$4.4	$4.5	$4.6	$3.5	$29.2
2	Fire Protection	0.0	0.0	2.6	2.6	2.7	3.8	3.9	4.0	2.9	22.5
3	Conservation	1.1	1.0	1.0	2.1	2.1	3.3	3.4	3.4	3.5	20.9
4	Source	22.5	13.7	11.3	9.4	5.0	1.4	6.7	1.8	1.0	72.7
5	Storage	0.0	0.7	0.0	4.7	0.0	3.0	4.7	8.1	15.4	36.5
6	Transmission	0.9	0.0	0.0	0.0	6.4	2.2	5.6	7.5	7.6	30.1
7	Distribution	2.7	5.3	8.0	10.4	12.2	16.1	5.7	5.8	0.0	66.0
8	Treatment Plant	3.0	8.3	23.0	8.1	2.7	0.0	0.0	0.0	2.3	47.3
9	Unspecified Projects	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1
10	Total Annual Encumbrances	$32.9	$30.9	$47.9	$39.4	$35.3	$34.1	$34.5	$35.2	$36.3	$326.5

Notes:
(1) FY 2012 encumbrances per '2012 CIP and Planning Prof SVC.xls'
(2) 2013-2020 per '01-10-12, Preliminary Draft, DWS 20-Year CIP.xls' Encumbrances are escalated at 2.3% per year.

Table 3-8 summarizes the projected sources of funds for the projected capital expenditures. The projected funding sources include the use of proceeds from Safe Drinking Water Loan Funds (SDWLF), use of water rate revenues collected in the Capital Replacement Fund (CRF), the Source Development Fund and Special Storage Assessment, the Water System Development Fee (WSDF), grants, and bond proceeds. Expenditures were based on the following assumptions:

- FY 2012 beginning of year balances in the CRF and WSDF fund.
- Annual transfers of water sales revenues to the CRF (see Table 3-10 for details).
- Receipt of $17,350,000 in SDWLF proceeds during FY 2012.
- Issuance of bonds when projected funding sources from the CRF, WSDF Fund, and other sources of funds are not sufficient to cover annual CIP encumbrances.
- Assumes no change in the WSDF rates during the projection period.
- The completion of certain projects may be contingent upon the receipt of other funding such as private, state and federal funding.
- Encumbrances are escalated starting in FY 2014 at 2.3 percent per year.

Table 3-8
Sources of Funds for Projected Capital Encumbrances ($M)
(Fiscal Year Ending June 30)

Line No.		Estimated (1) 2012	Budgeted (2) 2013	Projected (2) 2014	2015	2016	2017	2018	2019	2020	9-Year Total
1	SDWLF	$17.4	$14.5	$4.5	$5.0	$5.5	$6.0	$6.5	$7.0	$7.5	$73.8
2	Capital Replacement Fund	8.8	6.8	1.4	1.9	2.8	3.6	4.4	4.6	4.6	38.9
3	Source Development Fund	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
4	Special Storage Assessment	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
5	Water System Development Fee	5.5	2.0	5.0	4.0	2.0	2.1	2.1	2.2	2.2	26.9
6	Other Sources/Grants	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1
7	New Bond Issuances	0.0	7.6	37.0	28.5	25.0	22.5	21.5	21.5	22.0	185.6
8	Total Annual Encumbrances	$32.9	$30.9	$47.9	$39.4	$35.3	$34.1	$34.5	$35.2	$36.3	$326.5

Notes
(1) FY2012 per DWS budget
(2) FY2013-2020 Funding of projected encumbrances based on SAIC estimates of available funding. Encumbrances are escalated at 2.3% per year.

As indicated in Table 3-8, almost $38.9 million in water sales revenues, collected in the Capital Replacement Fund, are projected to be used through FY 2020. New bond proceeds are projected to fund approximately $185.6 million in capital expenditures over the projection period.

3.7 Debt Service Expenditures

Based on the debt service payment schedule for existing and projected future DWS debt issuances, Tables 3-9 and 3-10 summarize projected DWS debt service expenditures through FY 2020. The assumed terms of future bond issuances are projected to include levelized principal and interest payments at a 5.0 percent interest rate, a 20-year term, and issuance costs at 1.0 percent of bond proceeds. Debt service projections assume that bond issuances will occur in the second half of the fiscal year and that debt service repayment will begin in the following year.

The assumed terms of future SDWLF issuances are projected to include levelized principal and interest payments at a 3.5 percent interest rate and a 20-year term. Issuance expenses for SDWLF loans are included in the 3.5 percent interest rate. Debt service payment projections assume that 50 percent of annual debt service on SDWLF loans will be paid in the first subsequent year after issuance, and 100 percent in the following years, which is done to reflect estimated project completion schedules.

Debt service levels are projected to increase three-fold over the study period. This high level reflects the need for increased capital expenditures as described earlier in this Section.

Table 3-9
Projected Debt Service Schedule: FY 2012 – FY 2016
(Fiscal Year Ending June 30)

Line No.		Estimated (1) 2012	Budgeted (1) 2013	Projected (2) 2014	2015	2016
1	Existing Bond Debt Service	$4,287,841	$2,008,121	$2,007,538	$2,008,573	$2,007,624
2	Existing SDWLF Debt Service	2,081,683	1,417,593	1,385,867	1,354,080	1,321,687
3	**Total Existing Debt Service**	$6,369,524	$3,425,714	$3,393,405	$3,362,653	$3,329,311
4	**New Bond Debt Service**					
5	2012 Series A Issue	$0	$0	$0	$0	$0
6	2013 Series A Issue		175,938	615,900	615,900	615,900
7	2014 Series A Issue			0	2,998,700	2,998,700
8	2015 Series A Issue				0	2,309,800
9	2016 Series A Issue					0
10	Total New Bond Debt Service	$0	$175,938	$615,900	$3,614,600	$5,924,400
11	**New SDWLF Debt Service**					
12	2012 Loan	$0	$759,876	$759,876	$759,876	$759,876
13	2013 Loan		0	510,200	1,020,400	1,020,400
14	2014 Loan			0	158,900	317,800
15	2015 Loan				0	176,500
16	2016 Loan					0
17	Total SDWLF Debt Service	$0	$759,876	$1,270,076	$1,939,176	$2,274,576
18	Total Annual Debt Service	$6,369,524	$4,361,528	$5,279,381	$8,916,429	$11,528,287

Notes:

(1) FY 2012 & FY 2013 per 'FY13 Debt Service 12_23_11.pdf'.

(2) FY 2014 - 2016 per DWS-provided audited Debt Service Schedules.

Table 3-10
Projected Debt Service Schedule: FY 2017 – FY 2020
(Fiscal Year Ending June 30)

Line No.		Projected (1)			
		2017	2018	2019	2020
1	Existing Bond Debt Service	$2,006,002	$2,010,404	$897,410	$897,156
2	Existing SDWLF Debt Service	1,289,226	1,256,509	1,223,536	990,302
3	**Total Existing Debt Service**	$3,295,228	$3,266,913	$2,120,946	$1,887,457
4	**New Bond Debt Service**				
5	2012 Series A Issue	$0	$0	$0	$0
6	2013 Series A Issue	615,900	615,900	615,900	615,900
7	2014 Series A Issue	2,998,700	2,998,700	2,998,700	2,998,700
8	2015 Series A Issue	2,309,800	2,309,800	2,309,800	2,309,800
9	2016 Series A Issue	2,026,100	2,026,100	2,026,100	2,026,100
10	2017 Series A Issue	0	1,823,500	1,823,500	1,823,500
11	2018 Series A Issue		0	1,742,500	1,742,500
12	2019 Series A Issue			0	1,742,500
13	2020 Series A Issue				0
14	Total New Bond Debt Service	$7,950,500	$9,774,000	$11,516,500	$13,259,000
15	**New SDWLF Debt Service**				
16	2012 Loan	$759,876	$759,876	$759,876	$759,876
17	2013 Loan	1,020,400	1,020,400	1,020,400	1,020,400
18	2014 Loan	317,800	317,800	317,800	317,800
19	2015 Loan	353,100	353,100	353,100	353,100
20	2016 Loan	194,200	388,400	388,400	388,400
21	2017 Loan	0	211,800	423,700	423,700
22	2018 Loan		0	229,500	459,000
23	2019 Loan			0	247,200
24	2020 Loan				0
25	Total SDWLF Debt Service	$2,645,376	$3,051,376	$3,492,776	$3,969,476
26	Total Annual Debt Service	$13,891,104	$16,092,289	$17,130,222	$19,115,933

Notes:
(1) FY 2017 - 2020 per DWS-provided audited Debt Service Schedules.

3.8 Study Period Revenue Requirement Projections

A nine-year financial projection was prepared to determine revenue requirements for the study period. Separate financial projections were prepared for the following DWS funds:

- *Revenue Fund.* Sources of funds for the Revenue Fund include water sales revenues, interest income from all DWS funds, and other non-rate revenue. Uses of these funds include O&M expenditures, debt service, and transfers to the Capital Replacement Fund.

- *Capital Replacement Fund (CRF).* Sources of funds for the CRF include water sales revenues. Uses of these funds are cash-funded capital expenditures and carryover of unencumbered funds to the Revenue Fund.
- *Water System Development Fee Fund (WSDF Fund).* Sources of funds for the WSDF are the collection of Water System Development Fees. Use of these funds is for certain types of capital expenditures.

Per County financial operating policies, the DWS does not carry an ending balance in the Revenue Fund or CRF. Revenues which are not required for O&M expenditures or debt service are transferred to the CRF for use in cash-funded capital expenditures. Any funds remaining in the CRF which are unencumbered are transferred as carryover savings to the Revenue Fund in the next fiscal year.

Because of these financial operating policies, DWS does not maintain an ending cash balance to cover operating cash flow. It is assumed that additional working cash for DWS needs will be provided by the County, if necessary.

The Water System Development Fee Fund had a balance of approximately $8.5 million as of FY 2012. It is projected that this balance will be expended by FY 2015, as capital improvements are completed. In subsequent years expenditures from the WSDF Fund will equal incoming fees, maintaining a balance close to zero in that fund.

Table 3-11
Revenue Fund: Projected Sources and Uses of Funds: FY 2012 – FY 2016
(Fiscal Year Ending June 30)

Line No.		Estimated (1) 2012	Budgeted (1) 2013	Projected (2) 2014	2015	2016
1	**REVENUES**					
2	**Beginning of Year Balance**	$0	$0	$0	$0	$0
3	**Operating Revenues**					
4	Total Water Sales Revenues at Existing Rates	$46,000,000	$46,000,000	$46,000,000	$46,000,000	$46,000,000
5	Total Other Income	892,200	694,400	698,850	703,430	708,110
6	Total Interfund Transfers	785,700	795,000	807,420	820,130	833,130
7	Total Operating Revenues at Existing Rates	$47,677,900	$47,489,400	$47,506,270	$47,523,560	$47,541,240
8	Additional Rate Revenues					
9	Fiscal	% of Water	Months			
10	Year	Sales Revenue	Effective			
11	2013	4.5%	12	$2,070,000	$2,070,000	$2,070,000
12	2014	7.5%	12	3,605,300	3,605,300	3,605,300
13	2015	10.1%	12		5,219,200	5,219,200
14	2016	8.2%	12			4,665,300
15	Total Additional Revenue Required	$0	$2,070,000	$5,675,300	$10,894,500	$15,559,800
16	Total Revenues	$47,677,900	$49,559,400	$53,181,570	$58,418,060	$63,101,040
17	Carry-Over	$14,759,501	$7,467,980	$14,952	$35,541	$24,973
18	Total Cash Available	$62,437,401	$57,027,380	$53,196,522	$58,453,601	$63,126,013
19	**REVENUE REQUIREMENT**					
20	Total O&M Expenditures	$46,736,600	$45,850,900	$46,515,600	$47,592,200	$48,738,000
21	**REVENUES LESS O&M**	$941,300	$3,708,500	$6,665,970	$10,825,860	$14,363,040
22	**Debt Service**					
23	Existing Debt Service	$6,369,524	$3,425,714	$3,393,405	$3,362,653	$3,329,311
24	New Debt Service	0	935,814	1,885,976	5,553,776	8,198,976
25	Total Debt Service	$6,369,524	$4,361,528	$5,279,381	$8,916,429	$11,528,287
26	**CASH LESS O&M AND DEBT SERVICE**	$9,331,277	$6,814,952	$1,401,541	$1,944,973	$2,859,726
27	**TRANSFER TO CRF**	$9,331,277	$6,814,952	$1,401,541	$1,944,973	$2,859,726
28	**TOTAL REVENUE REQUIREMENT**	$46,000,000	$48,070,000	$51,675,300	$56,894,500	$61,559,800
29	**ENDING BALANCE**	$0	$0	$0	$0	$0
30	**DEBT SERVICE COVERAGE RATIO**	0.15	0.85	1.26	1.21	1.25

Notes:

(1) FY 2012 & FY 2013 per 'FY13 Debt Service 12_23_11.pdf'

(2) FY 2014 - 2016 per DWS-provided audited Debt Service Schedules

Table 3-12
Revenue Fund: Projected Sources and Uses of Funds: FY 2017 – FY 2020
(Fiscal Year Ending June 30)

Line No.				Projected (1) 2017	2018	2019	2020
1	**REVENUES**						
2	**Beginning of Year Balance**			$0	$0	$0	$0
3	**Operating Revenues**						
4	Total Water Sales Revenues at Existing Rates			$46,121,000	$46,248,000	$46,374,000	$46,501,000
5	Total Other Income			712,890	717,780	722,800	727,920
6	Total Interfund Transfers			846,430	860,030	873,950	888,190
7	Total Operating Revenues at Existing Rates			$47,680,320	$47,825,810	$47,970,750	$48,117,110
8	Additional Rate Revenues						
9	Fiscal	% of Water	Months				
10	Year	Sales Revenue	Effective				
11	2013	4.5%	12	$2,075,400	$2,081,200	$2,086,800	$2,092,500
12	2014	7.5%	12	3,614,700	3,624,700	3,634,600	3,644,500
13	2015	10.1%	12	5,232,900	5,247,300	5,261,600	5,276,000
14	2016	8.2%	12	4,677,600	4,690,500	4,703,300	4,716,100
15	2017	6.6%	12	4,073,600	4,084,900	4,096,000	4,107,200
16	2018	6.2%	12		4,090,500	4,101,700	4,112,900
17	2019	3.2%	12			2,248,300	2,254,400
18	2020	4.1%	12				2,980,900
19	Total Additional Revenue Required			$19,674,200	$23,819,100	$26,132,300	$29,184,500
20	Total Revenues			$67,354,520	$71,644,910	$74,103,050	$77,301,610
21	Carry-Over			$29,726	$13,342	$36,463	$55,591
22	Total Cash Available			$67,384,246	$71,658,252	$74,139,513	$77,357,201
23	**REVENUE REQUIREMENT**						
24	Total O&M Expenditures			$49,913,800	$51,120,500	$52,358,700	$53,630,000
25	**REVENUES LESS O&M**			$17,440,720	$20,524,410	$21,744,350	$23,671,610
26	**Debt Service**						
27	Existing Debt Service			$3,295,228	$3,266,913	$2,120,946	$1,887,457
28	New Debt Service			10,595,876	12,825,376	15,009,276	17,228,476
29	Total Debt Service			$13,891,104	$16,092,289	$17,130,222	$19,115,933
30	**CASH LESS O&M AND DEBT SERVICE**			$3,579,342	$4,445,463	$4,650,591	$4,611,267
31	**TRANSFER TO CRF**			$3,579,342	$4,445,463	$4,650,591	$4,611,267
32	**TOTAL REVENUE REQUIREMENT**			$65,795,200	$70,067,100	$72,506,300	$75,685,500
33	**ENDING BALANCE**			$0	$0	$0	$0
34	**DEBT SERVICE COVERAGE RATIO**			1.26	1.28	1.27	1.24

Notes:

(1) FY 2017 - 2020 per DWS-provided audited Debt Service Schedules.

Assuming a July 1 effective date for future rate adjustments, the projection of revenue requirements during the study period indicates that future rate increases will be needed as follows:

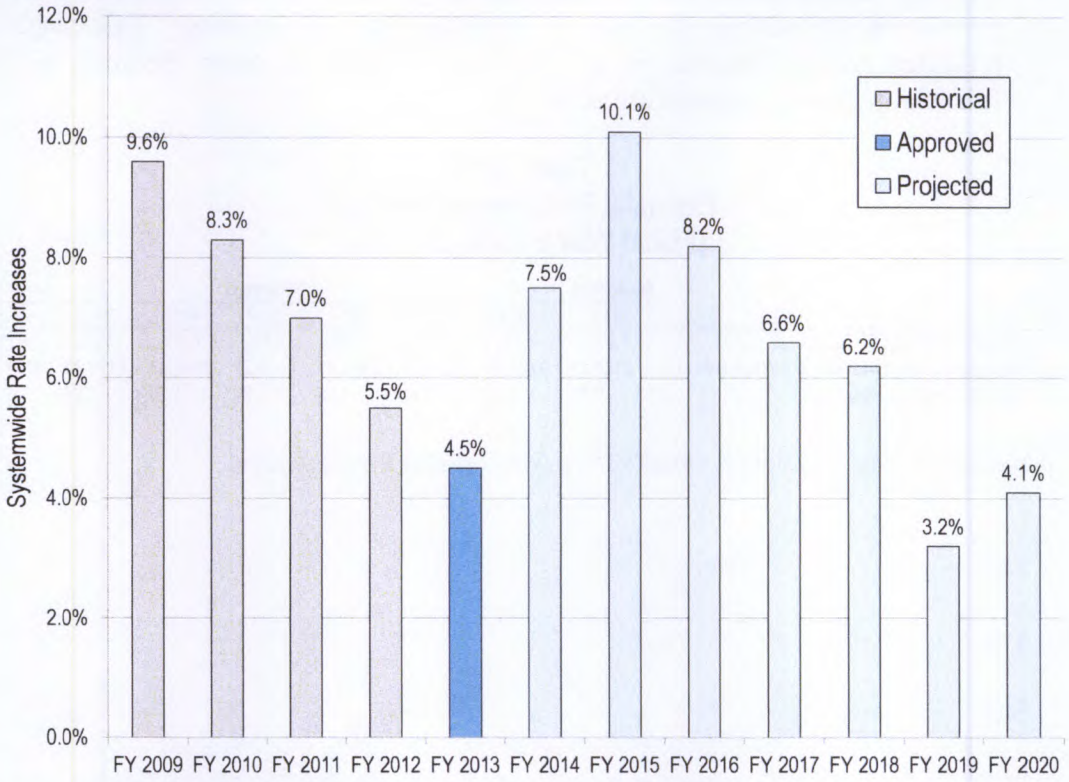


Figure 3-1: Historical and Projected Rate Increases (Fiscal Year Ending June 30)

It should be noted that only the FY 2013 rate increase has been approved by the County Council. Future rate increases are provided for information purposes only and for use as a long range planning tool by DWS.

Financial Performance Indicators

Table 3-11 summarizes three financial performance indicators for FY 2013-FY 2020 that result from the revenue and revenue requirement projections.

- *Annual water rate percent increase.* Approximate system-wide rate increase needed for revenues to cover projected revenue requirements.
- *Example residential bi-monthly water bill.* This example bi-monthly water bill is for a Single Family customer with a 5/8-inch meter using approximately 16,000 gallons per month.[2] The water bill for this customer would increase from the current (FY 2012) $109.20 per bi-monthly billing period to $177.72 per bi-monthly billing period in FY 2020, or an average annual increase of approximately 6.3 percent. It should be noted that the percent increase for each

[2] 16,000 gallons is the average monthly water use for a residential customer.

customer's water bill may vary from the system-wide rate increase. See Section 5 for more information on typical bill impacts.

- *Debt Service Coverage Ratio*. Meeting a target DSC ratio of 1.20 was used as a benchmark for setting the level of required rate adjustments. This target is projected to be achieved in FY 2014 – FY 2020, if other elements of the financial planning analysis are achieved.

Table 3-13
Financial Performance Metrics
(Fiscal Year Ending June 30)

Line No.		Budgeted	Projected						
		2013	2014	2015	2016	2017	2018	2019	2020
1	Annual Water Rate % Increase	4.5%	7.5%	10.1%	8.2%	6.6%	6.2%	3.2%	4.1%
2	Example Residential Bi-Monthly Water Bill (1)	$114.11	$122.67	$135.06	$146.13	$155.77	$165.43	$170.72	$177.72
3	Debt Service Coverage Ratio	0.85	1.26	1.21	1.25	1.26	1.28	1.27	1.24

Notes:
(1) Example bi-monthly water bill based on a 5/8-inch meter and 32,000 gallons consumed per bi-monthly billing period.

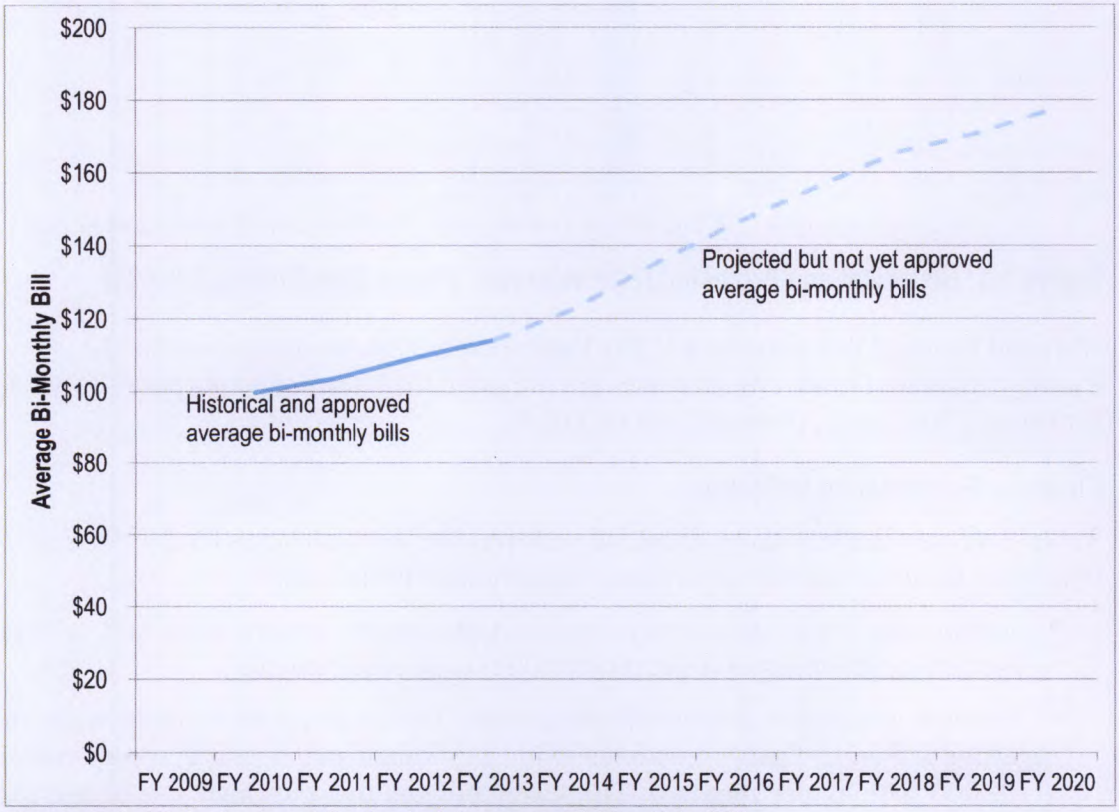


Figure 3-2: Historical and Projected Average Bi-Monthly Bill

Section 4
COST-OF-SERVICE ANALYSIS

4.1 Background

The design of an equitable water rate structure typically starts with a cost-of-service analysis that includes the appropriate allocation of revenue requirements to each customer class in order to determine their respective cost-of-service requirements. The allocation of revenue requirements among the various DWS customer classes takes into account the quantity of water used by each customer class, the relative peak demand of each customer class, and the number and size of customer service connections in each customer class. In this way, adjustments to the rates for various customer classes can be considered by comparing existing rates with the cost-of-service levels.

The results of the cost-of-service analysis also provide guidance for evaluating various rate design options including changes to the levels of the monthly service charge and usage charge.

4.2 Key Assumptions and Methodology

The typical methodology used in performing an historically based cost-of-service analysis involves an number of steps that are consistent with the approach recommended by the American Water Works Association (AWWA). These three analytical steps are: (1) functionalization, (2) classification, and (3) allocation.

As a first step, *functionalization*, the utility's assets and revenue requirements are categorized into the various water service functions they provide. In this cost-of-service analysis, eight system functions were identified: source, treatment, storage, transmission and distribution, customers, meters, fire protection and non-potable water.

The second step in performing a cost-of-service analysis is *classification*. This analysis involves the development of factors that are used to classify the functionalized revenue requirement into cost components reflecting why the costs are incurred. In this cost-of-service analysis, five classification cost components were used: base (average) usage, extra-capacity usage, meter equivalents, fire protection, and non-potable water.

- Base costs are those costs associated with providing customers potable water service under average demand conditions. For purposes of this analysis, 67 percent of consumption-related costs were assumed to be base costs.
- Extra-capacity costs are those costs associated with providing customers with water service in excess of average demand requirements up to the maximum day demand requirement. For purposes of this analysis, a peaking factor of 1.5

(peak month/average month) was assumed to estimate extra capacity costs, based on discussion with DWS staff.

- Customer costs are those costs that are associated with serving customers regardless of the amount of water used (including meter reading, bill preparation, revenue collection expenditures, and service connection expenditures). These costs are further separated into those costs which depend on the water meter or service connection size (e.g., service connection expenditures), and those that do not vary with the size of meter or service connection (e.g., bill preparation). For purposes of this analysis, 33 percent of extra-capacity costs were assumed to be recovered from customer-related charges.
- Direct fire protection costs are those costs associated with providing adequate water service to meet the needs of both public and private fire protection systems.
- Non-potable costs are the costs associated with providing non-potable water service.

The third step of the cost-of-service analysis is *allocation* and involves allocating the revenue requirement for each classified cost component among DWS customer classes based on each classes' usage characteristics. Four customer classes were analyzed, the existing Agricultural and Non-Potable classes as well as the newly separated General Service – Single Family and General Service – All Other classes. A key allocation factor was the ratio of peak to average demand for each customer class. For purposes of this analysis, the following customer class ratios for peak month/average month demands were used:

- General Rate – Single Family Peak Ratio: 1.51
- General Rate – All Other Peak Ratio: 1.47
- Agricultural Peak Ratio: 1.60
- Non-Potable Peak Ratio: 1.69

These monthly demands were based on the adjusted average of FY 2006 – FY 2011 peak month data provided by Haiku Design & Analysis.

4.3 Cost-of-Service Analysis Results

This cost-of-service analysis was performed for budget year FY 2013, and indicates that revenues at existing rates from the General Rate – Single Family, Agricultural and Non-Potable classes are projected to be below cost-of-service levels, and that revenues from General Rate – All Other customers are projected to be above cost-of-service levels. At existing rates, General Rate – Single Family customers are projected to be paying approximately 85 percent of cost of service, General Rate – All Other customers are projected to be paying approximately 117 percent of cost of service, Agricultural customers are projected to be paying approximately 33 percent of cost of

service, and Non-Potable customers are projected to be paying approximately 42 percent of cost of service.

When total revenues are not sufficient to pay for the full cost of service, costs must be reduced or revenues must be increased. The cost-of-service analysis, in conjunction with the revenue requirements analysis, indicates that a 4.5 percent overall increase in revenues is required in order for revenues to recover the full cost of service.

As mentioned above, in addition to adjustments made to rates for each class, the cost-of-service analysis provides guidance on the level of service charges and usage charges for each class.

Table 4-1 summarizes the results of the cost-of-service analysis for the monthly service charge. This charge represents a stream of revenue that is independent of water usage. There are various policy options that can be considered when designing these types of charges:

- What level of fixed costs should this charge recover?
- What kinds of fixed costs should this charge recover?

Table 4-1
Summary of FY 2013 Cost-of-Service
for Monthly Service Charges Analysis

Line No.	Meter Size	Monthly Meter Charge (1)	Monthly Capacity Charge (2)	Monthly Customer Charge (3)	Total COS Service Charge	Proposed Service Charge	Proposed Charge as a % of COS
1	5/8"	$3.59	$8.18	$5.21	$16.98	$11.25	66.3%
2	3/4"	5.39	12.27	5.21	22.87	16.00	70.0%
3	1"	8.98	20.45	5.21	34.64	27.00	78.0%
4	1-1/2"	17.95	40.90	5.21	64.06	55.00	85.9%
5	2"	28.72	65.44	5.21	99.37	75.00	75.5%
6	3"	53.85	122.70	5.21	181.76	145.00	79.8%
7	4"	89.75	204.50	5.21	299.46	260.00	86.8%
8	6"	179.50	409.00	5.21	593.71	490.00	82.5%
9	8"	287.20	654.40	5.21	946.81	800.00	84.5%

Notes:

(1) Based on recovery of meter-related costs.

(2) Based on recovery of extra-capacity, fire protection, and non-potable-related costs.

(3) Based on recovery of customer-related costs.

Fixed costs may include meter maintenance costs, extra capacity or peak demand-related costs, customer and billing related costs, and other fixed costs. Utilities may choose to recover some or all of these costs in the monthly service charge. The existing service charge for the 5/8-inch meter size is $18.50, or 54 percent of the cost of service. The DWS has had, in the past, a policy to maintain a relatively low service charge as compared to the cost of service. The DWS has expressed a goal of gradually adjusting the monthly service charge to match the cost of service.

The cost-of-service consumption charge was calculated at $3.19 per 1,000 gallons of potable water, and $2.62 per 1,000 gallons of non-potable water. These results were

used as a reference point for designing the proposed rates as discussed in the next section of this report.

Section 5
PROPOSED RATE ADJUSTMENTS

5.1 Background

The last DWS water rate change took place in July 2011 when rates were increased by approximately 5.5 percent. This section of the report summarizes the proposed water rate schedule for the DWS for FY 2013 based on a recommendation to increase water system revenues by approximately 4.5 percent.

This section contains a summary of example water bills calculated using the proposed schedule of water rates.

5.2 Existing Water Rate Schedule

Table 5-1 summarizes the existing DWS water rate schedule. The DWS charges each customer a monthly service charge based on meter size. The usage charge applied to each 1,000 gallons (kgal) of metered water consumption depends on the customer class. The General Rate structure is an increasing block rate structure with three rate blocks. For Agricultural customers, the first two blocks have increasing rates, and the third block contains the lowest rate. The Non-Potable rate structure is a uniform block rate structure.

Table 5-1
Existing DWS Water Rate Schedule

	Service Charge		Usage Charge ($/kGal)	
Line No.	Meter Size (inches)	Monthly Rate	General Rates:	$/kgal
1	5/8"	$9.25	0 - 5,000 gallons/month	$1.75
2	3/4"	14.00	5,001 - 15,000 gallons/month	3.20
3	1"	24.00	> 15,001 gallons/month	4.60
4	1-1/2"	51.00		
5	2"	67.50	Agriculture Rates:	$/kgal
6	3"	125.00	0 - 5,000 gallons/month	$1.75
7	4"	250.00	5,001 - 15,000 gallons/month	3.20
8	6"	415.00	> 15,001 gallons/month	1.05
9	8"	650.00		
10			Non-Potable Rate:	$/kgal
			All Usage	$1.05

5.3 Discussion of Rate Design Options

One of the main objectives of the 2013 Water Rate Study was the implementation of more conservation-oriented rates and evaluation of the creation of a General Rate – Single Family customer class. One of the goals of creating a General Rate – Single Family customer class was to set the rate blocks and rates in such a way to promote

conservation among that subset of customers. Therefore, the General Rate – Single Family rate structure is proposed to be an inverted 4-block rate structure, instead of the existing inverted 3-block rate structure. The rate for the fourth block will be set at a level that is designed to promote the wise use of water for those General Rate – Single Family customers using relatively high levels of water.

Another objective of the 2013 Water Rate Study was to continue to evaluate the level of the monthly service charge relative to the cost of service.

Additional details on these rate issues can be found later in this section.

5.4 DWS Conservation Program

The AWWA defines water conservation as practices, techniques, and technologies that improve the efficiency of water use. The proposed rate structure, which aims to promote conservation, will work in conjunction with the current efforts of the DWS to promote conservation. The DWS distributes low-flow shower heads, faucet aerators, and leak detection dye tablets at community events. In addition, the DWS advertises conservation tips in local newspapers, in magazines, via radio ads and on its website.

To further educate consumers about the proposed rate structure and its conservation benefits, the DWS should consider increasing its public education efforts by providing inserts in customer bills explaining the new rate structure or by holding public meetings, if deemed appropriate.

5.5 Proposed Water Rates

The proposed rates include the addition of the General Rate – Single Family customer class. Taking into account the rate design policies described above, and the system-wide increase of 4.5 percent, the proposed rate schedule results in an annual revenue increase of approximately 6.5 percent for General Rate – Single Family customers, 4.5 percent increase for General Rate – All Other customers, 4.8 percent increase for Agricultural customers, and 5.4 percent increase for Non-Potable customers, that will become effective July 1, 2012.

5.6 General Rate – Single Family Rate Structure

The design of the rate structure for the new General Rate – Single Family Rate Structure customer class considered two key data points: (1) consumption levels for the General Rate – Single Family customer class and (2) number of customers in the class at various consumption levels. These data points were evaluated through a bill-frequency analysis, comparing the historical bills for customers that would be part of the new customer class.

The goal of designing a more conservation-oriented rate structure was implemented by setting the rate blocks so that approximately 10 percent of consumption would be in the highest block. As far as customers go, the goal was to set rate blocks so that approximately 5 percent of customers have usage that falls into the highest rate block.

Figure 5-1 graphically represents the percent of customers and consumption that falls within the existing and proposed rate blocks for the General Rate – Single Family customers. The first block represents lifeline use, and is currently charged at approximately half the cost-of-service. The second block represents average use, and is typically charged at the cost-of-service. The third block is above-average use, and is charged at approximately 140 percent of the cost-of-service. The newly-added fourth block represents significantly above-average use, and is charged at approximately 165 percent of the cost-of-service.

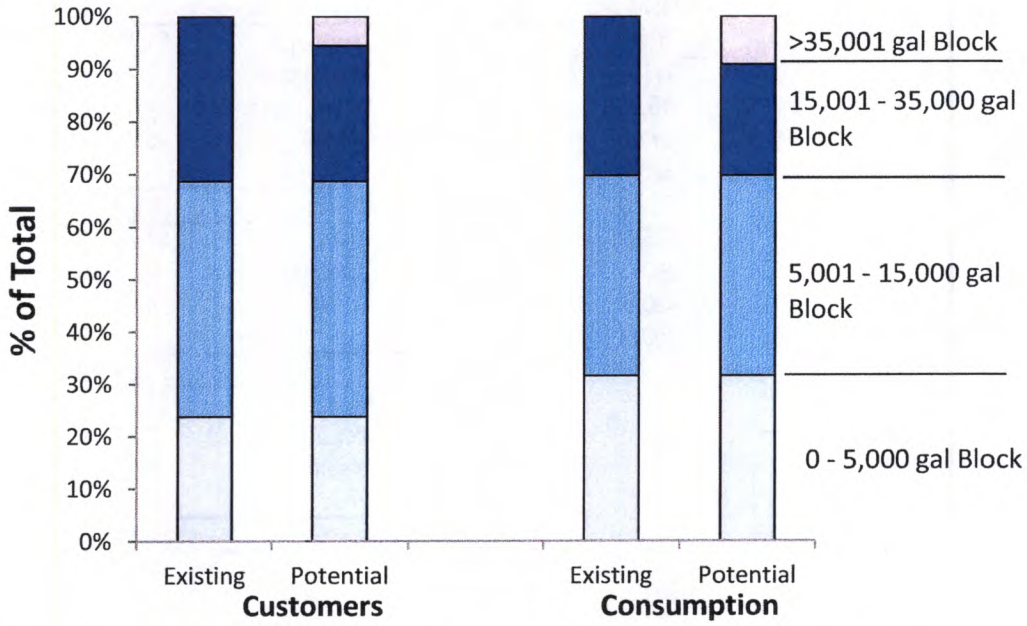


Figure 5-1: Consumption Blocks for General Rate – Single Family Customers

5.7 Proposed Water Rate Schedule

Table 5-2 summarizes the proposed water rate schedule for FY 2013 based on a system-wide rate increase of 4.5 percent.

Table 5-2
Proposed DWS FY 2013 Rate Schedule

Line No.	Service Charge: Meter Size (inches)	Service Charge: Monthly Rate	Usage Charge ($/kGal)	
			General Rates - Single Family:	$/kgal
1	5/8"	$11.25	0 - 5,000 gallons/month	$1.75
2	3/4"	16.00	5,001 - 15,000 gallons/month	3.20
3	1"	27.00	15,001 - 35,000 gallons/month	4.80
4	1-1/2"	55.00	≥ 35,001 gallons/month	5.25
5	2"	75.00		
			General Rates - All Other:	$/kgal
6	3"	145.00	0 - 5,000 gallons/month	$1.75
7	4"	260.00	5,001 - 15,000 gallons/month	3.20
8	6"	490.00	≥ 15,001 gallons/month	4.80
9	8"	800.00		
			Agriculture Rates:	$/kgal
10			0 - 5,000 gallons/month	$1.75
11			5,001 - 15,000 gallons/month	3.20
12			≥ 15,001 gallons/month	1.10
13				
14			Non-Potable Rate:	$/kgal
15			All Usage	$1.10
16				

5.8 Example Bi-Monthly Water Bill Calculations

Table 5-3 provides a summary of calculated bi-monthly water bills for customers at various water usage levels under existing and proposed rates. Two effects can be observed in the bill impact table. The first is that customers on the very low end of consumption see a higher than average percent increase in their bills, reflecting the change to increase the monthly service charge closer to the cost of service. The second is that customers in the General Rates – Single Family class that have consumption in the new fourth block will see a higher increase in their bi-monthly bills, sending the desired conservation signal.

Table 5-3
Example Bi-Monthly Water Bill Calculation

Line No.	Meter Size	Bi-Monthly Usage, gallons	Existing Rates Bi-Monthly Bill	Proposed Rates (1) Effective July 1, 2012 Bi-Monthly Bill	Bi-Monthly $ Increase from Existing Rates	Bi-Monthly % Increase From Existing Rates
1	**General Rates - Single Family**					
2	5/8"	10,000	$36.00	$40.00	$4.00	11.1%
3	5/8"	32,000	109.20	113.60	4.40	4.0%
4	5/8"	60,000	238.00	248.00	10.00	4.2%
5	5/8"	90,000	376.00	401.00	25.00	6.6%
6	5/8"	200,000	882.00	978.50	96.50	10.9%
7	**General Rates - All Other**					
8	5/8"	10,000	$36.00	$40.00	$4.00	11.1%
9	5/8"	60,000	238.00	248.00	10.00	4.2%
10	5/8"	300,000	1,342.00	1,400.00	58.00	4.3%
11	3/4"	18,000	71.10	75.10	4.00	5.6%
12	3/4"	90,000	385.50	401.50	16.00	4.2%
13	1"	30,000	129.50	135.50	6.00	4.6%
14	1"	180,000	819.50	855.50	36.00	4.4%
15	1-1/2"	100,000	505.50	527.50	22.00	4.4%
16	1-1/2"	700,000	3,265.50	3,407.50	142.00	4.3%
17	2"	300,000	1,458.50	1,527.50	69.00	4.7%
18	2"	1,000,000	4,678.50	4,887.50	209.00	4.5%
19	3"	300,000	1,573.50	1,667.50	94.00	6.0%
20	3"	2,000,000	9,393.50	9,827.50	434.00	4.6%
21	4"	400,000	2,283.50	2,377.50	94.00	4.1%
22	4"	3,000,000	14,243.50	14,857.50	614.00	4.3%
23	6"	1,000,000	5,373.50	5,717.50	344.00	6.4%
24	6"	8,000,000	37,573.50	39,317.50	1,744.00	4.6%
25	8"	1,000,000	5,843.50	6,337.50	494.00	8.5%
26	8"	8,000,000	38,043.50	39,937.50	1,894.00	5.0%
27	**Agricultural**					
28	5/8"	35,000	$105.25	$109.50	$4.25	4.0%
29	5/8"	200,000	278.50	291.00	12.50	4.5%
30	3/4"	50,000	130.50	135.50	5.00	3.8%
31	3/4"	250,000	340.50	355.50	15.00	4.4%
32	1"	100,000	203.00	212.50	9.50	4.7%
33	1"	600,000	728.00	762.50	34.50	4.7%
34	1-1/2"	150,000	309.50	323.50	14.00	4.5%
35	1-1/2"	700,000	887.00	928.50	41.50	4.7%
36	2"	300,000	500.00	528.50	28.50	5.7%
37	2"	2,000,000	2,285.00	2,398.50	113.50	5.0%
38	3"	300,000	615.00	668.50	53.50	8.7%
39	3"	2,000,000	2,400.00	2,538.50	138.50	5.8%
40	**Non-Potable**					
41	1-1/2"	150,000	$259.50	$275.00	$15.50	6.0%
42	1-1/2"	1,000,000	1,152.00	1,210.00	58.00	5.0%
43	1-1/2"	1,500,000	1,677.00	1,760.00	83.00	4.9%

Notes:

(1) Assumes system-wide rate increase of approximately 4.5 percent.

Table 5-4 compares the DWS example bi-monthly water bills with those for other Hawai'i public water systems.

Table 5-4
Comparison with Other Hawai'i Water Utilities

Meter Size	Bi-Monthly Usage, gallons	(1) Maui SF Bi-Monthly Bill	(2) Hawai`i Bi-Monthly Bill	(3) Kaua`i Bi-Monthly Bill	(4) Honolulu SF Bi-Monthly Bill
Single-Family Customers					
5/8"	10,000	$40.00	$62.40	$73.40	$40.52
5/8"	32,000	113.60	156.16	196.92	118.36
5/8"	60,000	248.00	306.80	439.00	231.48
5/8"	90,000	401.00	477.40	700.30	412.08
5/8"	200,000	978.50	1,170.40	829.20	1,074.28

Meter Size	Bi-Monthly Usage, gallons	(5) Maui Bi-Monthly Bill	(2) Hawai`i Bi-Monthly Bill	(3) Kaua`i Bi-Monthly Bill	(6) Honolulu NR Bi-Monthly Bill
General Rate Customers					
5/8"	10,000	$40.00	$72.40	$73.40	$44.62
5/8"	60,000	248.00	306.80	439.00	232.62
5/8"	300,000	1,400.00	1,800.40	2,529.40	1,135.02
3/4"	18,000	75.10	95.60	120.08	74.70
3/4"	90,000	401.50	477.40	467.60	345.42
1"	30,000	135.50	175.40	192.80	119.82
1"	180,000	855.50	797.90	903.20	683.82
1-1/2"	700,000	3,407.50	3,005.90	3,585.80	2,639.02
2"	1,000,000	4,887.50	4,312.90	4,830.00	3,767.02

Meter Size	Bi-Monthly Usage, gallons	(7) Maui Bi-Monthly Bill	(8) Hawai`i Bi-Monthly Bill	(9) Kaua`i Bi-Monthly Bill	(10) Honolulu Bi-Monthly Bill
Agricultural Customers					
5/8"	180,000	$269.00	$647.90	$489.60	$314.34
3/4"	200,000	300.50	714.90	552.00	342.94
1"	300,000	432.50	1,079.90	827.00	485.94
1-1/2"	700,000	928.50	2,469.90	1,898.00	1,057.94
2"	1,000,000	1,298.50	3,536.90	2,722.00	1,486.94
3"	300,000	668.50	1,309.90	1,061.50	485.94
3"	1,000,000	1,438.50	3,654.90	2,853.50	1,486.94
Non-Potable Customers					
1-1/2"	150,000	$275.00	n/a	n/a	$289.02
1-1/2"	400,000	550.00	n/a	n/a	759.02
1-1/2"	1,000,000	1,210.00	n/a	n/a	1,887.02

Notes:

(1) Based on Maui Department of Water Supply proposed General Rate - Single-Family rates, effective July 2012.

(2) Based on Hawai`i Department of Water Supply General Use Rates, effective July 2012.

(3) Based on Kaua`i Department of Water General Use Rates, effective July 2012.

(4) Based on Honolulu Board of Water Supply Single Family Residential Rates, effective July 2012.

(5) Based on Maui Department of Water Supply proposed General Use - All Other rates, effective July 2012.

(6) Based on Honolulu Board of Water Supply Non-Residential Rates, effective July 2012.

(7) Based on Maui Department of Water Supply adopted Agricultural and Non-Potable Rates, effective July 2012.

(8) Based on Hawai`i Department of Water Supply Agricultural Use Rates, effective July 2012. DWS does not provide Non-Potable water.

(9) Based on Kaua`i Department of Water Agriculture Use Rates, effective July 2012. DOW does not provide Non-Potable water.

(10) Based on Honolulu Board of Water Supply Agriculture and Non-Potable Rates, effective July 2012.

Section 6
ADOPTED RATES

The rate schedule presented in Table 6-1 is effective July 1, 2012.

Table 6-1
Adopted DWS Water Rate Schedule

Line No.	Service Charge: Meter Size (inches)	Service Charge: Monthly Rate
1	5/8"	$11.25
2	3/4"	16.00
3	1"	27.00
4	1-1/2"	55.00
5	2"	75.00
6	3"	145.00
7	4"	260.00
8	6"	490.00
9	8"	800.00
10		
11		
12		
13		
14		
15		
16		

Usage Charge ($/kGal)	
General Rates - Single Family:	$/kgal
0 - 5,000 gallons/month	$1.75
5,001 - 15,000 gallons/month	3.20
15,001 - 35,000 gallons/month	4.80
≥ 35,001 gallons/month	5.25
General Rates - All Other:	$/kgal
0 - 5,000 gallons/month	$1.75
5,001 - 15,000 gallons/month	3.20
≥ 15,001 gallons/month	4.80
Agriculture Rates:	$/kgal
0 - 5,000 gallons/month	$1.75
5,001 - 15,000 gallons/month	3.20
≥ 15,001 gallons/month	1.10
Non-Potable Rate:	$/kgal
All Usage	$1.10

Section 7
ISSUES FOR FURTHER CONSIDERATION

During the course of completing this water rate study, several key issues for further consideration were identified. The following is a list and discussion of various water rate-related and water planning issues for the DWS to consider in advance of its next review of water rates.

Work with Honolulu BWS to ensure data accuracy.

As was noted in the discussion of historical data results, an issue was observed with data provided by the DWS for water use in FY 2009 and 2010, related to a double-counting of water sales revenues in cases where bills had to be cancelled and reissued. Accurate reporting and tracking of billing data will be particularly important as DWS monitors the impacts of the new customer class.

Continue to examine the level of the monthly service charge.

While the monthly service charge was increased to bring it closer to the cost of service, it is still below the full cost-of-service determined via the Cost-of-Service Analysis described in Section 4. It is recommended that the monthly service charge be evaluated in future years to bring recover the full cost-of-service.

Work with County Budget staff to investigate the possibility of passing multi-year rate increases.

Currently, the County passes rates on a one-year basis. Given that the DWS is planning a significant capital improvement effort, passing a multi-year rate increase could provide greater planning certainty. It is likely that this would require a change in County policy and needs to be discussed with the County Budget staff.

Closely monitor revenue patterns in FY 2013.

It is recommended that DWS closely track revenue and consumption patterns in FY 2013 to understand the impact of the new rate structure. It will be important to assess the degree to which customers that have historically been significantly above-average respond to the new conservation signal sent by the new fourth block and the corresponding revenue impacts.

Appendix A
REVENUE REQUIREMENTS ANALYSIS

SAIC®

Department of Water Supply
County of Maui
Water Rate Study
Revenue Requirements Analysis
Fiscal Years
2009 - 2020

SAIC

Model Prepared by SAIC, Inc. in 2012
for internal use by Maui County DWS Staff
SAIC run date: May 2012

Table A-1

County of Maui, Department of Water Supply
Water Rate Study

Assumptions and General Parameters

Line No.	General Assumptions	
1	Rounding	-1
2		
3	Budget Year (FY)	2012
4		
5	General Inflation (2)	2.30%
6		
7	Target Debt Service Coverage (3)	1.2
8		
9	Target Days of O&M	0
10	for Minimum Ending Balance	
11		
12	Monthly 5/8" Usage	16,000
13	(gallons)	
14		
15	**Capital Improvement Projects**	
16	Carry Forward	0.0%
17	CIP Inflation	2.30%
18		
19	**Safe Drinking Water Loan Fund (SDWLF)**	
20	Interest Rate/Issuance Expense	3.5%
21	Period (Years)	20
22		
23	**Bonds**	
24	Interest Rate	5.0%
25	Period (Years)	20
26	Issuance Expense	1.0%

Growth Rates (1)

Customer Growth Rates

	Single Family	All Other	Agricultural	Non-Potable
2013 - 2016	0.00%	0.00%	0.00%	0.00%
2017 - 2020	0.50%	0.50%	0.50%	0.50%

Consumption Growth Rates

	Single Family	All Other	Agricultural	Non-Potable
2013 - 2016	0.00%	0.00%	0.00%	0.00%
2017 - 2020	0.25%	0.25%	0.25%	0.25%

Notes:
(1) Based on historical FY 2009-2011 growth in total system customers and consumption and DWS Staff input.
(2) Forecast CPI per Hawaii DBEDT as of 9/2011. http://hawaii.gov/dbedt/info/economic/data_reports/qser/outlook-economy
(3) Debt Service Coverage Target per DWS.

Table A-2

County of Maui, Department of Water Supply
Water Rate Study

Number of Customers

Line No.		Historical (1) 2009	2010	2011	'09 - '11 Avg Annual Growth	(2) Estimated 2012	Budget (3) 2013	Projected (3) 2014	2015	2016	2017	2018	2019	2020	'12 - '20 Avg Annual Growth (4)
1	**General Rates - Single Family**														
2	5/8"	0	0	0	0.00%	0	28,902	28,902	28,902	28,902	29,047	29,192	29,338	29,485	0.29%
3	Total Single Family	0	0	0	0.00%	0	28,900	28,900	28,900	28,900	29,000	29,200	29,300	29,500	0.29%
4															
5					'09 - '11	(2)									'12 - '20
6					Avg Annual	Estimated	Budget (3)				Projected (3)				Avg Annual
7		2009	2010	2011	Growth	2012	2013	2014	2015	2016	2017	2018	2019	2020	Growth (4)
8	**General Rates - All Other**														
9	5/8"	30,314	30,017	30,206	-0.18%	30,206	1,304	1,304	1,304	1,304	1,311	1,318	1,325	1,332	n/a
10	3/4"	2,066	2,118	2,170	2.49%	2,170	2,170	2,170	2,170	2,170	2,181	2,192	2,203	2,214	0.25%
11	1"	877	881	905	1.58%	905	905	905	905	905	910	915	920	925	0.27%
12	1 1/2"	625	628	641	1.27%	641	641	641	641	641	644	647	650	653	0.23%
13	2"	581	581	591	0.86%	591	591	591	591	591	594	597	600	603	0.25%
14	3"	84	81	87	1.77%	87	87	87	87	87	87	87	87	87	0.00%
15	4"	38	43	43	6.38%	43	43	43	43	43	43	43	43	43	0.00%
16	6"	11	9	10	-4.65%	10	10	10	10	10	10	10	10	10	0.00%
17	8"	1	1	1	0.00%	1	1	1	1	1	1	1	1	1	0.00%
18	Total General - All Other	34,597	34,359	34,654	0.08%	34,700	5,800	5,800	5,800	5,800	5,800	5,800	5,800	5,900	n/a
19															
20					'09 - '11	(2)									'12 - '20
21			Historical (1)		Avg Annual	Estimated	Budget (3)				Projected (3)				Avg Annual
22		2009	2010	2011	Growth	2012	2013	2014	2015	2016	2017	2018	2019	2020	Growth (4)
23	**Agricultural**														
24	5/8"	444	455	437	-0.79%	437	437	437	437	437	439	441	443	445	0.23%
25	3/4"	87	90	86	-0.58%	86	86	86	86	86	86	86	86	86	0.00%
26	1"	112	111	103	-4.10%	103	103	103	103	103	104	105	106	107	0.48%
27	1 1/2"	75	75	72	-2.02%	72	72	72	72	72	72	72	72	72	0.00%
28	2"	23	25	25	4.26%	25	25	25	25	25	25	25	25	25	0.00%
29	3"	2	3	3	22.47%	3	3	3	3	3	3	3	3	3	0.00%
30	4"	1	1	1	0.00%	1	1	1	1	1	1	1	1	1	0.00%
31	6"	0	0	0	0.00%	0	0	0	0	0	0	0	0	0	0.00%
32	8"	0	0	0	0.00%	0	0	0	0	0	0	0	0	0	0.00%
33	Total Agricultural	744	760	727	-1.15%	730	730	730	730	730	730	730	740	740	0.17%

Table A-2

County of Maui, Department of Water Supply
Water Rate Study

Number of Customers

Line No.		Historical (1) 2009	2010	2011	'09 - '11 Avg Annual Growth	(2) Estimated 2012	Budget (3) 2013	Projected (3) 2014	2015	2016	2017	2018	2019	2020	'12 - '20 Avg Annual Growth (4)
34	**Non-Potable**														
35	5/8"	23	25	27	8.35%	27	27	27	27	27	27	27	27	27	0.00%
36	3/4"	1	1	1	0.00%	1	1	1	1	1	1	1	1	1	0.00%
37	1"	6	6	6	0.00%	6	6	6	6	6	6	6	6	6	0.00%
38	1 1/2"	21	22	22	2.35%	22	22	22	22	22	22	22	22	22	0.00%
39	2"	9	9	9	0.00%	9	9	9	9	9	9	9	9	9	0.00%
40	3"	0	0	0	0.00%	0	0	0	0	0	0	0	0	0	0.00%
41	4"	1	1	1	0.00%	1	1	1	1	1	1	1	1	1	0.00%
42	6"	0	0	0	0.00%	0	0	0	0	0	0	0	0	0	0.00%
43	8"	0	0	0	0.00%	0	0	0	0	0	0	0	0	0	0.00%
44	Total Non-Potable	61	64	66	4.02%	70	70	70	70	70	70	70	70	70	0.00%
45															
46															
47		Historical (1)			'09 - '11 Avg Annual	(2) Estimated	Budget (3)	Projected (3)							'12 - '20 Avg Annual
48		2009	2010	2011	Growth	2012	2013	2014	2015	2016	2017	2018	2019	2020	Growth (4)
49	**Total System**														
50	5/8"	30,781	30,497	30,670	-0.18%	30,670	30,670	30,670	30,670	30,670	30,824	30,978	31,133	31,289	0.25%
51	3/4"	2,154	2,209	2,257	2.36%	2,257	2,257	2,257	2,257	2,257	2,268	2,279	2,290	2,301	0.24%
52	1"	995	998	1,014	0.95%	1,014	1,014	1,014	1,014	1,014	1,020	1,026	1,032	1,038	0.29%
53	1 1/2"	721	725	735	0.97%	735	735	735	735	735	738	741	744	747	0.20%
54	2"	613	615	625	0.97%	625	625	625	625	625	628	631	634	637	0.24%
55	3"	86	84	90	2.30%	90	90	90	90	90	90	90	90	90	0.00%
56	4"	40	45	45	6.07%	45	45	45	45	45	45	45	45	45	0.00%
57	6"	11	9	10	-4.65%	10	10	10	10	10	10	10	10	10	0.00%
58	8"	1	1	1	0.00%	1	1	1	1	1	1	1	1	1	0.00%
59	Total System	35,402	35,183	35,447	0.06%	35,400	35,400	35,400	35,400	35,400	35,600	35,800	36,000	36,200	0.28%
60															
61	Annual Reports	35,540	35,611												
62	Percent Difference	0.4%	1.2%												

Notes:

Totals may differ due to rounding.

(1) Historical data from Honolulu Board of Water Supply, Bill Frequency Analysis Data. Historical data does not include the separation of Single Family General Rates from All Other General Rates.

(2) Projected data based on previous year's customer data times projected growth rate (See Table 1 for details). FY 2012 - FY 2020 average annual growth rates are the average over the two time periods (0% growth through 2016 and .5% growth through 2020).

(3) Budget data for FY 2013 assumes a split of the Single Family class from the existing General Use class. The split of current General Rates customers into a Single Family class and General Rates class was based on data provided by Haiku Design and Analysis.

(4) Average Annual Growth Rates may vary from those described in the Assumptions (Table 1) due to rounding.

Table A-3

County of Maui, Department of Water Supply
Water Rate Study

Consumption Data
(000 Gallons)

Line No.		Historical (1) 2009	2010	2011	'09 - '11 Avg Annual Growth	(2) Estimated 2012	Budget (3) 2013	Projected (3) 2014	2015	2016	2017	2018	2019	2020	'12 - '20 Avg Annual Growth (4)
1	**General Rates - Single Family**														
2	5/8"	0	0	0	0.00%	0	4,674,470	4,674,470	4,674,470	4,674,470	4,686,160	4,697,880	4,709,620	4,721,390	0.14%
3	Total Single Family	0	0	0	0.00%	0	4,674,500	4,674,500	4,674,500	4,674,500	4,686,200	4,697,900	4,709,600	4,721,400	0.14%
4															
5					'09 - '11	(2)									'12 - '20
6					Avg Annual	Estimated	Budget (3)				Projected (3)				Avg Annual
7		2009	2010	2011	Growth	2012	2013	2014	2015	2016	2017	2018	2019	2020	Growth (4)
8	**General Rates - All Other**														
9	5/8"	n/a	5,485,149	5,004,895	n/a	5,004,900	330,430	330,430	330,430	330,430	331,260	332,090	332,920	333,750	n/a
10	3/4"	n/a	734,877	674,135	n/a	674,140	674,140	674,140	674,140	674,140	675,830	677,520	679,210	680,910	0.12%
11	1"	n/a	703,098	633,729	n/a	633,730	633,730	633,730	633,730	633,730	635,310	636,900	638,490	640,090	0.12%
12	1 1/2"	n/a	1,243,934	1,146,421	n/a	1,146,420	1,146,420	1,146,420	1,146,420	1,146,420	1,149,290	1,152,160	1,155,040	1,157,930	0.12%
13	2"	n/a	2,799,546	2,588,622	n/a	2,588,620	2,588,620	2,588,620	2,588,620	2,588,620	2,595,090	2,601,580	2,608,080	2,614,600	0.12%
14	3"	n/a	381,454	367,951	n/a	367,950	367,950	367,950	367,950	367,950	368,870	369,790	370,710	371,640	0.12%
15	4"	n/a	339,786	317,886	n/a	317,890	317,890	317,890	317,890	317,890	318,680	319,480	320,280	321,080	0.12%
16	6"	n/a	348,971	269,511	n/a	269,510	269,510	269,510	269,510	269,510	270,180	270,860	271,540	272,220	0.13%
17	8"	n/a	4,202	3,841	n/a	3,840	3,840	3,840	3,840	3,840	3,850	3,860	3,870	3,880	0.13%
18	Total General - All Other	n/a	12,041,017	11,006,991	n/a	11,007,000	6,332,500	6,332,500	6,332,500	6,332,500	6,348,400	6,364,200	6,380,100	6,396,100	n/a
19															
20					'09 - '11	(2)									'12 - '20
21			Historical (1)		Avg Annual	Estimated	Budget (3)				Projected (3)				Avg Annual
22		2009	2010	2011	Growth	2012	2013	2014	2015	2016	2017	2018	2019	2020	Growth (4)
23	**Agricultural**														
24	5/8"	n/a	321,391	309,583	n/a	309,580	309,580	309,580	309,580	309,580	310,350	311,130	311,910	312,690	0.13%
25	3/4"	n/a	92,099	79,826	n/a	79,830	79,830	79,830	79,830	79,830	80,030	80,230	80,430	80,630	0.12%
26	1"	n/a	213,996	189,128	n/a	189,130	189,130	189,130	189,130	189,130	189,600	190,070	190,550	191,030	0.13%
27	1 1/2"	n/a	294,706	263,087	n/a	263,090	263,090	263,090	263,090	263,090	263,750	264,410	265,070	265,730	0.12%
28	2"	n/a	188,452	169,551	n/a	169,550	169,550	169,550	169,550	169,550	169,970	170,390	170,820	171,250	0.12%
29	3"	n/a	33,849	21,654	n/a	21,650	21,650	21,650	21,650	21,650	21,700	21,750	21,800	21,850	0.12%
30	4"	n/a	31,292	29,528	n/a	29,530	29,530	29,530	29,530	29,530	29,600	29,670	29,740	29,810	0.12%
31	6"	0	0	0	0.00%	0	0	0	0	0	0	0	0	0	0.00%
32	8"	0	0	0	0.00%	0	0	0	0	0	0	0	0	0	0.00%
33	Total Agricultural	n/a	1,175,785	1,062,357	n/a	1,062,400	1,062,400	1,062,400	1,062,400	1,062,400	1,065,000	1,067,700	1,070,300	1,073,000	0.12%

Table A-3

County of Maui, Department of Water Supply
Water Rate Study

Consumption Data
(000 Gallons)

Line No.		Historical (1) 2009	2010	2011	'09 - '11 Avg Annual Growth	(2) Estimated 2012	Budget (3) 2013	Projected (3) 2014	2015	2016	2017	2018	2019	2020	'12 - '20 Avg Annual Growth (4)
34	**Non-Potable**														
35	5/8"	n/a	2,613	2,055	n/a	2,060	2,060	2,060	2,060	2,060	2,070	2,080	2,090	2,100	0.24%
36	3/4"	n/a	0	0	n/a	0	0	0	0	0	0	0	0	0	0.00%
37	1"	n/a	14,150	9,587	n/a	9,590	9,590	9,590	9,590	9,590	9,610	9,630	9,650	9,670	0.10%
38	1 1/2"	n/a	156,997	138,630	n/a	138,630	138,630	138,630	138,630	138,630	138,980	139,330	139,680	140,030	0.13%
39	2"	n/a	49,040	43,431	n/a	43,430	43,430	43,430	43,430	43,430	43,540	43,650	43,760	43,870	0.13%
40	3"	n/a	0	0	n/a	0	0	0	0	0	0	0	0	0	0.00%
41	4"	n/a	4,315	4,325	n/a	4,330	4,330	4,330	4,330	4,330	4,340	4,350	4,360	4,370	0.12%
42	6"	0	0	0	0.00%	0	0	0	0	0	0	0	0	0	0.00%
43	8"	0	0	0	0.00%	0	0	0	0	0	0	0	0	0	0.00%
44	Total Non-Potable	n/a	227,115	198,028	n/a	198,000	198,000	198,000	198,000	198,000	198,500	199,000	199,500	200,000	0.13%
45															
46															
47		Historical (1)			'09 - '11 Avg Annual	(2) Estimated	Budget (3)	Projected (3)							'12 - '20 Avg Annual
48		2009	2010	2011	Growth	2012	2013	2014	2015	2016	2017	2018	2019	2020	Growth (4)
49	**Total System**														
50	5/8"	n/a	5,809,153	5,316,533	n/a	5,316,540	5,316,540	5,316,540	5,316,540	5,316,540	5,329,840	5,343,180	5,356,540	5,369,930	0.12%
51	3/4"	n/a	826,976	753,961	n/a	753,970	753,970	753,970	753,970	753,970	755,860	757,750	759,640	761,540	0.12%
52	1"	n/a	931,244	832,444	n/a	832,450	832,450	832,450	832,450	832,450	834,520	836,600	838,690	840,790	0.12%
53	1 1/2"	n/a	1,695,637	1,548,138	n/a	1,548,140	1,548,140	1,548,140	1,548,140	1,548,140	1,552,020	1,555,900	1,559,790	1,563,690	0.13%
54	2"	n/a	3,037,038	2,801,604	n/a	2,801,600	2,801,600	2,801,600	2,801,600	2,801,600	2,808,600	2,815,620	2,822,660	2,829,720	0.12%
55	3"	n/a	415,303	389,605	n/a	389,600	389,600	389,600	389,600	389,600	390,570	391,540	392,510	393,490	0.12%
56	4"	n/a	375,393	351,739	n/a	351,750	351,750	351,750	351,750	351,750	352,620	353,500	354,380	355,260	0.12%
57	6"	n/a	348,971	269,511	n/a	269,510	269,510	269,510	269,510	269,510	270,180	270,860	271,540	272,220	0.13%
58	8"	n/a	4,202	3,841	n/a	3,840	3,840	3,840	3,840	3,840	3,850	3,860	3,870	3,880	0.13%
59	Total System	n/a	13,443,917	12,267,376	n/a	12,267,400	12,267,400	12,267,400	12,267,400	12,267,400	12,298,100	12,328,800	12,359,600	12,390,500	0.12%
60															
61	Annual Reports	12,073,942	12,213,752												

Notes:

Totals may differ due to rounding.

(1) Historical data from Honolulu Board of Water Supply, Bill Frequency Analysis Data. FY2009 data is not reported because it had unresolvable anomalies.

(2) Projected data based on previous year's consumption data times projected growth rate (See Table 1 for details). FY 2012 - FY 2020 average annual growth rates are the average over the two time periods (0% growth through 2016 and .25% growth through 2020).

(3) Budget data for FY 2013 assumes a split of the Single Family class from the existing General Use class. The split of current General Rates customers into a Single Family class and General Rates class was based on data provided by Haiku Design and Analysis.

(4) Average Annual Growth Rates may vary from those described in the Assumptions (Table 1) due to rounding.

Table A-4

County of Maui, Department of Water Supply
Water Rate Study

Revenue Under Existing Rates
Water Service Charge Revenues

Line No.		Historical (1) 2009	Historical (1) 2010	Historical (1) 2011	'09 - '11 Avg Annual Growth	(2) Estimated 2012	Budget (2,3) 2013	Projected (2) 2014	2015	2016	2017	2018	2019	2020	'12 - '20 Avg Annual Growth (4)
1	**General Rates - Single Family**														
2	5/8"	$0	$0	$0	0.00%	$0	$3,208,120	$3,208,120	$3,208,120	$3,208,120	$3,224,220	$3,240,310	$3,256,520	$3,272,840	n/a
3	Total Single Family	$0	$0	$0	0.00%	$0	$3,208,100	$3,208,100	$3,208,100	$3,208,100	$3,224,200	$3,240,300	$3,256,500	$3,272,800	n/a
4															
5					'09 - '11	(2)	Budget (2,3)				Projected (2)				'12 - '20
6					Avg Annual	Estimated									Avg Annual
7		2009	2010	2011	Growth	2012	2013	2014	2015	2016	2017	2018	2019	2020	Growth (4)
8	**General Rates - All Other**														
9	5/8"	$2,897,130	$3,056,456	$3,254,863	5.99%	$3,352,870	$144,740	$144,740	$144,740	$144,740	$145,520	$146,300	$147,080	$147,850	n/a
10	3/4"	293,023	325,607	349,450	9.20%	364,560	364,560	364,560	364,560	364,560	366,410	368,260	370,100	371,950	0.25%
11	1"	208,868	230,719	249,536	9.30%	260,640	260,640	260,640	260,640	260,640	262,080	263,520	264,960	266,400	0.27%
12	1 1/2"	296,420	327,064	372,246	12.06%	392,290	392,290	392,290	392,290	392,290	394,130	395,960	397,800	399,640	0.23%
13	2"	379,548	414,558	457,343	9.77%	478,710	478,710	478,710	478,710	478,710	481,140	483,570	486,000	488,430	0.25%
14	3"	102,746	110,209	123,619	9.69%	130,500	130,500	130,500	130,500	130,500	130,500	130,500	130,500	130,500	0.00%
15	4"	94,645	110,618	121,005	13.07%	129,000	129,000	129,000	129,000	129,000	129,000	129,000	129,000	129,000	0.00%
16	6"	44,111	43,508	45,496	1.56%	49,800	49,800	49,800	49,800	49,800	49,800	49,800	49,800	49,800	0.00%
17	8"	1,248	1,368	1,439	7.38%	7,800	7,800	7,800	7,800	7,800	7,800	7,800	7,800	7,800	0.00%
18	Total General - All Other	$4,317,739	$4,620,107	$4,974,997	7.34%	$5,166,200	$1,958,000	$1,958,000	$1,958,000	$1,958,000	$1,966,400	$1,974,700	$1,983,000	$1,991,400	n/a
19															
20					'09 - '11	(2)	Budget (2,3)				Projected (2)				'12 - '20
21		Historical (1)			Avg Annual	Estimated									Avg Annual
22		2009	2010	2011	Growth	2012	2013	2014	2015	2016	2017	2018	2019	2020	Growth (4)
23	**Agricultural**														
24	5/8"	$42,380	$46,371	$47,095	5.42%	$48,510	$48,510	$48,510	$48,510	$48,510	$48,730	$48,950	$49,170	$49,400	0.23%
25	3/4"	12,445	13,942	13,974	5.96%	14,450	14,450	14,450	14,450	14,450	14,450	14,450	14,450	14,450	0.00%
26	1"	26,670	29,039	28,397	3.19%	29,660	29,660	29,660	29,660	29,660	29,950	30,240	30,530	30,820	0.48%
27	1 1/2"	35,894	39,496	41,973	8.14%	44,060	44,060	44,060	44,060	44,060	44,060	44,060	44,060	44,060	0.00%
28	2"	14,941	17,688	19,499	14.24%	20,250	20,250	20,250	20,250	20,250	20,250	20,250	20,250	20,250	0.00%
29	3"	2,886	3,658	3,587	11.48%	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	0.00%
30	4"	2,485	2,738	2,869	7.46%	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	0.00%
31	6"	0	0	0	0.00%	0	0	0	0	0	0	0	0	0	0.00%
32	8"	0	0	0	0.00%	0	0	0	0	0	0	0	0	0	0.00%
33	Total Agricultural	$137,701	$152,931	$157,394	6.91%	$164,400	$164,400	$164,400	$164,400	$164,400	$164,900	$165,500	$166,000	$166,500	0.16%

See Page 12 for footnotes.

Table A-4

County of Maui, Department of Water Supply
Water Rate Study

Revenue Under Existing Rates
Water Service Charge Revenues

Line No.		Historical (1) 2009	2010	2011	'09 - '11 Avg Annual Growth	(2) Estimated 2012	Budget (2,3) 2013	Projected (2) 2014	2015	2016	2017	2018	2019	2020	'12 - '20 Avg Annual Growth (4)
34	**Non-Potable**														
35	5/8"	$2,206	$2,560	$2,880	14.26%	$3,000	$3,000	$3,000	$3,000	$3,000	$3,000	$3,000	$3,000	$3,000	0.00%
36	3/4"	144	154	162	6.07%	170	170	170	170	170	170	170	170	170	0.00%
37	1"	1,437	1,581	1,659	7.45%	1,730	1,730	1,730	1,730	1,730	1,730	1,730	1,730	1,730	0.00%
38	1 1/2"	10,237	11,507	12,986	12.63%	13,460	13,460	13,460	13,460	13,460	13,460	13,460	13,460	13,460	0.00%
39	2"	5,931	6,472	7,014	8.75%	7,290	7,290	7,290	7,290	7,290	7,290	7,290	7,290	7,290	0.00%
40	3"	0	0	0	0.00%	0	0	0	0	0	0	0	0	0	0.00%
41	4"	2,497	2,749	2,881	7.41%	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	0.00%
42	6"	0	0	0	0.00%	0	0	0	0	0	0	0	0	0	0.00%
43	8"	0	0	0	0.00%	0	0	0	0	0	0	0	0	0	0.00%
44	Total Non-Potable	$22,452	$25,023	$27,582	10.84%	$28,700	$28,700	$28,700	$28,700	$28,700	$28,700	$28,700	$28,700	$28,700	0.00%
45															
46															
47		Historical (1)			'09 - '11 Avg Annual	(2) Estimated	Budget (2,3)	Projected (2)							'12 - '20 Avg Annual
48		2009	2010	2011	Growth	2012	2013	2014	2015	2016	2017	2018	2019	2020	Growth (4)
49	**Total System**														
50	5/8"	$2,941,716	$3,105,387	$3,304,838	5.99%	$3,404,380	$3,404,370	$3,404,370	$3,404,370	$3,404,370	$3,421,470	$3,438,560	$3,455,770	$3,473,090	0.25%
51	3/4"	305,612	339,703	363,586	9.07%	379,180	379,180	379,180	379,180	379,180	381,030	382,880	384,720	386,570	0.24%
52	1"	236,975	261,339	279,592	8.62%	292,030	292,030	292,030	292,030	292,030	293,760	295,490	297,220	298,950	0.29%
53	1 1/2"	342,551	378,067	427,205	11.67%	449,810	449,810	449,810	449,810	449,810	451,650	453,480	455,320	457,160	0.20%
54	2"	400,420	438,718	483,856	9.93%	506,250	506,250	506,250	506,250	506,250	508,680	511,110	513,540	515,970	0.24%
55	3"	105,632	113,867	127,206	9.74%	135,000	135,000	135,000	135,000	135,000	135,000	135,000	135,000	135,000	0.00%
56	4"	99,627	116,105	126,755	12.80%	135,000	135,000	135,000	135,000	135,000	135,000	135,000	135,000	135,000	0.00%
57	6"	44,111	43,508	45,496	1.56%	49,800	49,800	49,800	49,800	49,800	49,800	49,800	49,800	49,800	0.00%
58	8"	1,248	1,368	1,439	7.38%	7,800	7,800	7,800	7,800	7,800	7,800	7,800	7,800	7,800	0.00%
59	Total System	$4,477,892	$4,798,061	$5,159,973	7.35%	$5,359,300	$5,359,200	$5,359,200	$5,359,200	$5,359,200	$5,384,200	$5,409,100	$5,434,200	$5,459,300	0.23%

See Page 12 for footnotes.

Table A-4

County of Maui, Department of Water Supply
Water Rate Study

Revenue Under Existing Rates
Water Usage Charge Revenues

Line No.		Historical (1) 2009	Historical (1) 2010	Historical (1) 2011	'09 - '11 Avg Annual Growth	(2) Estimated 2012	Budget (2,3) 2013	Projected (2) 2014	Projected (2) 2015	Projected (2) 2016	Projected (2) 2017	Projected (2) 2018	Projected (2) 2019	Projected (2) 2020	'12 - '20 Avg Annual Growth (4)
60	**General Rates - Single Family**														
61	5/8"	$0	$0	$0	0.00%	$0	$14,794,040	$14,794,040	$14,794,040	$14,794,040	$14,831,040	$14,868,130	$14,905,280	$14,942,540	n/a
62	Total Single Family	$0	$0	$0	0.00%	$0	$14,794,000	$14,794,000	$14,794,000	$14,794,000	$14,831,000	$14,868,100	$14,905,300	$14,942,500	n/a
63															
64					'09 - '11	(2)									'12 - '20
65					Avg Annual	Estimated	Budget (2,3)				Projected (2)				Avg Annual
66		2009	2010	2011	Growth	2012	2013	2014	2015	2016	2017	2018	2019	2020	Growth (4)
67	**General Rates - All Other**														
68	5/8"	$13,672,965	$14,227,995	$14,839,301	4.18%	$15,839,800	$1,045,760	$1,045,760	$1,045,760	$1,045,760	$1,048,390	$1,051,020	$1,053,640	$1,056,270	n/a
69	3/4"	1,996,401	2,180,149	2,338,863	8.24%	2,508,530	2,508,530	2,508,530	2,508,530	2,508,530	2,514,820	2,521,110	2,527,400	2,533,730	0.13%
70	1"	2,215,615	2,380,145	2,488,498	5.98%	2,670,950	2,670,950	2,670,950	2,670,950	2,670,950	2,677,610	2,684,310	2,691,020	2,697,760	0.12%
71	1 1/2"	4,116,496	4,407,334	4,727,610	7.17%	5,083,440	5,083,440	5,083,440	5,083,440	5,083,440	5,096,170	5,108,890	5,121,660	5,134,480	0.12%
72	2"	9,510,015	10,037,818	10,904,750	7.08%	11,731,840	11,731,840	11,731,840	11,731,840	11,731,840	11,761,170	11,790,580	11,820,040	11,849,590	0.12%
73	3"	1,320,034	1,459,264	1,573,449	9.18%	1,670,950	1,670,950	1,670,950	1,670,950	1,670,950	1,675,130	1,679,300	1,683,480	1,687,700	0.12%
74	4"	1,132,966	1,254,285	1,347,601	9.06%	1,448,890	1,448,890	1,448,890	1,448,890	1,448,890	1,452,490	1,456,140	1,459,790	1,463,430	0.12%
75	6"	1,302,540	1,261,720	1,149,272	-6.07%	1,236,920	1,236,920	1,236,920	1,236,920	1,236,920	1,240,000	1,243,120	1,246,240	1,249,360	0.13%
76	8"	22,635	22,157	24,156	3.31%	17,330	17,330	17,330	17,330	17,330	17,370	17,420	17,460	17,510	0.13%
77	Total General - All Other	$35,289,667	$37,230,867	$39,393,500	5.65%	$42,208,700	$27,414,600	$27,414,600	$27,414,600	$27,414,600	$27,483,200	$27,551,900	$27,620,700	$27,689,800	n/a
78															
79					'09 - '11	(2)									'12 - '20
80			Historical (1)		Avg Annual	Estimated	Budget (2,3)				Projected (2)				Avg Annual
81		2009	2010	2011	Growth	2012	2013	2014	2015	2016	2017	2018	2019	2020	Growth (4)
82	**Agricultural**														
83	5/8"	$353,260	$395,334	$421,133	9.18%	$432,650	$432,650	$432,650	$432,650	$432,650	$433,720	$434,810	$435,900	$436,990	0.12%
84	3/4"	102,579	106,790	102,888	0.15%	105,280	105,280	105,280	105,280	105,280	105,540	105,810	106,070	106,330	0.12%
85	1"	207,626	222,453	221,572	3.30%	225,140	225,140	225,140	225,140	225,140	225,700	226,260	226,830	227,400	0.12%
86	1 1/2"	248,188	286,198	292,332	8.53%	295,730	295,730	295,730	295,730	295,730	296,470	297,210	297,960	298,700	0.12%
87	2"	147,759	176,647	183,019	11.29%	184,740	184,740	184,740	184,740	184,740	185,190	185,650	186,120	186,590	0.12%
88	3"	28,754	31,070	23,230	-10.12%	23,470	23,470	23,470	23,470	23,470	23,520	23,580	23,630	23,680	0.11%
89	4"	32,292	28,801	31,052	-1.94%	31,310	31,310	31,310	31,310	31,310	31,380	31,450	31,530	31,600	0.12%
90	6"	0	0	0	0.00%	0	0	0	0	0	0	0	0	0	0.00%
91	8"	0	0	0	0.00%	0	0	0	0	0	0	0	0	0	0.00%
92	Total Agricultural	$1,120,458	$1,247,292	$1,275,226	6.68%	$1,298,300	$1,298,300	$1,298,300	$1,298,300	$1,298,300	$1,301,500	$1,304,800	$1,308,000	$1,311,300	0.12%

See Page 12 for footnotes.

Table A-4

County of Maui, Department of Water Supply
Water Rate Study

Revenue Under Existing Rates
Water Usage Charge Revenues

Line No.		Historical (1) 2009	2010	2011	'09 - '11 Avg Annual Growth	(2) Estimated 2012	Budget (2,3) 2013	Projected (2) 2014	2015	2016	2017	2018	2019	2020	'12 - '20 Avg Annual Growth (4)
93	**Non-Potable**														
94	5/8"	$2,241	$2,333	$2,145	-2.17%	$2,160	$2,160	$2,160	$2,160	$2,160	$2,170	$2,180	$2,190	$2,210	0.29%
95	3/4"	0	0	0	0.00%	0	0	0	0	0	0	0	0	0	0.00%
96	1"	9,534	13,455	10,030	2.57%	10,070	10,070	10,070	10,070	10,070	10,090	10,110	10,130	10,150	0.10%
97	1 1/2"	105,193	144,745	144,764	17.31%	145,560	145,560	145,560	145,560	145,560	145,930	146,300	146,660	147,030	0.13%
98	2"	32,737	45,148	45,375	17.73%	45,600	45,600	45,600	45,600	45,600	45,720	45,830	45,950	46,060	0.13%
99	3"	0	0	0	0.00%	0	0	0	0	0	0	0	0	0	0.00%
100	4"	4,078	4,181	4,529	5.38%	4,550	4,550	4,550	4,550	4,550	4,560	4,570	4,580	4,590	0.11%
101	6"	0	0	0	0.00%	0	0	0	0	0	0	0	0	0	0.00%
102	8"	0	0	0	0.00%	0	0	0	0	0	0	0	0	0	0.00%
103	Total Non-Potable	$153,783	$209,862	$206,843	15.98%	$207,900	$207,900	$207,900	$207,900	$207,900	$208,500	$209,000	$209,500	$210,000	0.13%
104															
105					'09 - '11	(2)									'12 - '20
106		Historical (1)			Avg Annual	Estimated	Budget (2,3)	Projected (2)							Avg Annual
107		2009	2010	2011	Growth	2012	2013	2014	2015	2016	2017	2018	2019	2020	Growth (4)
108	**Total System**														
109	5/8"	$14,028,466	$14,625,662	$15,262,579	4.31%	$16,274,610	$16,274,610	$16,274,610	$16,274,610	$16,274,610	$16,315,320	$16,356,140	$16,397,010	$16,438,010	0.12%
110	3/4"	2,098,980	2,286,939	2,441,751	7.86%	2,613,810	2,613,810	2,613,810	2,613,810	2,613,810	2,620,360	2,626,920	2,633,470	2,640,060	0.12%
111	1"	2,432,775	2,616,053	2,720,100	5.74%	2,906,160	2,906,160	2,906,160	2,906,160	2,906,160	2,913,400	2,920,680	2,927,980	2,935,310	0.12%
112	1 1/2"	4,469,877	4,838,277	5,164,706	7.49%	5,524,730	5,524,730	5,524,730	5,524,730	5,524,730	5,538,570	5,552,400	5,566,280	5,580,210	0.12%
113	2"	9,690,511	10,259,613	11,133,144	7.19%	11,962,180	11,962,180	11,962,180	11,962,180	11,962,180	11,992,080	12,022,060	12,052,110	12,082,240	0.12%
114	3"	1,348,788	1,490,334	1,596,679	8.80%	1,694,420	1,694,420	1,694,420	1,694,420	1,694,420	1,698,650	1,702,880	1,707,110	1,711,380	0.12%
115	4"	1,169,336	1,287,267	1,383,182	8.76%	1,484,750	1,484,750	1,484,750	1,484,750	1,484,750	1,488,430	1,492,160	1,495,900	1,499,620	0.12%
116	6"	1,302,540	1,261,720	1,149,272	-6.07%	1,236,920	1,236,920	1,236,920	1,236,920	1,236,920	1,240,000	1,243,120	1,246,240	1,249,360	0.13%
117	8"	22,635	22,157	24,156	3.31%	17,330	17,330	17,330	17,330	17,330	17,370	17,420	17,460	17,510	0.13%
118	Total System	$36,563,908	$38,688,021	$40,875,569	5.73%	$43,714,900	$43,714,900	$43,714,900	$43,714,900	$43,714,900	$43,824,200	$43,933,800	$44,043,600	$44,153,700	0.12%

See Page 12 for footnotes.

Table A-4

County of Maui, Department of Water Supply
Water Rate Study

Revenue Under Existing Rates
Total Water Sales Revenues

Line No.		Historical (1) 2009	2010	2011	'09 - '11 Avg Annual Growth	(2) Estimated 2012	Budget (2,3) 2013	Projected (2) 2014	2015	2016	2017	2018	2019	2020	'12 - '20 Avg Annual Growth (4)
119	**General Rates - Single Family**														
120	5/8"	$0	$0	$0	0.00%	$0	$18,002,160	$18,002,160	$18,002,160	$18,002,160	$18,055,260	$18,108,440	$18,161,800	$18,215,380	n/a
121	Total Single Family	$0	$0	$0	0.00%	$0	$18,002,200	$18,002,200	$18,002,200	$18,002,200	$18,055,300	$18,108,400	$18,161,800	$18,215,400	n/a
122															
123					'09 - '11 Avg Annual	(2) Estimated	Budget (2,3)				Projected (2)				'12 - '20 Avg Annual
124															
125		2009	2010	2011	Growth	2012	2013	2014	2015	2016	2017	2018	2019	2020	Growth (4)
126	**General Rates - All Other**														
127	5/8"	$16,570,095	$17,284,451	$18,094,164	4.50%	$19,192,670	$1,190,500	$1,190,500	$1,190,500	$1,190,500	$1,193,910	$1,197,320	$1,200,720	$1,204,120	n/a
128	3/4"	2,289,424	2,505,756	2,688,313	8.36%	2,873,090	2,873,090	2,873,090	2,873,090	2,873,090	2,881,230	2,889,370	2,897,500	2,905,680	0.14%
129	1"	2,424,483	2,610,864	2,738,034	6.27%	2,931,590	2,931,590	2,931,590	2,931,590	2,931,590	2,939,690	2,947,830	2,955,980	2,964,160	0.14%
130	1 1/2"	4,412,916	4,734,398	5,099,856	7.50%	5,475,730	5,475,730	5,475,730	5,475,730	5,475,730	5,490,300	5,504,850	5,519,460	5,534,120	0.13%
131	2"	9,889,563	10,452,376	11,362,093	7.19%	12,210,550	12,210,550	12,210,550	12,210,550	12,210,550	12,242,310	12,274,150	12,306,040	12,338,020	0.13%
132	3"	1,422,780	1,569,473	1,697,068	9.21%	1,801,450	1,801,450	1,801,450	1,801,450	1,801,450	1,805,630	1,809,800	1,813,980	1,818,200	0.12%
133	4"	1,227,611	1,364,903	1,468,606	9.38%	1,577,890	1,577,890	1,577,890	1,577,890	1,577,890	1,581,490	1,585,140	1,588,790	1,592,430	0.11%
134	6"	1,346,651	1,305,228	1,194,768	-5.81%	1,286,720	1,286,720	1,286,720	1,286,720	1,286,720	1,289,800	1,292,920	1,296,040	1,299,160	0.12%
135	8"	23,883	23,525	25,595	3.52%	25,130	25,130	25,130	25,130	25,130	25,170	25,220	25,260	25,310	0.09%
136	Total General - All Other	$39,607,406	$41,850,974	$44,368,497	5.84%	$47,374,800	$29,372,700	$29,372,700	$29,372,700	$29,372,700	$29,449,500	$29,526,600	$29,603,800	$29,681,200	n/a
137															
138					'09 - '11 Avg Annual	(2) Estimated	Budget (2,3)				Projected (2)				'12 - '20 Avg Annual
139		Historical (1)													
140		2009	2010	2011	Growth	2012	2013	2014	2015	2016	2017	2018	2019	2020	Growth (4)
141	**Agricultural**														
142	5/8"	$395,640	$441,705	$468,227	8.79%	$481,160	$481,160	$481,160	$481,160	$481,160	$482,450	$483,760	$485,070	$486,390	0.14%
143	3/4"	115,024	120,731	116,862	0.80%	119,730	119,730	119,730	119,730	119,730	119,990	120,260	120,520	120,780	0.11%
144	1"	234,296	251,491	249,969	3.29%	254,800	254,800	254,800	254,800	254,800	255,650	256,500	257,360	258,220	0.17%
145	1 1/2"	284,082	325,694	334,305	8.48%	339,790	339,790	339,790	339,790	339,790	340,530	341,270	342,020	342,760	0.11%
146	2"	162,700	194,336	202,518	11.57%	204,990	204,990	204,990	204,990	204,990	205,440	205,900	206,370	206,840	0.11%
147	3"	31,640	34,728	26,817	-7.94%	27,970	27,970	27,970	27,970	27,970	28,020	28,080	28,130	28,180	0.09%
148	4"	34,777	31,539	33,921	-1.24%	34,310	34,310	34,310	34,310	34,310	34,380	34,450	34,530	34,600	0.11%
149	6"	0	0	0	0.00%	0	0	0	0	0	0	0	0	0	0.00%
150	8"	0	0	0	0.00%	0	0	0	0	0	0	0	0	0	0.00%
151	Total Agricultural	$1,258,159	$1,400,223	$1,432,620	6.71%	$1,462,800	$1,462,800	$1,462,800	$1,462,800	$1,462,800	$1,466,500	$1,470,200	$1,474,000	$1,477,800	0.13%

See Page 12 for footnotes.

Table A-4

County of Maui, Department of Water Supply
Water Rate Study

Revenue Under Existing Rates
Total Water Sales Revenues

Line No.		Historical (1) 2009	Historical (1) 2010	Historical (1) 2011	'09 - '11 Avg Annual Growth	(2) Estimated 2012	Budget (2,3) 2013	Projected (2) 2014	2015	2016	2017	2018	2019	2020	'12 - '20 Avg Annual Growth (4)
152	**Non-Potable**														
153	5/8"	$4,447	$4,893	$5,025	6.30%	$5,160	$5,160	$5,160	$5,160	$5,160	$5,170	$5,180	$5,190	$5,210	0.12%
154	3/4"	144	154	162	6.07%	170	170	170	170	170	170	170	170	170	0.00%
155	1"	10,971	15,036	11,689	3.22%	11,800	11,800	11,800	11,800	11,800	11,820	11,840	11,860	11,880	0.08%
156	1 1/2"	115,430	156,252	157,750	16.90%	159,020	159,020	159,020	159,020	159,020	159,390	159,760	160,120	160,490	0.12%
157	2"	38,668	51,620	52,389	16.40%	52,890	52,890	52,890	52,890	52,890	53,010	53,120	53,240	53,350	0.11%
158	3"	0	0	0	0.00%	0	0	0	0	0	0	0	0	0	0.00%
159	4"	6,575	6,930	7,410	6.16%	7,550	7,550	7,550	7,550	7,550	7,560	7,570	7,580	7,590	0.07%
160	6"	0	0	0	0.00%	0	0	0	0	0	0	0	0	0	0.00%
161	8"	0	0	0	0.00%	0	0	0	0	0	0	0	0	0	0.00%
162	Total Non-Potable	$176,235	$234,885	$234,425	15.33%	$236,600	$236,600	$236,600	$236,600	$236,600	$237,100	$237,600	$238,200	$238,700	0.11%
163															
164					'09 - '11	(2)									'12 - '20
165		Historical (1)			Avg Annual	Estimated	Budget (2,3)				Projected (2)				Avg Annual
166		2009	2010	2011	Growth	2012	2013	2014	2015	2016	2017	2018	2019	2020	Growth (4)
167	**Total System**														
168	5/8"	$16,970,182	$17,731,049	$18,567,416	4.60%	$19,678,990	$19,678,980	$19,678,980	$19,678,980	$19,678,980	$19,736,790	$19,794,700	$19,852,780	$19,911,100	0.15%
169	3/4"	2,404,592	2,626,641	2,805,337	8.01%	2,992,990	2,992,990	2,992,990	2,992,990	2,992,990	3,001,390	3,009,800	3,018,190	3,026,630	0.14%
170	1"	2,669,750	2,877,391	2,999,692	6.00%	3,198,190	3,198,190	3,198,190	3,198,190	3,198,190	3,207,160	3,216,170	3,225,200	3,234,260	0.14%
171	1 1/2"	4,812,428	5,216,344	5,591,911	7.79%	5,974,540	5,974,540	5,974,540	5,974,540	5,974,540	5,990,220	6,005,880	6,021,600	6,037,370	0.13%
172	2"	10,090,931	10,698,332	11,617,000	7.30%	12,468,430	12,468,430	12,468,430	12,468,430	12,468,430	12,500,760	12,533,170	12,565,650	12,598,210	0.13%
173	3"	1,454,420	1,604,201	1,723,885	8.87%	1,829,420	1,829,420	1,829,420	1,829,420	1,829,420	1,833,650	1,837,880	1,842,110	1,846,380	0.12%
174	4"	1,268,963	1,403,372	1,509,937	9.08%	1,619,750	1,619,750	1,619,750	1,619,750	1,619,750	1,623,430	1,627,160	1,630,900	1,634,620	0.11%
175	6"	1,346,651	1,305,228	1,194,768	-5.81%	1,286,720	1,286,720	1,286,720	1,286,720	1,286,720	1,289,800	1,292,920	1,296,040	1,299,160	0.12%
176	8"	23,883	23,525	25,595	3.52%	25,130	25,130	25,130	25,130	25,130	25,170	25,220	25,260	25,310	0.09%
177	Total System (See row 187)	$41,041,800	$43,486,082	$46,035,542	5.91%	$49,074,200	$49,074,200	$49,074,200	$49,074,200	$49,074,200	$49,208,400	$49,342,900	$49,477,700	$49,613,000	0.14%
178															
179	Approved Rate Increase	9.6%	8.3%	7.0%		5.5%									
180	Historical Annual Increase in Water	n/a	6.0%	5.9%		6.6%									
181	Sales Revenue														
182	Annual Report	$41,925,832	$45,780,015	$46,427,383											
183	Annual Report (Less Fire)	$41,696,699	$45,284,840	$45,836,176											
184	Percent Difference (5)	2.2%	5.3%	0.9%											
185	2012 Adopted Budget					$50,000,000									
186	Adjustment Factor to Reflect Department Budgeting Assumptions (6)					-6.27%	-6.27%	-6.27%	-6.27%	-6.27%	-6.27%	-6.27%	-6.27%	-6.27%	
187	Adjusted Total System Revenue (7)					$46,000,000	$46,000,000	$46,000,000	$46,000,000	$46,000,000	$46,121,900	$46,248,000	$46,374,300	$46,501,100	

See Page 12 for footnotes.

Table A-4

County of Maui, Department of Water Supply
Water Rate Study

Revenue Under Existing Rates
FY 2012 Rate Schedule

Line No.				
	Usage Charge			
188	**Blocks**	**General Rates**	**Non-Potable**	**Agricultural**
189	0-5000	$1.75	$1.05	$1.75
190	5001-15000	3.20	1.05	3.20
191	>15000	4.60	1.05	1.05
192				
193	Service Charge			
194				
195	**Meter Size**	**Monthly Charge**		
196	5/8"	$9.25		
197	3/4"	14.00		
198	1"	24.00		
199	1 1/2"	51.00		
200	2"	67.50		
201	3"	125.00		
202	4"	250.00		
203	6"	415.00		
204	8"	650.00		

Notes:

Totals may differ due to rounding.

(1) Historical data from Honolulu Board of Water Supply, Bill Frequency Analysis Data.

(2) FY 2012 through FY 2020 based on current rate schedule times appropriate customer and usage data (See Tables 2 & 3 for details). Calculated revenue may differ from budgeted projection.

(3) FY 2013 assumes a split of the Single Family class from the existing General Use class. Single Family class data based on Bill Frequency Data provided by Honolulu Board of Water Supply.

(4) Average Annual Growth Rates may vary from those described in the Assumptions (Table 1) due to rounding.

(5) Percent Difference between line 177 Total System Revenue and line 183 Annual Report Revenues (less Fire).

(6) Due to differences between calculated revenue and expected revenue per DWS, an adjustment factor was calculated to reduce the calculated revenue to match the expected amount in FY 2013. This adjustment factor is carried through for FY2014 - FY2020.

(7) Line 187 (2012) is $46.0 million, the expected revenue in 2012 per DWS.
Line 187 (2013) is $47.0 million, the expected revenue in 2013 per DWS.
Line 187 (2014-2020) is the calculated revenue (on Line 156), reduced by 4.22%, which was the adjustment factor calculated for 2013 based on the ratio between the calculated revenue in the model and the expected revenue in 2013 per DWS.

Table A-5

County of Maui, Department of Water Supply
Water Rate Study

O&M Expenses

Line No.		Historical (1) 2009	2010	2011	'09 - '11 Avg Annual Growth	(2) Estimated 2012	Budget 2013	Projected (3) 2014	2015	2016	2017	2018	2019	2020	'12 - '20 Avg Annual Growth
1	**Departmental Costs**														
2	Insurance	$323,375	$475,000	$475,000	21.20%	$475,000	$475,000	$485,930	$497,110	$508,540	$520,240	$532,210	$544,450	$556,970	2.01%
3	Overhead Charges	309,430	391,943	374,553	10.02%	364,942	362,303	370,640	379,160	387,880	396,800	405,930	415,270	424,820	1.92%
4	Employee Benefits	3,722,144	4,641,287	4,440,935	9.23%	4,533,711	4,596,934	4,702,660	4,810,820	4,921,470	5,034,660	5,150,460	5,268,920	5,390,110	2.19%
5	Refund for Mainline Extensions (4)	338,685	500,000	500,000	21.50%	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000	0.00%
6	Other Post-Employee Benefits	1,219,718	1,291,462	1,237,502	0.73%	1,259,508	1,705,502	1,744,730	1,784,860	1,825,910	1,867,910	1,910,870	1,954,820	1,999,780	5.95%
7	Total Departmental Costs	$5,913,352	$7,299,692	$7,027,990	9.02%	$7,133,200	$7,639,700	$7,804,000	$7,972,000	$8,143,800	$8,319,600	$8,499,500	$8,683,500	$8,871,700	2.76%
8															
9	**Field Operations**														
10	Wages and Salaries	$3,655,284	$4,146,684	$3,975,852	4.29%	$4,024,944	$4,024,944	$4,117,520	$4,212,220	$4,309,100	$4,408,210	$4,509,600	$4,613,320	$4,719,430	2.01%
11	Other Premium Pay	0	0	0	0.00%	0	0	0	0	0	0	0	0	0	0.00%
12	Materials and Supplies	1,758,950	1,680,232	2,142,575	10.37%	2,142,575	2,142,575	2,191,850	2,242,260	2,293,830	2,346,590	2,400,560	2,455,770	2,512,250	2.01%
13	Services	91,088	254,863	311,835	85.03%	311,835	311,835	319,010	326,350	333,860	341,540	349,400	357,440	365,660	2.01%
14	Utilities	136,175	125,220	154,000	6.34%	154,000	154,000	157,540	161,160	164,870	168,660	172,540	176,510	180,570	2.01%
15	Travel	9,588	8,531	23,450	56.39%	23,450	23,450	23,990	24,540	25,100	25,680	26,270	26,870	27,490	2.01%
16	Other Costs (5)	62,640	61,750	117,900	37.19%	117,900	117,900	120,610	123,380	126,220	129,120	132,090	135,130	138,240	2.01%
17	Machinery and Equipment	461,475	156,000	83,500	-57.46%	83,000	365,630	374,040	382,640	391,440	400,440	409,650	419,070	428,710	22.78%
18	Total Field Operations	$6,175,200	$6,433,280	$6,809,112	5.01%	$6,857,700	$7,140,300	$7,304,600	$7,472,600	$7,644,400	$7,820,200	$8,000,100	$8,184,100	$8,372,400	2.53%
19															
20	**Engineering**														
21	Wages and Salaries	$215,331	$1,669,808	$1,497,708	163.73%	$1,544,724	$1,615,296	$1,652,450	$1,690,460	$1,729,340	$1,769,110	$1,809,800	$1,851,430	$1,894,010	2.58%
22	Other Premium Pay	0	0	0	0.00%	0	0	0	0	0	0	0	0	0	0.00%
23	Materials and Supplies	28,714	32,793	47,100	28.07%	47,100	47,100	48,180	49,290	50,420	51,580	52,770	53,980	55,220	2.01%
24	Services	54,230	14,774	81,800	22.82%	81,800	81,800	83,680	85,600	87,570	89,580	91,640	93,750	95,910	2.01%
25	Utilities	3,877	3,833	4,600	8.93%	4,600	4,600	4,710	4,820	4,930	5,040	5,160	5,280	5,400	2.02%
26	Travel	6,558	1,749	15,500	53.74%	15,500	15,500	15,860	16,220	16,590	16,970	17,360	17,760	18,170	2.01%
27	Other Costs (5)	14,792	2,130	22,800	24.15%	22,800	22,800	23,320	23,860	24,410	24,970	25,540	26,130	26,730	2.01%
28	Machinery and Equipment (6)	76,500	16,300	21,000	-47.61%	6,800	36,800	40,480	44,530	48,980	53,880	59,270	65,200	71,720	34.24%
29	Total Engineering	$400,002	$1,741,387	$1,690,508	105.58%	$1,723,300	$1,823,900	$1,868,700	$1,914,800	$1,962,200	$2,011,100	$2,061,500	$2,113,500	$2,167,200	2.91%
30															
31	**Planning**														
32	Wages and Salaries	$379,388	$627,004	$536,472	18.91%	$535,080	$550,224	$562,880	$575,830	$589,070	$602,620	$616,480	$630,660	$645,170	2.37%
33	Other Premium Pay	0	0	0	0.00%	0	0	0	0	0	0	0	0	0	0.00%
34	Materials and Supplies	12,424	16,972	28,500	51.46%	28,500	28,500	29,160	29,830	30,520	31,220	31,940	32,670	33,420	2.01%
35	Services (7)	185,136	320,777	312,600	29.94%	211,176	211,176	221,730	232,820	244,460	256,680	269,510	282,990	297,140	4.36%
36	Utilities (7)	18,396	19,505	26,000	18.88%	23,000	23,000	23,530	24,070	24,620	25,190	25,770	26,360	26,970	2.01%
37	Travel	10,448	5,155	15,600	22.19%	15,600	15,600	15,960	16,330	16,710	17,090	17,480	17,880	18,290	2.01%
38	Other Costs (5,8)	281,653	252,693	286,500	0.86%	286,500	286,500	286,500	286,500	286,500	286,500	286,500	286,500	286,500	0.00%
39	Other Professional Services (9)	806,565	715,500	503,750	-20.97%	1,047,865	1,047,865	1,071,970	1,096,630	1,121,850	1,147,650	1,174,050	1,201,050	1,228,670	2.01%
40	Machinery and Equipment	16,000	103,500	13,000	-9.86%	19,653	56,000	57,290	58,610	59,960	61,340	62,750	64,190	65,670	16.28%
41	Total Planning	$1,710,010	$2,061,106	$1,722,422	0.36%	$2,167,400	$2,218,900	$2,269,000	$2,320,600	$2,373,700	$2,428,300	$2,484,500	$2,542,300	$2,601,800	2.31%

Table A-5

County of Maui, Department of Water Supply
Water Rate Study

O&M Expenses

Line No.		Historical (1) 2009	2010	2011	'09 - '11 Avg Annual Growth	(2) Estimate 2012	(2) Budget 2013	Projected (3) 2014	2015	2016	2017	2018	2019	2020	'12 - '20 Avg Annual Growth
42	**Director's Office**														
43	Wages and Salaries	$548,254	$546,868	$511,332	-3.43%	$534,836	$525,644	$537,730	$550,100	$562,750	$575,690	$588,930	$602,480	$616,340	1.79%
44	Other Premium Pay	0	0	0	0.00%	0	0	0	0	0	0	0	0	0	0.00%
45	Materials and Supplies	8,168	14,163	40,390	122.37%	60,390	60,390	61,780	63,200	64,650	66,140	67,660	69,220	70,810	2.01%
46	Services (6, 9)	5,955	27,557	187,000	460.38%	187,000	187,000	205,700	226,270	248,900	273,790	301,170	331,290	364,420	8.70%
47	Utilities	186,775	94,719	111,000	-22.91%	111,000	111,000	113,550	116,160	118,830	121,560	124,360	127,220	130,150	2.01%
48	Travel	7,535	5,241	16,550	48.20%	16,550	16,550	16,930	17,320	17,720	18,130	18,550	18,980	19,420	2.02%
49	Other Costs (5)	356,498	375,342	294,000	-9.19%	284,000	284,000	290,530	297,210	304,050	311,040	318,190	325,510	333,000	2.01%
50	Machinery and Equipment	257,000	28,000	28,000	-66.99%	18,800	18,800	19,230	19,670	20,120	20,580	21,050	21,530	22,030	2.00%
51	Total Director's Office	$1,370,185	$1,091,890	$1,188,272	-6.87%	$1,212,600	$1,203,400	$1,245,500	$1,289,900	$1,337,000	$1,386,900	$1,439,900	$1,496,200	$1,556,200	3.17%
52															
53	**Fiscal and Administration**														
54	Wages and Salaries	$1,315,959	$1,468,140	$1,378,996	2.37%	$1,437,096	$1,439,472	$1,472,580	$1,506,450	$1,541,100	$1,576,550	$1,612,810	$1,649,900	$1,687,850	2.03%
55	Other Premium Pay	0	0	0	0.00%	0	0	0	0	0	0	0	0	0	0.00%
56	Materials and Supplies	576,465	524,651	582,700	0.54%	677,700	677,700	693,290	709,240	725,550	742,240	759,310	776,770	794,640	2.01%
57	Services	156,592	193,652	230,500	21.33%	319,280	319,280	326,620	334,130	341,810	349,670	357,710	365,940	374,360	2.01%
58	Utilities	8,386	7,609	10,000	9.20%	10,000	10,000	10,230	10,470	10,710	10,960	11,210	11,470	11,730	2.01%
59	Travel	5,785	3,945	12,000	44.03%	12,000	12,000	12,280	12,560	12,850	13,150	13,450	13,760	14,080	2.02%
60	Other Costs (5)	6,145	7,729	10,450	30.41%	10,450	10,450	10,690	10,940	11,190	11,450	11,710	11,980	12,260	2.02%
61	Machinery and Equipment	36,800	62,600	6,000	-59.62%	6,800	86,800	88,800	90,840	92,930	95,070	97,260	99,500	101,790	40.25%
62	Total Fiscal and Administration	$2,106,132	$2,268,326	$2,230,646	2.91%	$2,473,300	$2,555,700	$2,614,500	$2,674,600	$2,736,100	$2,799,100	$2,863,500	$2,929,300	$2,996,700	2.43%
63															
64	**Water Treatment Plants**														
65	Wages and Salaries	$1,522,570	$1,698,920	$1,655,484	4.27%	$1,672,420	$1,668,772	$1,707,150	$1,746,410	$1,786,580	$1,827,670	$1,869,710	$1,912,710	$1,956,700	1.98%
66	Other Premium Pay	0	0	0	0.00%	0	0	0	0	0	0	0	0	0	0.00%
67	Materials and Supplies	842,599	930,228	1,164,000	17.53%	1,164,000	1,267,500	1,296,650	1,326,470	1,356,980	1,388,190	1,420,120	1,452,780	1,486,190	3.10%
68	Services	38,319	104,361	349,000	201.79%	349,000	349,000	357,030	365,240	373,640	382,230	391,020	400,010	409,210	2.01%
69	Utilities (10)	2,131,607	1,921,011	3,450,836	27.24%	3,411,848	2,911,848	2,978,820	3,047,330	3,125,210	3,205,080	3,286,990	3,371,000	3,457,150	0.17%
70	Travel	3,268	3,305	13,400	102.49%	13,400	13,400	13,710	14,030	14,350	14,680	15,020	15,370	15,720	2.02%
71	Other Costs (5)	23,707	48,802	47,450	41.48%	47,450	47,450	48,540	49,660	50,800	51,970	53,170	54,390	55,640	2.01%
72	Buildings	0	0	0	0.00%	0	0	0	0	0	0	0	0	0	0.00%
73	Machinery and Equipment (11)	159,000	394,000	0	-100.00%	0	0	50,000	51,150	52,330	53,530	54,760	56,020	57,310	2.30%
74	Total Water Treatment Plants	$4,721,070	$5,100,627	$6,680,170	18.95%	$6,658,100	$6,258,000	$6,451,900	$6,600,300	$6,759,900	$6,923,400	$7,090,800	$7,262,300	$7,437,900	1.39%
75															
76	**Pump/Purification Manager**														
77	Wages and Salaries	$1,603,359	$1,875,036	$1,761,608	4.82%	$1,812,052	$1,825,252	$1,867,230	$1,910,180	$1,954,110	$1,999,050	$2,045,030	$2,092,070	$2,140,190	2.10%
78	Other Premium Pay	0	0	0	0.00%	0	0	0	0	0	0	0	0	0	0.00%
79	Materials and Supplies	778,266	760,165	859,400	5.08%	859,400	859,400	879,170	899,390	920,080	941,240	962,890	985,040	1,007,700	2.01%
80	Services	499,322	431,367	782,850	25.21%	782,850	782,850	800,860	819,280	838,120	857,400	877,120	897,290	917,930	2.01%
81	Utilities (10)	10,353,848	8,827,310	15,222,500	21.25%	14,924,934	12,888,234	13,184,660	13,487,910	13,832,630	14,186,160	14,548,720	14,920,550	15,301,880	0.31%
82	Travel	25,532	17,914	41,850	28.03%	41,850	41,850	42,810	43,790	44,800	45,830	46,880	47,960	49,060	2.01%
83	Other Costs (5)	25,533	22,777	31,900	11.77%	31,900	31,900	32,630	33,380	34,150	34,940	35,740	36,560	37,400	2.01%
84	Buildings	0	0	0	0.00%	0	0	0	0	0	0	0	0	0	0.00%
85	Machinery and Equipment	157,000	272,000	177,400	6.30%	58,000	581,500	150,000	153,450	156,980	160,590	164,280	168,060	171,930	14.55%
86	Total Pump/Purification Manager	$13,442,860	$12,206,569	$18,877,508	18.50%	$18,511,000	$17,011,000	$16,957,400	$17,347,400	$17,780,900	$18,225,200	$18,680,700	$19,147,500	$19,626,100	0.73%
87															
88	Total O&M Expenditures	$35,838,811	$38,202,877	$46,226,628	13.57%	$46,736,600	$45,850,900	$46,515,600	$47,592,200	$48,738,000	$49,913,800	$51,120,500	$52,358,700	$53,630,000	1.73%
89	Annual Report O&M (12)	$33,763,797	$34,220,880	-	-	-	-	-	-	-	-	-	-	-	-
90	Budget FTEs (13)	219	219	218	-0.23%	218	219	219	219	219	219	219	219	219	0.06%
91	Actual FTEs (13)	n/a	n/a	197		200	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Table A-5

County of Maui, Department of Water Supply
Water Rate Study

O&M Expenses

Notes:

Totals may differ due to rounding.

(1) Historical data from FY 2009-FY 2011 Director's Report.
(2) 2012 per 'Water - FY2012Board Draft Final.xls'
(3) FY 2009-FY 2012 projected data based on previous year times general inflation of 2.30%, unless otherwise noted.
(4) Amount of refund is not increased with inflation per prior DWS guidance.
(5) Other Costs includes Publications & Subscriptions, Board Costs, Registration/Training Fees, Workers Compensation, Safety Program and other miscellaneous costs.
(6) FY 2013 and beyond escalated at 10% per year, per prior DWS guidance.
(7) FY 2013 and beyond escalated at 5% per year, per prior DWS guidance.
(8) FY 2013 and beyond not escalated per year, per prior DWS guidance.
(9) FY 2013 based on average of FY2009-2012.
(10) Projection based on previous year times general inflation of 2.30% and growth in consumption.
(11) FY 2014 expense per DWS.
(12) O&M Expenditures as reported in the Annual Report differ from the totals in this model due to the inclusion of capitalized expenses in the Annual Report.
(13) Per DWS Budget and discussion with staff.

Table A-6

County of Maui, Department of Water Supply
Water Rate Study

Capital Improvement Plan
($M)

Line No.		Estimated 2012	Budgeted 2013	2014	2015	2016	Projected 2017	2018	2019	2020	Nine-Year Total
1	**Annual Encumbrances - Repair & Replacements (1)**										
2	Facilities	$1.8	$2.0	$2.0	$2.0	$4.0	$4.0	$4.0	$4.0	$3.0	$26.8
3	Fire Protection	0.0	0.0	2.5	2.5	2.5	3.5	3.5	3.5	2.5	20.5
4	Conservation	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	Source	22.5	12.7	4.2	2.2	3.7	0.9	2.7	0.6	0.5	49.8
6	Storage	0.0	0.7	0.0	4.5	0.0	1.2	2.7	2.1	8.1	19.3
7	Transmission	0.9	0.0	0.0	0.0	6.0	2.0	5.0	6.5	6.5	26.9
8	Distribution	2.7	5.3	7.8	9.9	11.4	14.7	5.1	5.1	0.0	61.8
9	Treatment Plant	3.0	8.3	0.5	4.8	0.0	0.0	0.0	0.0	1.0	17.5
10	Unspecified Projects	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1
11	**Total Repair & Replacement Encumbrances**	$31.9	$28.9	$17.0	$25.8	$27.5	$26.3	$23.0	$21.8	$21.6	$223.6
12	**Annual Encumbrances - Growth Related (1)**										
13	Facilities	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
14	Fire Protection	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15	Conservation	1.1	1.0	1.0	2.0	2.0	3.0	3.0	3.0	3.0	19.1
16	Source	0.0	1.0	6.8	6.9	1.0	0.4	3.4	1.0	0.4	20.7
17	Storage	0.0	0.0	0.0	0.0	0.0	1.5	1.5	5.0	5.0	13.0
18	Transmission	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19	Distribution	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20	Treatment Plant	0.0	0.0	22.0	3.0	2.5	0.0	0.0	0.0	1.0	28.5
21	Unspecified Projects	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
22	**Total Growth Related Encumbrances**	$1.1	$2.0	$29.8	$11.9	$5.5	$4.9	$7.9	$9.0	$9.4	$81.3
23	**Escalated Total Annual Encumbrances**	$32.9	$30.9	$47.9	$39.4	$35.3	$34.1	$34.5	$35.2	$36.3	$326.5
24	**Sources of Funds: (2)**										
25	Bond Fund	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
26	SDWLF (3)	17.4	14.5	4.5	5.0	5.5	6.0	6.5	7.0	7.5	73.8
27	Capital Replacement Fund (2,4)	8.8	6.8	1.4	1.9	2.8	3.6	4.4	4.6	4.6	38.9
28	Source Development Fund	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
29	Special Storage Assmt Fund	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
30	Water System Development Fee Fund (2,5)	5.5	2.0	5.0	4.0	2.0	2.1	2.1	2.2	2.2	26.9
31	Other Sources/Grants (6)	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1
32	General Fund	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
33	New Bond Issuances (2,7)	0.0	7.6	37.0	28.5	25.0	22.5	21.5	21.5	22.0	185.6
34	Total Sources of Funds	$32.9	$30.9	$47.9	$39.4	$35.3	$34.1	$34.5	$35.2	$36.3	$326.5
35	**Allocation of Sources**										
36	Bond Fund	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
37	SDWLF	52.7%	46.8%	9.4%	12.7%	15.6%	17.6%	18.8%	19.9%	20.7%	22.6%
38	Capital Replacement Fund	26.8%	22.0%	2.9%	4.9%	8.0%	10.5%	12.8%	13.0%	12.7%	11.9%
39	Source Development Fund	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
40	Special Storage Assmt Fund	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
41	Water System Development Fee Fund	16.6%	6.5%	10.5%	10.0%	5.7%	6.0%	6.1%	6.1%	6.1%	8.2%
42	Other Sources/Grants	3.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%
43	General Fund	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
44	New Bond Issuances	0.0%	24.6%	77.3%	72.4%	70.8%	66.0%	62.3%	61.0%	60.6%	56.9%
45	Total Allocation of Funds	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Table A-6

County of Maui, Department of Water Supply
Water Rate Study

Notes:

(1) FY 2012 encumbrances per '2012 CIP and Planning Prof SVC.xls' 2013-2020 per '01-10-12, Preliminary Draft, DWS 20-Year CIP.xls'
(2) FY2012 per DWS budget. FY2013-2020 Funding of projected encumbrances based on SAIC estimates of available funding.
(3) Assumes receipt of SDWLF proceeds of $7.95 million in FY 2013. FY 2014-2020 estimated by SAIC based on historical SDWLF CIP levels.
(4) See lines 46-52 for details on the Capital Reserve Fund.
(5) See lines 53-58 for details on the Water System Development Fee Fund.
(6) Includes private and possible state funding sources. Predominantly for Watershed Protection projects.
(7) Debt service on bond issuances will begin in the second half of the subsequent fiscal year.

Table A-6

County of Maui, Department of Water Supply
Water Rate Study

Capital Replacement and Water System Development Fee Funds
($M)

Line No.		Estimated 2012	Budgeted 2013	2014	2015	2016	Projected 2017	2018	2019	2020
46	**Capital Replacement Fund**									
47	Beginning of Year Balance (8)	$2.5	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
48	Transfer from Operating Fund (9)	9.3	6.8	1.4	1.9	2.9	3.6	4.4	4.7	4.6
49	Annual Capital Expenditures (10)	(6.0)	(6.8)	(1.4)	(1.9)	(2.8)	(3.6)	(4.4)	(4.6)	(4.6)
50	Total Capital Expenditures	($6.0)	($6.8)	($1.4)	($1.9)	($2.8)	($3.6)	($4.4)	($4.6)	($4.6)
51	Transfer to the Carryover (11)	$5.8	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.1	$0.0
52	End of Year Balance	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
53	**Water System Development Fee Fund**									
54	Beginning of Year Balance (8)	$8.5	$5.0	$5.0	$2.0	$0.0	$0.0	$0.0	$0.0	$0.0
55	Annual Water System Development Fees (12)	1.9	2.0	2.0	2.0	2.0	2.1	2.1	2.2	2.2
56	Annual Capital Expenditures (10)	(5.5)	(2.0)	(5.0)	(4.0)	(2.0)	(2.1)	(2.1)	(2.2)	(2.2)
57	Total Capital Expenditures	($5.5)	($2.0)	($5.0)	($4.0)	($2.0)	($2.1)	($2.1)	($2.2)	($2.2)
58	End of Year Balance	$5.0	$5.0	$2.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0

Notes:
(8) FY 2012 Beginning of Year Balance per CASH BAL BY SUB FUND.pdf (11/10/11).
(9) See Table 8, line 76 for details.
(10) See footnote 2 above.
(11) DWS transfers the end of year balances in the CRF as Carryover to the Revenue Fund, consistent with County cash management policies.
(12) Projected WSDF revenues based on average of 2009-2011, net of $422,000 used for debt service. FY2013 per DWS Budget.

Table 7

County of Maui, Department of Water Supply
Water Rate Study

Debt Service

Line No.		Estimated 2012	Budgeted 2013	2014	2015	2016	Projected 2017	2018	2019	2020
1	**Existing Bond Debt Service (1)**									
2	Principal	$3,346,568	$1,396,609	$1,443,454	$1,509,989	$1,577,622	$1,636,053	$1,715,578	$686,884	$716,786
3	Interest	941,273	611,512	564,084	498,583	430,002	369,949	294,826	210,526	180,370
4	Total Existing Bond Debt Service	$4,287,841	$2,008,121	$2,007,538	$2,008,573	$2,007,624	$2,006,002	$2,010,404	$897,410	$897,156
5										
6	**Existing Notes Payable (1)**									
7	SRF Principal	$1,338,341	$974,354	$981,692	$989,245	$996,834	$1,004,722	$1,012,534	$1,020,514	$829,411
8	SRF Interest	743,342	443,239	404,174	364,835	324,853	284,504	243,975	203,022	160,890
9	Total Current Notes Payable	$2,081,683	$1,417,593	$1,385,867	$1,354,080	$1,321,687	$1,289,226	$1,256,509	$1,223,536	$990,302
10										
11	**Total Existing Debt Service**	$6,369,524	$3,425,714	$3,393,405	$3,362,653	$3,329,311	$3,295,228	$3,266,913	$2,120,946	$1,887,457
12										
13	**New Bond Debt Service (2)**									
14	2012 Series A Issue	0	0	0	0	0	0	0	0	0
15	2013 Series A Issue		175,938	615,900	615,900	615,900	615,900	615,900	615,900	615,900
16	2014 Series A Issue			0	2,998,700	2,998,700	2,998,700	2,998,700	2,998,700	2,998,700
17	2015 Series A Issue				0	2,309,800	2,309,800	2,309,800	2,309,800	2,309,800
18	2016 Series A Issue					0	2,026,100	2,026,100	2,026,100	2,026,100
19	2017 Series A Issue						0	1,823,500	1,823,500	1,823,500
20	2018 Series A Issue							0	1,742,500	1,742,500
21	2019 Series A Issue								0	1,742,500
22	2020 Series A Issue									0
23	Total New Bond Debt Service	$0	$175,938	$615,900	$3,614,600	$5,924,400	$7,950,500	$9,774,000	$11,516,500	$13,259,000
24										
25	**New SDWLF Debt Service (3)**									
26	2012 Loan	0	759,876	759,876	759,876	759,876	759,876	759,876	759,876	759,876
27	2013 Loan		0	510,200	1,020,400	1,020,400	1,020,400	1,020,400	1,020,400	1,020,400
28	2014 Loan			0	158,900	317,800	317,800	317,800	317,800	317,800
29	2015 Loan				0	176,500	353,100	353,100	353,100	353,100
30	2016 Loan					0	194,200	388,400	388,400	388,400
31	2017 Loan						0	211,800	423,700	423,700
32	2018 Loan							0	229,500	459,000
33	2019 Loan								0	247,200
34	2020 Loan									0
35	Total SDWLF Debt Service	$0	$759,876	$1,270,076	$1,939,176	$2,274,576	$2,645,376	$3,051,376	$3,492,776	$3,969,476
36										
37	**Total New Debt Service**	$0	$935,814	$1,885,976	$5,553,776	$8,198,976	$10,595,876	$12,825,376	$15,009,276	$17,228,476
38										
39	**Total Annual Debt Service Payments**	$6,369,524	$4,361,528	$5,279,381	$8,916,429	$11,528,287	$13,891,104	$16,092,289	$17,130,222	$19,115,933

Notes:

(1) FY 2012 & FY 2013 per 'FY13 Debt Service 12_23_11.pdf'. FY 2014 - 2020 per DWS-provided audited Debt Service Schedules (10/20/11).

(2) New Bond Debt Service based on interest rate of 5%, 20-year period and 1% issuance expense (See Table 1 for details). Assumes bond issuance will occur in the latter part of fiscal year. Initial debt service payment occurs in year following bond sale.

(3) Assumes payments of SDWLF debt service begin in year after issuance, at 50% for the first year.

Table 8

County of Maui, Department of Water Supply
Water Rate Study

Operating Statement

Line No.		Historical (1) 2009	2010	2011	Estimated 2012	Budgeted 2013	Projected (1) 2014	2015	2016	2017	2018	2019	2020
1	**REVENUES**												
2	Beginning of Year Balances (2)												
3	Revenue Fund	$9,661,110	$7,726,820	$9,404,420	$0	$0	$0	$0	$0	$0	$0	$0	$0
4													
5	**Operating Revenues (3)**												
6	Water Service Charge under Existing Rates	$4,477,892	$4,798,061	$5,159,973	$5,023,272	$5,023,000	$5,023,000	$5,023,000	$5,023,000	$5,046,000	$5,070,000	$5,093,000	$5,117,000
7	Water Usage Charge under Existing Rates	36,563,908	38,688,021	40,875,569	40,973,976	40,973,000	40,973,000	40,973,000	40,973,000	41,075,000	41,178,000	41,281,000	41,384,000
8	Total Water Sales Revenues	$41,041,800	$43,486,082	$46,035,542	$46,000,000	$46,000,000	$46,000,000	$46,000,000	$46,000,000	$46,121,000	$46,248,000	$46,374,000	$46,501,000
9													
10													
11	Other Income (4)												
12	Interest Income (5)	182,825	426,886	602,950	500,000	300,000	300,000	300,000	300,000	300,000	300,000	300,000	300,000
13	Miscellaneous Receipts	11,425	18,264	86,202	20,600	22,753	23,280	23,820	24,370	24,930	25,500	26,090	26,690
14	DWS-Other Income	4,245	13,668	35,490	21,640	21,625	22,120	22,630	23,150	23,680	24,220	24,780	25,350
15	Jobbing (6)	217,992	250,674	209,489	150,000	150,000	153,450	156,980	160,590	164,280	168,060	171,930	175,880
16	Expenses of Jobbing (6)	(101,287)	(91,883)	(65,220)	0	0	0	0	0	0	0	0	0
17	Private Fire Protection (7)	229,133	230,305	295,604	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000
18	Laboratory Sales	19,945	0	0	0	0	0	0	0	0	0	0	0
19	Miscellaneous Program Receipts	(30,294)	0	0	0	0	0	0	0	0	0	0	0
20	Total Other Income	$533,984	$847,914	$1,164,515	$892,200	$694,400	$698,850	$703,430	$708,110	$712,890	$717,780	$722,800	$727,920
21													
22	Interfund Transfers												
23	Sewer Billing Charges	326,055	496,047	530,683	530,683	540,000	552,420	565,130	578,130	591,430	605,030	618,950	633,190
24	Public Fire Protection	230,112	264,870	295,604	255,000	255,000	255,000	255,000	255,000	255,000	255,000	255,000	255,000
25	Total Interfund Transfers	$556,167	$760,917	$826,287	$785,700	$795,000	$807,420	$820,130	$833,130	$846,430	$860,030	$873,950	$888,190
26													
27	Water System Development Fee Fund Transfer (8)	$422,800	$422,594	$423,196	$0	$0	$0	$0	$0	$0	$0	$0	$0
28													
29	Total Operating Revenues, Existing Rates	$42,554,751	$45,517,507	$48,449,539	$47,677,900	$47,489,400	$47,506,270	$47,523,560	$47,541,240	$47,680,320	$47,825,810	$47,970,750	$48,117,110
30													
31													
32	Additional Rate Revenues												
33	Fiscal % of Water Months												
34	Year Sales Revenue Effective												
35	2013 4.5% 12					2,070,000	2,070,000	2,070,000	2,070,000	2,075,400	2,081,200	2,086,800	2,092,500
36	2014 7.5% 12						3,605,300	3,605,300	3,614,700	3,624,700	3,634,600	3,644,500	
37	2015 10.1% 12							5,219,200	5,219,200	5,232,900	5,247,300	5,261,600	5,276,000
38	2016 8.2% 12								4,665,300	4,677,600	4,690,500	4,703,300	4,716,100
39	2017 6.6% 12									4,073,600	4,084,900	4,096,000	4,107,200
40	2018 6.2% 12										4,090,500	4,101,700	4,112,900
41	2019 3.2% 12											2,248,300	2,254,400
42	2020 4.1% 12												2,980,900
43	Total Additional Revenue Required	n/a	n/a	n/a	$0	$2,070,000	$5,675,300	$10,894,500	$15,559,800	$19,674,200	$23,819,100	$26,132,300	$29,184,500
44													
45	Total Revenues	$42,554,751	$45,517,507	$48,449,539	$47,677,900	$49,559,400	$53,181,570	$58,418,060	$63,101,040	$67,354,520	$71,644,910	$74,103,050	$77,301,610
46													
47	Carry Over (9)	$0	$0	$0	$14,759,501	$7,467,980	$14,952	$35,541	$24,973	$29,726	$13,342	$36,463	$55,591
48	Total Cash Available	$52,215,861	$53,244,327	$57,853,959	$62,437,401	$57,027,380	$53,196,522	$58,453,601	$63,126,013	$67,384,246	$71,658,252	$74,139,513	$77,357,201

Table 8

County of Maui, Department of Water Supply
Water Rate Study

Operating Statement

Line No.		Historical (1) 2009	2010	2011	Estimated 2012	Budgeted 2013	Projected (1) 2014	2015	2016	2017	2018	2019	2020
49	**REVENUE REQUIREMENT**												
50	**O&M Expenditures (10)**												
51	Departmental Costs	$5,913,352	$7,299,692	$7,027,990	$7,133,200	$7,639,700	$7,804,000	$7,972,000	$8,143,800	$8,319,600	$8,499,500	$8,683,500	$8,871,700
52	Field Operations	6,175,200	6,433,280	6,809,112	6,857,700	7,140,300	7,304,600	7,472,600	7,644,400	7,820,200	8,000,100	8,184,100	8,372,400
53	Engineering	400,002	1,741,387	1,690,508	1,723,300	1,823,900	1,868,700	1,914,800	1,962,200	2,011,100	2,061,500	2,113,500	2,167,200
54	Planning	1,710,010	2,061,106	1,722,422	2,167,400	2,218,900	2,269,000	2,320,600	2,373,700	2,428,300	2,484,500	2,542,300	2,601,800
55	Director's Office	1,370,185	1,091,890	1,188,272	1,212,600	1,203,400	1,245,500	1,289,900	1,337,000	1,386,900	1,439,900	1,496,200	1,556,200
56	Fiscal and Administration	2,106,132	2,268,326	2,230,646	2,473,300	2,555,700	2,614,500	2,674,600	2,736,100	2,799,100	2,863,500	2,929,300	2,996,700
57	Water Treatment Plants	4,721,070	5,100,627	6,680,170	6,658,100	6,258,000	6,451,900	6,600,300	6,759,900	6,923,400	7,090,800	7,262,300	7,437,900
58	Pump/Purification Manager	13,442,860	12,206,569	18,877,508	18,511,000	17,011,000	16,957,400	17,347,400	17,780,900	18,225,200	18,680,700	19,147,500	19,626,100
59	Total O&M Expenditures	$35,838,811	$38,202,877	$46,226,628	$46,736,600	$45,850,900	$46,515,600	$47,592,200	$48,738,000	$49,913,800	$51,120,500	$52,358,700	$53,630,000
60	**REVENUES LESS O&M**	$6,715,940	$7,314,630	$2,222,911	$941,300	$3,708,500	$6,665,970	$10,825,860	$14,363,040	$17,440,720	$20,524,410	$21,744,350	$23,671,610
61													
62	Debt Service Requirement (11)												
63	Existing Bond Debt Service	n/a	n/a	n/a	$4,287,841	$2,008,121	$2,007,538	$2,008,573	$2,007,624	$2,006,002	$2,010,404	$897,410	$897,156
64	Existing Notes Payable	n/a	n/a	n/a	2,081,683	1,417,593	1,385,867	1,354,080	1,321,687	1,289,226	1,256,509	1,223,536	990,302
65	Total Existing Debt Service (11)	$7,179,479	$7,776,653	$5,537,041	$6,369,524	$3,425,714	$3,393,405	$3,362,653	$3,329,311	$3,295,228	$3,266,913	$2,120,946	$1,887,457
66													
67	New Bond Debt Service	n/a	n/a	n/a	$0	$175,938	$615,900	$3,614,600	$5,924,400	$7,950,500	$9,774,000	$11,516,500	$13,259,000
68	New SDWRLF	n/a	n/a	n/a	0	759,876	1,270,076	1,939,176	2,274,576	2,645,376	3,051,376	3,492,776	3,969,476
69	Total New Debt Service	n/a	n/a	n/a	$0	$935,814	$1,885,976	$5,553,776	$8,198,976	$10,595,876	$12,825,376	$15,009,276	$17,228,476
70													
71	Total Debt Service	$7,179,479	$7,776,653	$5,537,041	$6,369,524	$4,361,528	$5,279,381	$8,916,429	$11,528,287	$13,891,104	$16,092,289	$17,130,222	$19,115,933
72													
73	**CASH LESS O&M AND DEBT SERVICE**	($463,539)	($462,023)	($3,314,130)	$9,331,277	$6,814,952	$1,401,541	$1,944,973	$2,859,726	$3,579,342	$4,445,463	$4,650,591	$4,611,267
74													
75	**TRANSFERS**												
76	To the Capital Replacement Fund (12)	$2,000,000	$0	$0	$9,331,277	$6,814,952	$1,401,541	$1,944,973	$2,859,726	$3,579,342	$4,445,463	$4,650,591	$4,611,267
77	Total Transfers	$2,000,000	$0	$0	$9,331,277	$6,814,952	$1,401,541	$1,944,973	$2,859,726	$3,579,342	$4,445,463	$4,650,591	$4,611,267
78													
79	**TOTAL REVENUE REQUIREMENTS (13)**	$33,844,230	$36,221,290	$39,945,250	$46,000,000	$48,070,000	$51,675,300	$56,894,500	$61,559,800	$65,795,200	$70,067,100	$72,506,300	$75,685,500
80	**ENDING BALANCE**	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
81	Debt Service Coverage Ratio (14)	0.94	0.94	0.40	0.15	0.85	1.26	1.21	1.25	1.26	1.28	1.27	1.24
82	Target Debt Service Coverage (15)	n/a	n/a	n/a	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20
83													
84	Average Bi-Monthly Residential Bill (16)	n/a	$99.70	$103.60	$109.20	$114.11	$122.67	$135.06	$146.13	$155.77	$165.43	$170.72	$177.72
85	% Increase	n/a	n/a	3.9%	5.4%	4.5%	7.5%	10.1%	8.2%	6.6%	6.2%	3.2%	4.1%

Table 8

County of Maui, Department of Water Supply
Water Rate Study

Operating Statement

Line No.	Historical (1) 2009	2010	2011	Estimated 2012	Budgeted 2013	2014	2015	2016	Projected (1) 2017	2018	2019	2020

Notes:

(1) Projected data based on previous year times general inflation of 2.30%, unless otherwise noted.
(2) Historical data from Cash-Balance by SubFund (11/10/11).
(3) FY 2009-2011 revenue figures from Director's Summary Report.
(4) Historical data from FY 2009-FY 2011 Director's Summary Report.
(5) FY2013 per budget. SAIC assumed interest income would remain flat in FY2014-2020.
(6) Expenses of Jobbing represent expenses such as labor and materials which are expensed during jobbing contracts. Budget and Projected values of Jobbing are net of Expenses of Jobbing.
(7) FY 2013-2020 kept constant at FY 2012 estimates.
(8) Represents payment from the Water System Development Fee Fund to offset a portion of debt service. Discontinued as of FY 2012 per DWS.
(9) The Carry-Over represents the beginning year balances in the Revenue Fund, the Capital Reserve Fund (CRF) and the difference between budgeted revenues and budgeted expenditures in a fiscal year. The DWS has estimated that future fiscal year beginning year balances in the Revenue Fund and CRF will be $0. FY2012 and FY2013 Carryover per DWS Budget.
(10) See Table 5 for details.
(11) See Table 7 for details on projected payments. Total Existing Debt Service in FY2013 adjusted to match FY13REVENUE EXPENSE BRKDWN CURRENT.xls (11/29/11).
(12) Level of FY 2012 - FY 2020 transfer based on goal of maintaining a $0 end-of-year balance in the revenue fund, and transferring between $4.0M and $5.0M per year based on replacement planning study recommendation. Transfers to CRF are used to fund cash-financed capital.
(13) Revenue requirements equals beginning of year balance plus other income, water system development fee fund transfer and carry-over less O&M expenditures, debt service, transfers to the capital reserve fund and ending balance.
(14) Debt Service Coverage Ratio equals Line 60 (Revenues less O&M) divided by Line 71 (Total Debt Service).
(15) Minimum debt service coverage of 1.2x.
(16) Based on monthly usage of 16,000 gallons and a 5/8" meter.

Appendix B
COST-OF-SERVICE ANALYSIS

File: 011238/2651111024

SAIC®

Table B-1
County of Maui, Department of Water Supply
Water Rate Study

Cost-of-Service Analysis

SECTION 1: INPUT RANGE

Line No.		Input Range	
1	Budget Year	2012	(Fiscal Year ending June 30)
2	Rate Setting Year	2013	(Fiscal Year ending June 30)
3			
4	Inflation:		
5	General Expense Escalator	2.30%	
6	Rounding Option	-1	
7	% of Extra Capacity recovered from Consumption Charges	67%	
8			
9	Total System Peak Ratio (1)	1.5	
10	Days in Year	365	

Notes:
(1) Based on Department design standard for peak day to average day.

SECTION 2: INPUT OF SYSTEM DATA

Fiscal Year Ending June 30

Line No.	Description	Projected FY 13 Total System
1	Total Annual Sales (000 gallons)	12,267,400
2		
3	Total Annual Customers	35,400
4		
5	Average Annual Customer Usage (000 gallons)	347
6		
7	Average Gallons per Day (000 gallons)	33,609
8		
9	Peak Gallons per Day (000 gallons)	50,414
10		
11	Ratio: Peak Day/Average Day (1)	1.50
12	General Rates - Single Family Service Peak Ratio (2)	1.51
13	General Rates - All Other Peak Ratio (2)	1.47
14	Agriculture Peak Ratio (2)	1.60
15	Non-Potable Peak Ratio (2)	1.69
16		
17	Excess Demand (gallons per day) (000 gallons)	16,805
18	(Peak Day - Average Day)	
19		
20	Allocation Factor for Base Cost	67%
21	(Average-Month Units/Month/Peak-Month Units/Month)	

Notes:
(1) Peak day to average day ratio per DWS guidance.
(2) Based on adjusted average of FY 2006 - 2011 peak month data provided by Haiku Design & Analysis, normalized by SAIC so that the combined weighted ratio matches the 1.50 Peak Day/Average Day specified by DWS.

Table B-1
County of Maui, Department of Water Supply
Water Rate Study

Cost-of-Service Analysis

SECTION 3: FUNCTIONALIZATION FACTORS

Line No.		Total	Functionalized Amount								Notes
			Source	Treatment	Storage	Transmission & Distribution	Customer	Meter	Fire Protection	Nonpotable	
1	Direct: Source	100%	98.4%							1.6%	1
2	Direct: Treatment	100%		100.0%							DA
3	Direct: Storage	100%			98.4%					1.6%	1
4	Direct: T&D	100%				98.4%				1.6%	1
5	Direct: Customer	100%					99.8%			0.2%	2
6	Direct: Meter	100%						99.8%		0.2%	2
7	Direct: Fire Protection	100%							100%		DA
8	Direct: Non-Potable	100%								100%	DA
9	Direct: T&D/Meters	100%				50%		50%			3
10	Direct: Source/T&D (Pumping & Well Backup)	100%	70.5%			27.9%				1.6%	4
11	Direct: Source/Treatment	100%	50%	50%							3
12	Direct - Source/Treat/Storage (Land)	100%	12.9%	38.0%	49.1%						5
13	Direct - Source/Storage	100%	50%		50%						3
14	Direct - Treatment/Storage (Pump Replacement)	100%		50%	50%						3
15	Direct - Fire Protection/T&D	100%				50%			50%		DA
16	Net Utility Plant Factor: Amount	$231,402,475	$10,190,761	$30,048,510	$38,853,448	$135,737,689	$0	$7,335,757	$6,307,330	$2,928,980	6
17	Net Utility Plant Factor: %	100%	4.4%	13.0%	16.8%	58.7%	0.0%	3.2%	2.7%	1.3%	
18	Total Net Plant Factor: Amount	$234,753,248	$10,306,242	$30,595,754	$39,293,731	$137,275,852	$521,810	$7,418,886	$6,378,802	$2,962,171	7
19	Total Net Plant Factor: %	100%	4.4%	13.0%	16.7%	58.5%	0.2%	3.2%	2.7%	1.3%	
20	CIP: Amount	$326,476	$93,414	$51,297	$41,023	$123,617	$67	$957	$12,097	$4,004	8
21	CIP: %	100%	28.6%	15.7%	12.6%	37.9%	0.0%	0.3%	3.7%	1.2%	
22	Projects funded by Existing SRF: Amount	$2,342,537	$557,197	$1,616,890	$0	$168,450	$0	$0	$0	$0	9
23	Existing SRF Debt: %	100%	23.8%	69.0%	0.0%	7.2%	0.0%	0.0%	0.0%	0.0%	
24	Projects Funded by Existing Bonds: Amount	$14,400,000	$1,613,950	$109,301	$4,002,375	$5,417,962	$1,037	$3,206,509	$22,793	$26,073	10
25	Existing Bond Debt: %	100%	11.2%	0.8%	27.8%	37.6%	0.0%	22.3%	0.2%	0.2%	
26	Overhead: Amount	$37,007,764	$13,808,884	$7,153,563	$2,015,341	$9,855,344	$2,158,727	$1,268,971	$318,672	$428,262	11
27	Overhead: %	100%	37.3%	19.3%	5.4%	26.6%	5.8%	3.4%	0.9%	1.2%	
28	Overhead w/ Customer Focus: %	100%	2%	2%	2%	2%	60%	30%	1%	1%	5

Table B-1
County of Maui, Department of Water Supply
Water Rate Study

Cost-of-Service Analysis

SECTION 3: FUNCTIONALIZATION FACTORS

Line No.		Total	Functionalized Amount								Notes
			Source	Treatment	Storage	Transmission & Distribution	Customer	Meter	Fire Protection	Nonpotable	
29	Salaries: Amount	$11,649,604	$2,287,215	$2,412,839	$1,270,733	$3,599,087	$1,089,307	$680,547	$187,751	$122,125	12
30	Salaries:%	100%	19.6%	20.7%	10.9%	30.9%	9.4%	5.8%	1.6%	1.0%	
31	O&M - Engineering Division: Amount	$1,823,897	$364,779	$182,390	$547,169	$547,169	$54,717	$54,717	$54,717	$18,239	13
32	O&M - Engineering Division: %	100%	20.0%	10.0%	30.0%	30.0%	3.0%	3.0%	3.0%	1.0%	
33	O&M - Planning Division: Amount	$2,218,867	$776,603	$44,377	$221,887	$332,831	$554,716	$221,887	$44,377	$22,189	5
34	O&M - Planning Division: %	100%	35.0%	2.0%	10.0%	15.0%	25.0%	10.0%	2.0%	1.0%	
35	O&M - Water Treatment Plant Division: Amount	$13,400	$670	$12,730	$0	$0	$0	$0	$0	$0	5
36	O&M - Water Treatment Plant Division: %	100%	5.0%	95.0%							
37	O&M: Amount	$45,850,895	$15,952,867	$8,799,893	$2,774,421	$12,916,442	$2,780,439	$1,664,694	$433,835	$528,304	14
38	O&M: %	100%	34.8%	19.2%	6.1%	28.2%	6.1%	3.6%	0.9%	1.2%	
39	Net Plant Factor w/ Customer Focus: %	100%	3.1%	9.1%	11.8%	41.1%	30.0%	2.2%	1.9%	0.9%	3
40	FY13 Carryover Savings: Amount	$7,467,980	$2,585,265	$389,064	$375,443	$3,817,229	$42,981	$87,520	$60,719	$109,758	10
41	Carryover Savings: %	100%	34.6%	5.2%	5.0%	51.1%	0.6%	1.2%	0.8%	1.5%	
42	Total Revenue Requirement (Less Interest & Jobbing): %	100%	34%	21%	7%	28%	5%	4%	0%	1%	

Notes:
(1) Based on FY 13 Non-Potable Consumption.
(2) Based on FY 13 Non-Potable Meters.
(3) SAIC Estimate.
(4) Based on the split of 2011 electric bills for potable Source-related (71.63%) and T&D-related (28.37%) functions. Source functions included 50% of Booster/Well Pumps, Well Pump and Treatment Plant. T&D functions included 50% of Booster/Well Pumps, Booster and Facilities.
(5) DWS Estimate.
(6) See Section 3 - Functionalization of Net Plant less General Plant, Line 31.
(7) See Section 3 - Functionalization of Net Plant, Total Plant, Line 50.
(8) Based on Functionalization of FY 2012 - FY 2020 CIP.
(9) Based on functionalization of FY2013 Debt Service.
(10) Functionalized based on costs of projects identified by DWS, where documentation was provided.
(11) Unadjusted O&M less Director's Office & Department Costs.
(12) Wage & Salary plus Other Premium Pay.
(13) Estimate of work allocation of Engineering Staff (DWS Estimate).
(14) O&M prior to reduction of O&M expenses (no reductions in O&M expenses have been made for this scenario).
DA: Direct Assignment

Table B-1
County of Maui, Department of Water Supply
Water Rate Study

Cost-of-Service Analysis

SECTION 3: FUNCTIONALIZATION OF NET PLANT FOR FY 2011

Line No.	Description	Net Plant	Functionalized Amount								Factor (15)
			Source	Treatment	Storage	Transmission & Distribution	Customer	Meter	Fire Protection	Nonpotable	
1	Land	$6,619,358	$852,876	$2,514,793	$3,251,688	$0	$0	$0	$0	$0	12
2											
3	Source of Supply										
4	Source of Supply Structures	$591,413	$581,950	$0	$0	$0	$0	$0	$0	$9,463	1
5	Collecting and Impounding Reservoirs	1,032,399	1,015,880	0	0	0	0	0	0	16,518	1
6	Wells & Springs	2,301,221	2,264,401	0	0	0	0	0	0	36,820	1
7	Total	$3,925,032	$3,862,231	$0	$0	$0	$0	$0	$0	$62,801	
8											
9	Pumping Plant										
10	Power & Pumping Structures	$2,165,568	$1,526,377	$0	$0	$604,542	$0	$0	$0	$34,649	10
11	Electric Pumping Equipment	3,341,592	2,355,285	0	0	932,841	0	0	0	53,465	10
12	Other Power Pumping Equipment	205,506	144,849	0	0	57,369	0	0	0	3,288	10
13	Total	$5,712,666	$4,026,511	$0	$0	$1,594,752	$0	$0	$0	$91,402	
14											
15	Treatment Plant										
16	Purification Buildings	$11,233,036	$561,652	$10,671,384	$0	$0	$0	$0	$0	$0	36
17	Purification System - Chlorinators	203,667	10,183	193,483	0	0	0	0	0	0	36
18	Purification System - Filter Plants	17,546,158	877,308	16,668,850	0	0	0	0	0	0	36
19	Total	$28,982,861	$1,449,143	$27,533,717	$0	$0	$0	$0	$0	$0	
20											
21	Transmission and Distribution Plant										
22	Distribution Reservoir	$36,180,650	$0	$0	$35,601,760	$0	$0	$0	$0	$578,890	3
23	Transmission & Distribution Mains	136,324,123	0	0	0	134,142,937	0	0	0	2,181,186	4
24	Service Laterals	1,374,305	0	0	0	0	0	1,371,557	0	2,749	6
25	Meters	5,936,136	0	0	0	0	0	5,924,263	0	11,872	6
26	Meter Boxes	40,017	0	0	0	0	0	39,937	0	80	6
27	Hydrants	6,245,356	0	0	0	0	0	0	6,245,356	0	7
28	Standpipes	61,974	0	0	0	0	0	0	61,974	0	7
29	Total	$186,162,560	$0	$0	$35,601,760	$134,142,937	$0	$7,335,757	$6,307,330	$2,774,777	
30											
31	SUBTOTAL: Net Utility Plant	$231,402,477	$10,190,761	$30,048,510	$38,853,448	$135,737,689	$0	$7,335,757	$6,307,330	$2,928,980	17
32			4.4%	13.0%	16.8%	58.7%	0.0%	3.2%	2.7%	1.3%	
33											
34	2008 Factors		4.9%	19.6%	17.5%	51.5%	0.0%	3.1%	2.3%	1.2%	

Note:
(15) Corresponding functionalization factors are located on pages 2 and 3 under the "Line No" column.

Table B-1
County of Maui, Department of Water Supply
Water Rate Study

Cost-of-Service Analysis

SECTION 3: FUNCTIONALIZATION OF NET PLANT FOR FY 2011 (CONTINUED)

Fiscal Year Ending June 30

Line No.	Description	Total	Functionalized Amount								
			Source	Treatment	Storage	Transmission & Distribution	Customer	Meter	Fire Protection	Nonpotable	Factor (15)
35	General Plant										
36	Office Building	$710,916	$21,916	$64,621	$83,556	$291,910	$213,275	$15,776	$13,564	$6,299	39
37	Field Operation Building	242,448	10,677	31,483	40,708	142,217	0	7,686	6,609	3,069	17
38	Office Furniture & Equipment	26,714	824	2,428	3,140	10,969	8,014	593	510	237	39
39	Stores Equipment	16,991	748	2,206	2,853	9,967	0	539	463	215	17
40	Shop Equipment	16,121	710	2,093	2,707	9,457	0	511	439	204	17
41	Laboratory Equipment	206,739	0	206,739	0	0	0	0	0	0	2
42	Work Equipment	1,016,075	44,747	131,941	170,603	596,018	0	32,211	27,695	12,861	17
43	Communication Equipment	230,550	7,107	20,956	27,097	94,666	69,165	5,116	4,399	2,043	39
44	Utility Plant - Unclassified	32,665	1,439	4,242	5,485	19,161	0	1,036	890	413	17
45	Office Machines	80,365	3,539	10,436	13,494	47,141	0	2,548	2,189	1,017	17
46	Transportation Equipment	771,185	23,774	70,099	90,640	316,657	231,356	17,113	14,714	6,833	39
47	Total General Plant	$3,350,769	$115,481	$547,244	$440,283	$1,538,163	$521,810	$83,129	$71,472	$33,191	
48			3.4%	16.3%	13.1%	45.9%	15.6%	2.5%	2.1%	1.0%	
49											
50	Total Net Plant	$234,753,246	$10,306,242	$30,595,754	$39,293,731	$137,275,852	$521,810	$7,418,886	$6,378,802	$2,962,171	19
51	check	$234,753,248	4.4%	13.0%	16.7%	58.5%	0.2%	3.2%	2.7%	1.3%	
52											
53	Previous Study Factors		4.5%	13.0%	16.8%	58.5%	0.1%	3.2%	2.7%	1.3%	

Source: Department of Water Supply, Schedule of Fixed Assets & Depreciation Expense for the FY Ending June 30, 2011.

SECTION 3: FUNCTIONALIZATION OF CAPITAL IMPROVEMENT PROJECTS (2012-2020)

Line No.	Description	Total	Functionalized Amount								
			Source	Treatment	Storage	Transmission & Distribution	Customer	Meter	Fire Protection	Nonpotable	Factor (15)
1	Facilities	$29,186	$1,281	$3,804	$4,885	$17,067	$65	$922	$793	$368	19
2	Fire Protection	22,548	0	0	0	11,274	0	0	11,274	0	15
3	Conservation	20,910	20,576	0	0	0	0	0	0	335	1
4	Source	72,672	71,509	0	0	0	0	0	0	1,163	1
5	Storage	36,539	0	0	35,954	0	0	0	0	585	3
6	Transmission	30,138	0	0	0	29,656	0	0	0	482	4
7	Distribution	66,033	0	0	0	64,977	0	0	0	1,057	4
8	Treatment Plant	47,350	0	47,350	0	0	0	0	0	0	2
9	Unspecified Projects	1,100	48	143	184	643	2	35	30	14	19
10	Total	$326,477	$93,414	$51,297	$41,023	$123,617	$67	$957	$12,097	$4,004	
11	check	$326,476									

Source: FY2012-2020 CIP per DWS.
Note:
(15) Corresponding functionalization factors are located on pages 2 and 3 under the "Line No" column.

Table B-1
County of Maui, Department of Water Supply
Water Rate Study

Cost-of-Service Analysis

SECTION 3: FUNCTIONALIZATION OF OPERATING EXPENSES AND OTHER EXPENSES FOR FY 2013 (CONTINUED)

Line No.	Description	FY 2013 Total	Functionalized Amount								Factor (15)
			Source	Treatment	Storage	Transmission & Distribution	Customer	Meter	Fire Protection	Nonpotable	
	Operating Expenses										
1	**Departmental Costs**										
2	Insurance	$475,000	$20,854	$61,907	$79,507	$277,764	$1,056	$15,012	$12,907	$5,994	19
3	Overhead Charges	362,303	135,188	70,033	19,730	96,483	21,134	12,423	3,120	4,193	27
4	Employee Benefits	4,596,934	902,535	952,106	501,431	1,420,200	429,841	268,544	74,087	48,191	30
5	Refund for Mainline Extensions	500,000	0	0	0	492,000	0	0	0	8,000	4
6	Other Costs	1,705,502	636,382	329,672	92,877	454,183	99,485	58,481	14,686	19,736	27
7	Total Departmental Costs	$7,639,739	$1,694,959	$1,413,718	$693,545	$2,740,630	$551,516	$354,460	$104,800	$86,114	
8											
9	**Field Operations (16)**										
10	Wages and Salaries	$4,024,944	$176,705	$524,577	$673,708	$2,353,653	$8,947	$127,200	$109,367	$50,788	19
11	Other Premium Pay	0	0	0	0	0	0	0	0	0	19
12	Materials and Supplies	2,142,575	94,064	279,245	358,631	1,252,906	4,763	67,712	58,219	27,036	19
13	Services	311,835	13,690	40,642	52,196	182,351	693	9,855	8,473	3,935	19
14	Utilities	154,000	6,761	20,071	25,777	90,054	343	4,867	4,185	1,943	19
15	Travel	23,450	1,030	3,056	3,925	13,713	52	741	637	296	19
16	Other Costs	117,900	5,176	15,366	19,734	68,944	262	3,726	3,204	1,488	19
17	Machinery and Equipment	365,630	16,053	47,653	61,200	213,808	813	11,555	9,935	4,614	19
18	Total Field Operations	$7,140,334	$313,479	$930,610	$1,195,171	$4,175,429	$15,873	$225,656	$194,020	$90,100	
19											
20	**Engineering**										
21	Wages and Salaries	$1,615,296	$323,059	$161,530	$484,589	$484,589	$48,459	$48,459	$48,459	$16,153	32
22	Other Premium Pay	0	0	0	0	0	0	0	0	0	32
23	Materials and Supplies	47,100	9,420	4,710	14,130	14,130	1,413	1,413	1,413	471	32
24	Services	81,800	16,360	8,180	24,540	24,540	2,454	2,454	2,454	818	32
25	Utilities	4,600	920	460	1,380	1,380	138	138	138	46	32
26	Travel	15,500	3,100	1,550	4,650	4,650	465	465	465	155	32
27	Other Costs	22,800	4,560	2,280	6,840	6,840	684	684	684	228	32
28	Machinery and Equipment	36,800	7,360	3,680	11,040	11,040	1,104	1,104	1,104	368	32
29	Total Engineering	$1,823,896	$364,779	$182,390	$547,169	$547,169	$54,717	$54,717	$54,717	$18,239	
30											
31	**Planning**										
32	Wages and Salaries	$550,224	$192,578	$11,004	$55,022	$82,535	$137,556	$55,022	$11,004	$5,502	34
33	Other Premium Pay	0	0	0	0	0	0	0	0	0	34
34	Materials and Supplies	28,500	9,975	570	2,850	4,275	7,125	2,850	570	285	34
35	Services	211,176	73,912	4,224	21,118	31,676	52,794	21,118	4,224	2,112	34
36	Utilities	23,000	8,050	460	2,300	3,450	5,750	2,300	460	230	34
37	Travel	15,600	5,460	312	1,560	2,340	3,900	1,560	312	156	34
38	Other Costs	286,500	100,275	5,730	28,650	42,975	71,625	28,650	5,730	2,865	34
39	Other Professional Services	1,047,865	366,753	20,957	104,787	157,180	261,966	104,787	20,957	10,479	34
40	Machinery and Equipment	56,000	19,600	1,120	5,600	8,400	14,000	5,600	1,120	560	34
41	Total Planning	$2,218,865	$776,603	$44,377	$221,887	$332,831	$554,716	$221,887	$44,377	$22,189	

Note:
(15) Corresponding functionalization factors are located on pages 2 and 3 under the "Line No" column.
(16) Functionalized as Total Net Plant per DWS.

Table B-1
County of Maui, Department of Water Supply
Water Rate Study

Cost-of-Service Analysis

SECTION 3: FUNCTIONALIZATION OF OPERATING EXPENSES AND OTHER EXPENSES FOR FY 2013 (CONTINUED)

Line No.	Description	FY 2013 Total	Functionalized Amount								
			Source	Treatment	Storage	Transmission & Distribution	Customer	Meter	Fire Protection	Nonpotable	Factor (15)
42	**Director's Office**										
43	Wages and Salaries	$525,644	$196,136	$101,606	$28,625	$139,982	$30,662	$18,024	$4,526	$6,083	27
44	Other Premium Pay	0	0	0	0	0	0	0	0	0	27
45	Materials and Supplies	60,390	22,534	11,673	3,289	16,082	3,523	2,071	520	699	27
46	Services	187,000	69,776	36,147	10,184	49,799	10,908	6,412	1,610	2,164	27
47	Utilities	111,000	41,418	21,456	6,045	29,560	6,475	3,806	956	1,285	27
48	Travel	16,550	6,175	3,199	902	4,407	965	567	143	192	27
49	Other Costs	284,000	105,970	54,897	15,466	75,631	16,566	9,738	2,446	3,287	27
50	Machinery and Equipment	18,800	7,015	3,634	1,024	5,007	1,097	645	162	218	27
51	Total Director's Office	$1,203,384	$449,024	$232,612	$65,535	$320,468	$70,196	$41,263	$10,363	$13,928	
52											
53	**Fiscal and Administration**										
54	Wages and Salaries	$1,439,472	$28,789	$28,789	$28,789	$28,789	$863,683	$431,842	$14,395	$14,395	28
55	Other Premium Pay	0	0	0	0	0	0	0	0	0	28
56	Materials and Supplies	677,700	13,554	13,554	13,554	13,554	406,620	203,310	6,777	6,777	28
57	Services	319,280	6,386	6,386	6,386	6,386	191,568	95,784	3,193	3,193	28
58	Utilities	10,000	200	200	200	200	6,000	3,000	100	100	28
59	Travel	12,000	240	240	240	240	7,200	3,600	120	120	28
60	Other Costs	10,450	209	209	209	209	6,270	3,135	105	105	28
61	Machinery and Equipment	86,800	1,736	1,736	1,736	1,736	52,080	26,040	868	868	28
62	Total Fiscal and Administration	$2,555,702	$51,114	$51,114	$51,114	$51,114	$1,533,421	$766,711	$25,558	$25,558	

Note:
(15) Corresponding functionalization factors are located on pages 2 and 3 under the "Line No" column.

Table B-1
County of Maui, Department of Water Supply
Water Rate Study

Cost-of-Service Analysis

SECTION 3: FUNCTIONALIZATION OF OPERATING EXPENSES AND OTHER EXPENSES FOR FY 2013 (CONTINUED)

Line No.	Description	FY 2013 Total	Functionalized Amount								Factor (15)
			Source	Treatment	Storage	Transmission & Distribution	Customer	Meter	Fire Protection	Nonpotable	
63	**Water Treatment Plants**										
64	Wages and Salaries	$1,668,772	$83,439	$1,585,333	$0	$0	$0	$0	$0	$0	36
65	Other Premium Pay	0	0	0	0	0	0	0	0	0	36
66	Materials and Supplies	1,267,500	63,375	1,204,125	0	0	0	0	0	0	36
67	Services	349,000	17,450	331,550	0	0	0	0	0	0	36
68	Utilities	2,911,848	145,592	2,766,256	0	0	0	0	0	$0	36
69	Travel	13,400	670	12,730	0	0	0	0	0	0	36
70	Other Costs	47,450	2,373	45,078	0	0	0	0	0	0	36
71	Buildings	0	0	0	0	0	0	0	0	0	36
72	Machinery and Equipment	0	0	0	0	0	0	0	0	0	36
73	Total Water Treatment Plants	$6,257,970	$312,899	$5,945,072	$0	$0	$0	$0	$0	$0	
74											
75	**Pump/Purification Manager (17)**										
76	Wages and Salaries	$1,825,252	$1,286,509	$0	$0	$509,539	$0	$0	$0	$29,204	10
77	Other Premium Pay	0	0	0	0	0	0	0	0	0	10
78	Materials and Supplies	859,400	605,739	0	0	239,911	0	0	0	13,750	10
79	Services	782,850	551,783	0	0	218,541	0	0	0	12,526	10
80	Utilities	12,888,234	9,084,133	0	0	3,597,890	0	0	0	206,212	10
81	Travel	41,850	29,498	0	0	11,683	0	0	0	670	10
82	Other Costs	31,900	22,484	0	0	8,905	0	0	0	510	10
83	Buildings	0	0	0	0	0	0	0	0	0	10
84	Machinery and Equipment	581,500	409,864	0	0	162,332	0	0	0	9,304	10
85	Total Pump/Purification Manager	$17,010,986	$11,990,010	$0	$0	$4,748,801	$0	$0	$0	$272,176	
86											
87	**Total O&M Expenditures**	$45,850,876	$15,952,867	$8,799,893	$2,774,421	$12,916,442	$2,780,439	$1,664,694	$433,835	$528,304	38
88			34.8%	19.2%	6.1%	28.2%	6.1%	3.6%	0.9%	1.2%	
89											
90	2008 Factors		35.6%	21.4%	6.4%	25.2%	5.9%	3.5%	0.9%	1.1%	

Note:
(15) Corresponding functionalization factors are located on pages 2 and 3 under the "Line No" column.
(17) Functionalized as Direct: Source/T&D/Non-Potable per DWS.

Table B-1
County of Maui, Department of Water Supply
Water Rate Study

Cost-of-Service Analysis

SECTION 3: FUNCTIONALIZATION OF OPERATING EXPENSES AND OTHER EXPENSES FOR FY 2013 (CONTINUED)

Line No.	Description	FY 2013 Total	Functionalized Amount								
			Source	Treatment	Storage	Transmission & Distribution	Customer	Meter	Fire Protection	Nonpotable	Factor (15)
91	**Debt Service**										
92	Existing Bond Debt Service	$2,008,121	$225,070	$15,242	$558,143	$755,550	$145	$447,157	$3,179	$3,636	25
93	Existing Notes Payable	1,417,593	337,189	978,466	0	101,938	0	0	0	0	23
94	New Bond Debt Service	175,938	50,341	27,644	22,107	66,617	36	516	6,519	2,158	21
95	New SDWRLF	759,876	379,938	379,938	0	0	0	0	0	0	11
96	Total Debt Service	$4,361,528	$992,538	$1,401,290	$580,250	$924,105	$181	$447,673	$9,698	$5,794	
97											
98	**Transfers**										
99	Net Transfer to the Capital Replacement Fund	$6,814,952	$2,359,200	$355,043	$342,613	$3,483,437	$39,222	$79,867	$55,409	$100,160	41
100											
101	**Subtotal Expenditures**	$57,027,356	$19,304,605	$10,556,226	$3,697,284	$17,323,984	$2,819,842	$2,192,234	$498,942	$634,258	
102											
103	**Less Non-Rate Revenues**										
104	Interest Income	($300,000)	($103,274)	($62,811)	($20,524)	($83,439)	($13,821)	($13,004)	$106	($3,233)	42
105	Miscellaneous Receipts	(22,753)	(8,490)	(4,398)	(1,239)	(6,059)	(1,327)	(780)	(196)	(263)	27
106	DWS - Other Income	(21,625)	(8,069)	(4,180)	(1,178)	(5,759)	(1,261)	(742)	(186)	(250)	27
107	Jobbing	($150,000)	(51,637)	(31,405)	(10,262)	(41,720)	(6,911)	(6,502)	53	(1,617)	42
108	Expenses of Jobbing	0	0	0	0	0	0	0	0	0	27
109	Private Fire Protection	(200,000)	0	0	0	0	0	0	(200,000)	0	7
110	Sewer Billing Charges	(540,000)	0	0	0	0	(538,920)	0	0	(1,080)	5
111	Public Fire Protection	(255,000)	0	0	0	0	0	0	(255,000)	0	7
112	Total Non-Rate Revenues	(1,489,378)	(171,470)	(102,794)	(33,203)	(136,977)	(562,240)	(21,028)	(455,223)	(6,443)	

Note:
(15) Corresponding functionalization factors are located on pages 2 and 3 under the "Line No" column.

Table B-1
County of Maui, Department of Water Supply
Water Rate Study

Cost-of-Service Analysis

SECTION 3: FUNCTIONALIZATION OF OPERATING EXPENSES AND OTHER EXPENSES FOR FY 2013 (CONTINUED)

Line No.	Description	FY 2013 Total	Functionalized Amount								
			Source	Treatment	Storage	Transmission & Distribution	Customer	Meter	Fire Protection	Nonpotable	Factor (15)
113	**Carry-Over**	($7,467,980)	($2,585,265)	($389,064)	($375,443)	($3,817,229)	($42,981)	($87,520)	($60,719)	($109,758)	41
114											
115	**Change in Ending Balance**	$0	$0	$0	$0	$0	$1	$0	$0	$0	38
116											
117	**Total Revenue Requirement (Less Interest & Jobbing)**	$48,519,998	$16,702,781	$10,158,584	$3,319,424	$13,494,937	$2,235,354	$2,103,192	($17,159)	$522,907	
118		100%	34%	21%	7%	28%	5%	4%	0%	1%	
119											
120	**Total Revenue Requirement**	$48,069,998	$16,547,870	$10,064,368	$3,288,638	$13,369,778	$2,214,622	$2,083,686	($17,000)	$518,057	
121		100%	34%	21%	7%	28%	5%	4%	0%	1%	
122											
123	DWS Unit Cost (per 1,000 gallons of potable water)	$3.98	$1.37	$0.83	$0.27	$1.11	$0.18	$0.17	($0.00)	$0.04	
124			34%	21%	7%	28%	5%	4%	0%	1%	
125											
126	2008 DWS Unit Cost	$2.49	$0.72	$0.45	$0.19	$0.76	$0.16	$0.13	$0.05	$0.02	
127	(per 1,000 gallons of potable water)		29%	18%	8%	31%	7%	5%	2%	1%	
128											
129	**Revenues at Current Rates**	$46,000,000									
130											
131	Over (Under) Cost of Service	$2,069,998									
132											
133	As a Percent of Current Revenue	4.5%									
134											
135	Rev. at % Rate Increase	$48,069,998									
136											
137	Change in Revenue	$2,069,998									

Note:
(15) Corresponding functionalization factors are located on pages 2 and 3 under the "Line No" column.

Table B-1
County of Maui, Department of Water Supply
Water Rate Study

Cost-of-Service Analysis

SECTION 4: CLASSIFICATION FACTORS

Line No.	Classification Method	Base	Extra Capacity	Customer	Meter	Fire Protection	Non-Potable
1	Direct: Customer			100%			
2	Direct: Meters				100%		
3	Direct: Fire Protection					100%	
4	Direct: Non-Potable						100%
5	Base and Extra Capacity: Units of Service, mgd	33,609	16,805				
6	Base and Extra Capacity	66.67%	33.33%				

Table B-1
County of Maui, Department of Water Supply
Water Rate Study

Cost-of-Service Analysis

SECTION 4: CLASSIFICATION OF RATE REVENUE REQUIREMENT FOR FY 2013

Line No.		FY 2013 Total	Base	Extra Capacity	Customer	Meter	Fire Protection	Non-Potable	Factor (18)
1	**Operating Expenses**								
2	Source	$15,952,867	$10,635,776	$5,317,091	$0	$0	$0	$0	6
3	Treatment	8,799,893	5,866,889	2,933,004	0	0	0	0	6
4	Storage	2,774,421	1,849,706	924,715	0	0	0	0	6
5	Transmission & Distribution	12,916,442	8,611,392	4,305,050	0	0	0	0	6
6	Customer	2,780,439	0	0	2,780,439	0	0	0	1
7	Meter	1,664,694	0	0	0	1,664,694	0	0	2
8	Fire Protection	433,835	0	0	0	0	433,835	0	3
9	Nonpotable	528,304	0	0	0	0	0	528,304	4
10	Total	$45,850,895	$26,963,763	$13,479,860	$2,780,439	$1,664,694	$433,835	$528,304	
11	Percent of Total	100%	59%	29%	6%	4%	1%	1%	
12									
13	**Debt Service**								
14	Source	$992,538	$661,725	$330,813	$0	$0	$0	$0	6
15	Treatment	1,401,290	934,240	467,050	0	0	0	0	6
16	Storage	580,250	386,853	193,397	0	0	0	0	6
17	Transmission & Distribution	924,105	616,101	308,004	0	0	0	0	6
18	Customer	181	0	0	181	0	0	0	1
19	Meter	447,673	0	0	0	447,673	0	0	2
20	Fire Protection	9,698	0	0	0	0	9,698	0	3
21	Nonpotable	5,794	0	0	0	0	0	5,794	4
22	Total	$4,361,529	$2,598,919	$1,299,264	$181	$447,673	$9,698	$5,794	
23	Percent of Total	100%	60%	30%	0%	10%	0%	0%	
24									
25	**Transfer to Capital Reserve Fund**								
26	Source	$2,359,200	$1,572,879	$786,321	$0	$0	$0	$0	6
27	Treatment	355,043	236,707	118,336	0	0	0	0	6
28	Storage	342,613	228,420	114,193	0	0	0	0	6
29	Transmission & Distribution	3,483,437	2,322,407	1,161,030	0	0	0	0	6
30	Customer	39,222	0	0	39,222	0	0	0	1
31	Meter	79,867	0	0	0	79,867	0	0	2
32	Fire Protection	55,409	0	0	0	0	55,409	0	3
33	Nonpotable	100,160	0	0	0	0	0	100,160	4
34	Total	$6,814,951	$4,360,413	$2,179,880	$39,222	$79,867	$55,409	$100,160	
35	Percent of Total	100%	64%	32%	1%	1%	1%	1%	

Note:
(18) Corresponding functionalization factors are located on page 11 under the Classification Factors section and "Line No" column.

Table B-1
County of Maui, Department of Water Supply
Water Rate Study

Cost-of-Service Analysis

SECTION 4: CLASSIFICATION OF RATE REVENUE REQUIREMENT FOR FY 2013 (CONTINUED)

Line No.		FY 2013 Total	Base	Extra Capacity	Customer	Meter	Fire Protection	Non-Potable	Factor (18)
36	**Non-Rate Revenues**								
37	Source	($171,470)	($114,319)	($57,151)	$0	$0	$0	$0	6
38	Treatment	(102,794)	(68,533)	(34,261)	0	0	0	0	6
39	Storage	(33,203)	(22,136)	(11,067)	0	0	0	0	6
40	Transmission & Distribution	(136,977)	(91,323)	(45,654)	0	0	0	0	6
41	Customer	(562,240)	0	0	(562,240)	0	0	0	1
42	Meter	(21,028)	0	0	0	(21,028)	0	0	2
43	Fire Protection	(455,223)	0	0	0	0	(455,223)	0	3
44	Nonpotable	(6,443)	0	0	0	0	0	(6,443)	4
45	Total	($1,489,378)	($296,311)	($148,133)	($562,240)	($21,028)	($455,223)	($6,443)	
46	Percent of Total	100%	20%	10%	38%	1%	31%	0%	
47									
48	**Carry-Over**								
49	Source	($2,585,265)	($1,723,596)	($861,669)	$0	$0	$0	$0	6
50	Treatment	(389,064)	(259,389)	(129,675)	0	0	0	0	6
51	Storage	(375,443)	(250,308)	(125,135)	0	0	0	0	6
52	Transmission & Distribution	(3,817,229)	(2,544,947)	(1,272,282)	0	0	0	0	6
53	Customer	(42,981)	0	0	(42,981)	0	0	0	1
54	Meter	(87,520)	0	0	0	(87,520)	0	0	2
55	Fire Protection	(60,719)	0	0	0	0	(60,719)	0	3
56	Nonpotable	(109,758)	0	0	0	0	0	(109,758)	4
57	Total	($7,467,979)	($4,778,240)	($2,388,761)	($42,981)	($87,520)	($60,719)	($109,758)	
58	Percent of Total	100%	64%	32%	1%	1%	1%	1%	

Note:
(18) Corresponding functionalization factors are located on page 11 under the Classification Factors section and "Line No" column.

Table B-1
County of Maui, Department of Water Supply
Water Rate Study

Cost-of-Service Analysis

SECTION 5: SUMMARY OF COST OF SERVICE FOR FY 2013

Line No.		FY 2013 Total Revenue Requirement	Base	Extra Capacity	Customer	Meter	Fire Protection	Non-Potable
1	Operating Expenses	$45,850,895	$26,963,763	$13,479,860	$2,780,439	$1,664,694	$433,835	$528,304
2	Other Revenues	($1,489,378)	($296,311)	($148,133)	($562,240)	($21,028)	($455,223)	($6,443)
3	Net Operating Expenses	$44,361,517	$26,667,452	$13,331,727	$2,218,199	$1,643,666	($21,388)	$521,861
4								
5	Transfer to Capital Reserve Fund	$6,814,951	$4,360,413	$2,179,880	$39,222	$79,867	$55,409	$100,160
6								
7	Debt Service	$4,361,529	$2,598,919	$1,299,264	$181	$447,673	$9,698	$5,794
8								
9	Carry-Over	($7,467,979)	($4,778,240)	($2,388,761)	($42,981)	($87,520)	($60,719)	($109,758)
10								
11	Total Revenue Requirement	$48,070,018	$28,848,544	$14,422,110	$2,214,621	$2,083,686	($17,000)	$518,057
12	check	$48,070,018	60%	30%	5%	4%	0%	1%
13		2008 Allocation	61%	30%	4%	3%	1%	1%
14								
15	Revenue at Current Rates	$46,000,000						
16								
17	Over (Under) Cost of Service	$2,070,018						
18								
19	As a Percent of Current Revenue	4.5%						
20								
21	Rev. at % Rate Increase	$48,070,018						
22								
23	Change in Revenue	$2,070,018						

Table B-1
County of Maui, Department of Water Supply
Water Rate Study

Cost-of-Service Analysis

SECTION 6: DEVELOPMENT OF AVERAGE UNIT COSTS FOR FY 2013

Projected Potable FY 2013 Meters (1)

Line No.	Meter Size	SF	GU	AG	Total
1	5/8	28,902	1,304	437	30,643
2	3/4		2,170	86	2,256
3	1		905	103	1,008
4	1 1/2		641	72	713
5	2		591	25	616
6	3		87	3	90
7	4		43	1	44
8	6		10	-	10
9	8		1	-	1
10	Total	28,902	5,752	727	35,381

Maximum Flow (gpm)	Equivalents Relative to 5/8" Meter (2)
20	1
30	1.5
50	2.5
100	5
160	8
300	15
500	25
1,000	50
1,600	80

FY 2013 Potable	
No. of Meters	Equivalent 5/8" Meters
30,643	30,643
2,256	3,384
1,008	2,520
713	3,565
616	4,928
90	1,350
44	1,100
10	500
1	80
35,381	48,070

General Rates - Single Family

Meter Size	Maximum Flow (gpm)	Equivalents Relative to 5/8" Meter	Projected FY 2013 No. of Meters	Equivalent 5/8" Meters
5/8	20	1	28,902	28,902
3/4	30	1.5	0	0
1	50	2.5	0	0
1 1/2	100	5	0	0
2	160	8	0	0
3	300	15	0	0
4	500	25	0	0
6	1,000	50	0	0
8	1,600	80	0	0
Total			28,902	28,902

General Rates - All Other

Equivalents Relative to 5/8" Meter	Projected FY 2013 No. of Meters	Equivalent 5/8" Meters
1	1,304	1,304
1.5	2,170	3,255
2.5	905	2,263
5	641	3,205
8	591	4,728
15	87	1,305
25	43	1,075
50	10	500
80	1	80
	5,752	17,715

Agriculture

Meter Size	Maximum Flow (gpm)	Equivalents Relative to 5/8" Meter	Projected FY 2013 No. of Meters	Equivalent 5/8" Meters
5/8	20	1	437	437
3/4	30	2	86	129
1	50	3	103	258
1 1/2	100	5	72	360
2	160	8	25	200
3	300	15	3	45
4	500	25	1	25
6	1,000	50	0	0
8	1,600	80	0	0
Total			727	1,454

Non-Potable

Equivalents Relative to 5/8" Meter	Projected FY 2013 No. of Meters	Equivalent 5/8" Meters
1	27	27
1.5	1	2
2.5	6	15
5	22	110
8	9	72
15	0	0
25	1	25
50	0	0
80	0	0
	66	251

Notes:
(1) Projected FY 2013 meters based on projected FY 2013 meters from revenue requirements analysis.
(2) AWWA M6, pages 28-29.

SECTION 6: DEVELOPMENT OF AVERAGE UNIT COSTS FOR FY 2013 (Continued)

	Public Fire Protection			Private Fire Protection			Total Fire Protection	
			Projected		Projected			
			FY 2013	(3)	FY 2013		FY 2013	
Connection Size	Demand Factor (3)	No. of Connections (4)	Equivalent FP Connections	Demand Factor	No. of Connections	Equivalent FP Connections	No. of Connections	Equivalent FP Connections
1	1.0			1.0				
1 1/2	2.9			2.9				
2	6.2			6.2	24	149	24	149
2 1/2	11.1	1,326	14,761	11.1	0	0	1,326	14,761
3	18.0			18.0	0	0	0	0
4	38.3			38.3	76	2,912	76	2,912
6	111.3	5,162	574,587	111.3	115	12,801	5,277	587,388
8	237.2			237.2	183	43,409	183	43,409
10	426.6			426.6	0	0	0	0
12	689.0			689.0	74	50,989	74	50,989
Total		6,488	589,348		472	110,260	6,960	699,608

	Base	Peak Ratio	Days in the Year	Peak Day (gpd)	Average Day (gpd)	Extra Capacity (gpd)
Total System Sales	12,267,400,000	1.50	365	50,413,973	33,609,315	16,804,658
General - Single Family	4,674,500,000	1.51	365	19,312,399	12,806,849	6,505,550
General Rates - All Other	6,332,500,000	1.47	365	25,515,701	17,349,315	8,166,386
Agriculture	1,062,400,000	1.60	365	4,666,464	2,910,685	1,755,779
Non-Potable	198,000,000	1.69	365	919,402	542,466	376,936
	12,267,400,000			50,413,966	33,609,315	16,804,651

Notes:
(3) AWWA M1, page 224.
(4) Private Fire Protection counts as of June 30, 2011; per DWS.

Table B-1
County of Maui, Department of Water Supply
Water Rate Study

Cost-of-Service Analysis

SECTION 6: DEVELOPMENT OF AVERAGE UNIT COSTS FOR FY 2013

			Potable Water					
					Customer Costs			
Line No.	Item	Total	Base	Extra Capacity	Meters	Bills	Direct Fire Protection	Direct Non-Potable
1	Total System Units of Services		12,069,400	16,427,715	48,322	212,682	699,608	198,000
2	Total		(000) gallons	(gpd)	projected	projected	projected	(000) gallons
3					equivalent meters	bills	equivalent meters	
4								
5	Net O&M Expenses	$44,361,517	$26,667,452	$13,331,727	$2,218,199	$1,643,666	($21,388)	$521,861
6	Unit Cost		$2.2095	$0.8115	$45.9045	$7.7283	($0.0306)	$2.6357
7								
8	Capital Requirements	$6,814,951	$4,360,413	$2,179,880	$39,222	$79,867	$55,409	$100,160
9	Unit Cost		$0.3613	$0.1327	$0.8117	$0.3755	$0.0792	$0.5059
10								
11	Debt Service	$4,361,529	$2,598,919	$1,299,264	$181	$447,673	$9,698	$5,794
12	Unit Cost		$0.2153	$0.0791	$0.0037	$2.1049	$0.0139	$0.0293
13								
14	Carry-Over	($7,467,979)	($4,778,240)	($2,388,761)	($42,981)	($87,520)	($60,719)	($109,758)
15			($0.3959)	($0.1454)	($0.8895)	($0.4115)	($0.0868)	($0.5543)
16								
17	Total Unit Cost of Service	$48,070,018	$28,848,544	$14,422,110	$2,214,621	$2,083,686	-$17,000	$518,057
18	Total from Line 47	$48,070,014	$2.3902	$0.8779	$45.8305	$9.7972	($0.0243)	$2.6164

Table B-1
County of Maui, Department of Water Supply
Water Rate Study

Cost-of-Service Analysis

SECTION 6: DEVELOPMENT OF AVERAGE UNIT COSTS FOR FY 2013 (CONTINUED)

Line No.	Item	Total	Potable Water		Customer Costs		Direct Fire Protection	Direct Non-Potable
			Base	Extra Capacity	Meters	Customers		
19	**Total System:**							
20	Unit Cost of Service	$3.98	$2.3902	$0.8779	$45.8305	$9.7972	($0.0243)	$2.6164
21		per potable Kgal	per Kgal	(gpd)	per year	per bill	per year	per Kgal
22	**General Rates - Single Family:**							
23	Units of service		4,674,500	6,505,550	28,902	173,412	0	0
24	Allocated Cost of Service	$19,907,943	$11,173,093	$5,711,307	$1,324,593	$1,698,950	$0	$0
25								
26	**General Rates - All Other:**							
27	Units of service		6,332,500	8,166,386	17,715	34,512	0	0
28	Allocated Cost of Service	$23,455,465	$15,136,081	$7,169,376	$811,887	$338,121	$0	$0
29								
30	**Agriculture:**							
31	Units of service		1,062,400	1,755,779	1,454	4,362	0	0
32	Allocated Cost of Service	$4,190,166	$2,539,372	$1,541,421	$66,638	$42,735	$0	$0
33								
34	**Non-Potable**							
35	Units of service		0	0	251	396	0	198,000
36	Allocated Cost of Service	$533,440	$0	$0	$11,503	$3,880	$0	$518,057
37								
38	**Public & Private Fire Protection**							
39	Units of service		0	0	0	0	699,608	0
40	Allocated Cost of Service	($17,000)	$0	$0	$0	$0	($17,000)	$0
41								
42	**Total:**							
43	Units of service		12,069,400	16,427,715	48,322	212,682	699,608	198,000
44	Allocated Cost of Service	$48,070,014	$28,848,546	$14,422,104	$2,214,621	$2,083,686	($17,000)	$518,057
45			60.0%	30.0%	4.6%	4.3%	0.0%	1.1%

Table B-1
County of Maui, Department of Water Supply
Water Rate Study

Cost-of-Service Analysis

SECTION 6: DEVELOPMENT OF AVERAGE UNIT COSTS FOR FY 2013 (CONTINUED)

Line No.	Item	Total Avg Cost per Kgal	Consumption Cost per Kgal	Customer Cost per equiv. Meter/month	2008 Total Avg Cost per Kgal
1	**Total System:**				
2	Unit Cost of Service				
3					
4	**General Rates - Single Family:**				
5	Units of service	$4.26	$3.21	$14.15	$3.48
6	Allocated Cost of Service				
7					
8	**General Rates - All Other:**				
9	Units of service	$3.70	$3.15	$16.54	$3.03
10	Allocated Cost of Service				
11					
12	**Agriculture:**				
13	Units of service	$3.94	$3.36	$35.42	$3.51
14	Allocated Cost of Service				
15					
16	**Non-Potable**				
17	Units of service		$2.69	$5.11	$2.29
18	Allocated Cost of Service				
19					
20	**Public & Private Fire Protection**				
21	Units of service			$0.00	
22	Allocated Cost of Service				
23					
24	**Total:**				
25	Units of service	$3.98	$3.19	$15.59	$3.34
26	Allocated Cost of Service				

Table B-1
County of Maui, Department of Water Supply
Water Rate Study

Cost-of-Service Analysis

SECTION 7: COS BASIS for RATE DESIGN

Line No.	Cost Classification	FY 2013 Revenue Requiremen:	Revenues Needed from Consumption Charges	Revenues Needed from Monthly Service Charge: Based on Customers	Revenues Needed from Monthly Service Charge: Based on Meters
1	Base	$28,848,544	$28,848,544	-	-
2	Extra Capacity	14,422,110	$9,662,814	-	$4,759,296
3	Meters	2,083,686	-	-	2,083,686
4	Customers	2,214,621	-	2,214,621	-
5	Fire Protection	(17,000)	-	-	(17,000)
6	Non-Potable	518,057	518,057	-	-
7	Total Rev. Requirement including	$48,070,018	$39,029,415	$2,214,621	6,825,982
8	uncollected FP and NP costs		Total Stby. Ch.	$9,040,603	
9					
10					
11					

Monthly Service Charge:

Meter Size	Average # of Meters	Meter Index Number (1)	Equivalent 5/8" Meters	Meters: Annual Revenue Required	Meters: Monthly Meter Charge (2)	Capacity: Annual Revenue Required	Capacity: Monthly Capacity Charge (3)	Customer: Annual Revenue Required	Customer: Monthly Customer Charge (4)	Total Monthly Service Charge	Existing Service Charge	Annual Rev. from Service Charges
5/8	30,670	1	30,670	$1,321,264	$3.59	$3,010,567	$8.18	$1,917,488	$5.21	$16.98	$9.25	$6,249,319
3/4	2,257	1.5	3,386	145,869	5.39	332,370	12.27	141,108	5.21	22.87	14.00	619,346
1	1,014	2.5	2,535	109,208	8.98	248,836	20.45	63,395	5.21	34.64	24.00	421,439
1 1/2	735	5	3,675	158,319	17.95	360,738	40.90	45,952	5.21	64.06	51.00	565,009
2	625	8	5,000	215,400	28.72	490,800	65.44	39,075	5.21	99.37	67.50	745,275
3	90	15	1,350	58,158	53.85	132,516	122.70	5,627	5.21	181.76	125.00	196,301
4	45	25	1,125	48,465	89.75	110,430	204.50	2,813	5.21	299.46	250.00	161,708
6	10	50	500	21,540	179.50	49,080	409.00	625	5.21	593.71	415.00	71,245
8	1	80	80	3,446	287.20	7,853	654.40	63	5.21	946.81	650.00	11,362
	35,447		48,321	$2,081,669		$4,743,189		$2,216,146				$9,041,004

Notes:
(1) Meter Capacity Ratios from AWWA Meter Manual
(2) Monthly meter charge per 5/8" meter = $3.59 (Revenue needed from Meters portion of Service Charge based on Meters/Equivalent 5/8" Meters/12)
(3) Monthly capacity charge per 5/8" meter = $8.18 (Revenue needed from Extra Capacity and Fire Protection portions of Service Charge based on Meters/Equivalent 5/8" Meters/12)
(4) Monthly customer charge per customer= $5.21 (Revenue needed from Customer portion of Service Charge based on Average # of Meters/12)

Consumption Charge per 1000 Gallons:

Est. FY 2013 Consumption Related Costs	$38,511,358	
Est. FY 2013 Potable Water Consumption (000 gals.)	12,069,400	$3.19
Est. FY 2013 NP Consumption Related Costs	$518,057	
Est. FY 2013 Non-Potable Water Consumption (000 gals.)	198,000	$2.62

Current Consumption Charges

(per monthly period)	General Rates	Agricultural	Non-Potable
0 - 5,000 Gallons	$1.75	$1.75	$1.05
5,0001 - 15,000 Gallons	3.20	3.20	1.05
> 15,000 Gallons	4.60	1.05	1.05

Table B-1
County of Maui, Department of Water Supply
Water Rate Study

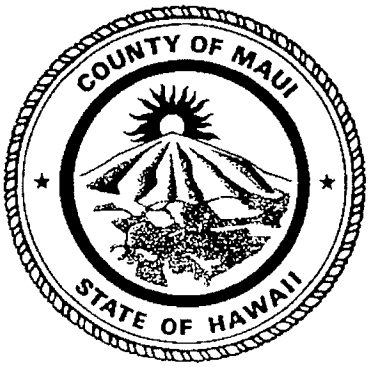
Cost-of-Service Analysis

SECTION 8: Comparison with Existing Rates

Line No.		FY 2013 Projected Revenue Under Existing Rates	FY 2013 Revenue Requirement
1	**General Rates - Single Family**		
2	Water Service Charge Revenues	$1,503,400	$4,908,300
3	Water Usage Charge Revenues	13,866,100	14,999,700
4	Subtotal	$15,369,500	$19,908,000
5	Projected Revenues as Percent of Cost-of-Service		**77.2%**
6			
7	**General Rates - All Other**		
8	Water Service Charge Revenues	$917,600	$3,515,900
9	Water Usage Charge Revenues	25,695,100	19,922,600
10	Subtotal	$26,612,700	$23,438,500
11	Projected Revenues as Percent of Cost-of-Service		**113.5%**
12			
13	**Agriculture**		
14	Water Service Charge Revenues	$77,100	$618,000
15	Water Usage Charge Revenues	1,216,900	3,572,000
16	Subtotal	$1,294,000	$4,190,000
17	Projected Revenues as Percent of Cost-of-Service		**30.9%**
18			
19	**Non-Potable**		
20	Water Service Charge Revenues	$13,400	$15,400
21	Water Usage Charge Revenues	194,900	518,100
22	Subtotal	$208,300	$533,500
23	Projected Revenues as Percent of Cost-of-Service		**39.0%**
24			
25	**Total**	**$43,484,500**	**$48,070,000**
26	**Projected Revenues as Percent of Cost-of-Service**		**90.5%**
27	**Projected Rate Increase Required**		**10.5%**

Appendix C
RATE ORDINANCE

SAIC®



COUNTY OF MAUI

REVENUES - FEES, RATES, ASSESSMENTS AND TAXES

FISCAL YEAR JULY 1, 2012 TO JUNE 30, 2013

ACCOUNT	REVENUE SOURCE	FEE, RATE, ASSESSMENT OR TAX	HRS	COUNTY CODE	ORDINANCE
		WATER FUND			
	CHARGES FOR CURRENT SERVICES:				
3475	Water Service Rates General Water Consumers	Water service charges to Single-family dwellings, single-family and accessory dwellings with 5/8" meters (Monthly): **Per 1,000 Gallons** 0 – 5,000 gallons ..... $1.75 5,001-15,000 gallons ..... $3.20 15,001-35,000 gallons ..... $4.80 ≥35,001 gallons ..... $5.25 Water service charges to All Other General Water Consumers (Monthly): **Per 1,000 Gallons** 0 – 5,000 gallons ..... $1.75 5,001-15,000 gallons ..... $3.20 ≥ 15,001 gallons ..... $4.80 In addition to the above water service charges, there is a monthly service charge by meter size: **Size of Meter** — **Per Meter/Month** 5/8 inch (02) ..... $11.25 3/4 inch (03) ..... $16.00 1 inch (04) ..... $27.00 1-1/2 inch (06) ..... $55.00 2 inch (07) ..... $75.00 3 inch (09) ..... $145.00 4 inch (12) ..... $260.00 6 inch (15) ..... $490.00 8 inch (18) $800.00		Charter 8-11.4(2)	
3475	Temporary Meter Charges	The meter service charge for all temporary meters shall be equal to the charge for 3-inch meter. In addition, there shall be an installation and conservation meter charge. The installation charge shall be based on the cost of installation and will be determined case by case. The conservation charge shall be 1.5 times the "general" water service rate.		Charter 8-11.4(2)	
3477	Water Service Rates - Agricultural Consumers Agricultural Rates	Agriculture and non-potable water service charges (Monthly): **Per 1,000 Gallons** 0 – 5,000 gallons ..... $1.75 5,001-15,000 gallons ..... $3.20 ≥ 15,001 gallons $1.10		Charter 8-11.4(2)	
	Non-Potable Rates	All usage ..... $1.10 In addition to the above water service charges, there is a monthly service charge by meter size: **Size of Meter** — **Per Meter/Month** 5/8 inch (02) ..... $11.25 3/4 inch (03) ..... $16.00 1 inch (04) ..... $27.00 1-1/2 inch (06) ..... $55.00 2 inch (07) ..... $75.00 3 inch (09) ..... $145.00 4 inch (12) ..... $260.00 6 inch (15) ..... $490.00 8 inch (18) $800.00			

FY18

County of Maui
Department of Water Supply

Revenue Test at Single Family Block Structure and Example Rates

Water Service Charge Revenues:

Line No.	Meter Size	% of %	Average Meters	FY 2018 Monthly Rate	FY 2018 Annual Revenue
1	5/8	10%	31,528	$19.25	$7,282,970
2	3/4	11%	2,491	31.00	926,650
3	1	10%	1,045	46.00	576,840
4	1 1/2	10%	751	88.00	793,060
5	2	10%	639	137.00	1,050,520
6	3	10%	101	242.00	293,300
7	4	11%	48	420.00	241,920
8	6	10%	11	770.00	101,640
9	8	10%	1	1,215.00	14,580
10	Total Stdby. Charges		36,615		$11,281,480

Water Usage Charge Revenues:

Line No.					Usage 000 gal	FY 2018 Usage Rate	Annual Revenue
1	**Single Family Customers**						
2	Water Service Charge Revenues (1)						$8,054,608
3	Water Usage Charge Revenues (1)						
4	First Block	0	5,000	32.22%	1,680,486	$2.00	$3,360,970
5	Second Block	5,001	15,000	35.33%	1,842,166	3.80	7,000,230
6	Third Block	15,001	35,000	26.78%	1,396,497	5.70	7,960,030
7	Fourth Block	over	35,000	5.67%	295,758	6.35	1,878,060
8					5,214,907		$20,199,290
9							
10	**Total Single Family**						$28,253,898
11							
12	**General Use Customers**						
13	Water Service Charge Revenues (1)						$2,873,698
14	Water Usage Charge Revenues (1)						
15	First Block	0	5,000	2.97%	162,095	$2.00	$324,190
16	Second Block	5,001	15,000	4.77%	260,698	3.80	990,650
10,071,380	Third Block	over	15,000	92.3%	5,043,932	5.70	28,750,410
10071381					5,466,725		$30,065,250
10071382							
10071383	**Total General Use**						$32,938,948

Line No.				Line No.			Usage 000 gal
10071384	**Agriculture Customers**						
10071385	Water Service Charge Revenues						$267,115
10071386	Water Usage Charge Revenues						
10071387	First Block	0	5,000	3.5%	30,792	$2.00	$61,580
10071388	Second Block	5,001	15,000	6.2%	54,458	3.80	206,940
10071389	Third Block	over	15,000	90.3%	798,014	1.10	877,820
10071390					883,264		$1,146,340
10071391							
10071392	**Total Agriculture**				883,264		$1,413,455
10071393						Temp SVC	
10071394	Temp SVC						$64,194
	Non-Potable Customers				29,060		$298,582
10071395	Water Service Charge Revenues						$53,878
10071396	Water Usage Charge Revenues				155,628	$1.00	$155,630
10071397							
10071398	**Total Non-Potable**				155,628		$209,508
10071399							
10071400				Consumption			
10071401	Total Consumption and Revenues				11,749,584		51,865,092
10071402					11,281,480	above	
10071403	Total Revenue						$63,146,572
10071404				Mthly Svc Chge			
10071405	Adjustment Factor to Reflect Department Budgeting Assu			11,313,493	actual		-0.05%
10071406	Adjusted Revenue			$11,281,480	per above		$63,115,756
10071407	Actual Revenue Received						
10071408	Revenue Required						
10071409				Budget $63,159,354			
10071410							
10071411							

FY 19

County of Maui
Department of Water Supply

Revenue Test at Single Family Block Structure and Example Rates

Water Service Charge Revenues:

Line No.	Meter Size	Average Meters	FY 2019 Monthly Rate	FY 2019 Annual Revenue
1	5/8	31,567	$19.25	$7,291,980
2	3/4	2,592	31.00	964,220
3	1	1,005	46.00	554,760
4	1 1/2	757	88.00	799,390
5	2	639	137.00	1,050,520
6	3	100	242.00	290,400
7	4	48	420.00	241,920
8	6	10	770.00	92,400
9	8	1	1,215.00	14,580
10	Total Stdby. Charges	36,719		$11,300,170

Water Usage Charge Revenues:

Line No.				Usage 000 gal	FY 2019 Usage Rate	Annual Revenue
1	**Single Family Customers**					
2	Water Service Charge Revenues (1)					$8,079,622
3	Water Usage Charge Revenues (1)					
4	First Block	0	5,000	1,664,000	$2.00	$3,328,000
5	Second Block	5,001	15,000	1,820,000	3.80	6,916,000
6	Third Block	15,001	35,000	1,404,000	5.70	8,002,800
7	Fourth Block	over	35,000	312,000	6.35	1,981,200
8				5,200,000		$20,228,000
9						
10	**Total Single Family**					$28,307,622
11						
12	**General Use Customers**					
13	Water Service Charge Revenues (1)					$2,825,043
14	Water Usage Charge Revenues (1)					
15	First Block	0	5,000	162,000	$2.00	$324,000
16	Second Block	5,001	15,000	259,200	3.80	984,960
10,071,380	Third Block	over	15,000	4,978,800	5.70	28,379,160
10071381				5,400,000		$29,688,120
10071382						
10071383	**Total General Use**					$32,513,163

Line No.				% of Revenue	Line No.	
10071384	**Agriculture Customers**					
10071385	Water Service Charge Revenues					$271,204
10071386	Water Usage Charge Revenues					
10071387	First Block	0	5,000	30,600	$2.00	$61,200
10071388	Second Block	5,001	15,000	54,900	3.80	208,620
10071389	Third Block	over	15,000	814,500	1.10	895,950
10071390				900,000		$1,165,770
10071391						
10071392	**Total Agriculture**			900,000		$1,436,974
10071393				Temp SVC		
10071394	Temp SVC					$ 67,707
	Non-Potable Customers			25,000		$200,000
10071395	Water Service Charge Revenues					$56,407
10071396	Water Usage Charge Revenues			155,000	$1.00	$155,000
10071397						
10071398	**Total Non-Potable**			155,000		$211,407
10071399						
10071400						
10071401	Total Consumption and Revenues			11,680,000		51,436,890
10071402						
10071403	Total Revenue					$62,804,767
10071404						
10071405	Adjustment Factor to Reflect Department Budgeting					0.55%
10071406	Adjusted Revenue					$63,150,193
10071407						
10071408	Revenue Required					
10071409				Budget $63,135,272		
10071410						

FY20

County of Maui
Department of Water Supply

Revenue Test at Single Family Block Structure and Example Rates

Water Service Charge Revenues:

Line No.	Meter Size	% of INCREASE	Average Meters	FY 2020 Monthly Rate	Annual Revenue	% of INCREASE
1	5/8	0%	31,887	$19.80	$7,576,350	3%
2	3/4	0%	2,739	32.00	1,051,780	3%
3	1	0%	941	47.50	536,370	3%
4	1 1/2	0%	722	91.00	788,420	3%
5	2	0%	628	141.00	1,062,580	3%
6	3	0%	90	249.00	268,920	3%
7	4	0%	51	432.00	264,380	3%
8	6	0%	10	793.00	95,160	3%
9	8	0%	1	1,251.00	15,010	3%
10	Total Stdby. Charges		37,069		$11,658,970	

Water Usage Charge Revenues:

Line No.					Usage 000 gal	FY 2020 Usage Rate	Annual Revenue	
1	**Single Family Customers**							
2	Water Service Charge Revenues (1)						$8,336,164	
				Base				
3	Water Usage Charge Revenues (1)			5,200,000				
4	First Block	0	5,000	32%	1,664,000	$2.05	$3,411,200	2%
5	Second Block	5,001	15,000	35%	1,820,000	3.90	7,098,000	3%
6	Third Block	15,001	35,000	27%	1,404,000	5.85	8,213,400	3%
7	Fourth Block	over	35,000	6%	312,000	6.55	2,043,600	3%
8					5,200,000		$20,766,200	
9								
10	**Total Single Family**						$29,102,364	
11								
12	**General Use Customers**							
13	Water Service Charge Revenues (1)						$2,914,743	
14	Water Usage Charge Revenues (1)			Base 5.4				
15	First Block	0	5,000		162,000	$2.05	$332,100	2%
16	Second Block	5,001	15,000		259,200	3.90	1,010,880	
10,071,380	Third Block	over	15,000		4,978,800	5.85	29,125,980	
10071381					5,400,000		$30,468,960	
10071382								
10071383	**Total General Use**						$33,383,703	

Line No.					Usage 000 gal	Usage Rate	Annual Revenue	% of Revenue
10071384	**Agriculture Customers**							
10071385	Water Service Charge Revenues						$279,815	
10071386	Water Usage Charge Revenues			base 900000				
10071387	First Block	0	5,000		30,600	$2.05	$62,730	
10071388	Second Block	5,001	15,000		54,900	3.90	214,110	
10071389	Third Block	over	15,000		814,500	1.10	895,950	
10071390					900,000		$1,172,790	
10071391								
10071392	**Total Agriculture**				900,000		$1,452,605	
10071393								
10071394	Temp SVC						$69,954	
	Non-Potable Customers				25,000		$200,000	
10071395	Water Service Charge Revenues						$58,295	
10071396	Water Usage Charge Revenues				155,000	$1.00	$155,000	
10071397								
10071398	**Total Non-Potable**				155,000		$213,295	
10071399								
10071400								
10071401	Total Consumption and Revenues				11,655,000		52,562,950	
10071402								
10071403	Total Revenue						$64,221,920	
10071404				Mthly Svc Chge				
10071405	Adjustment Factor to Reflect Department Budgeting Assu			$11,658,970	estimate			1.11%
10071406	Adjusted Revenue			$11,658,970	per above		$64,934,783	
10071407								
10071408	Revenue Required							
10071409				Budget $64,890,000				
10071410								
10071411								

Notes: