

City of Moscow



SANITATION, WATER
AND WASTEWATER
RATE STUDY

October 2013

FCS GROUP

7525 166th Avenue NE, Suite D-215
Redmond, WA 98052
T: 425.867.1802 | F: 425.867.1937

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TABLE OF CONTENTS

SECTION I: INTRODUCTION	1
SECTION II: RATE STUDY METHODOLOGY.....	2
A. Rate Setting Principles and Methodology.....	2
B. Revenue Requirement	3
C. Cost of Service	3
D. Rate Design	4
SECTION III: SANITATION FUND.....	5
A. Introduction.....	5
A.1 Rate Study Committee.....	5
B. Revenue Requirement	6
B.1 Operating Forecast	6
Reserves.....	6
Operating Revenue.....	6
O&M Expenses	6
Debt Service.....	7
B.2 Capital/Equipment Funding Plan	7
B.3 Summary of Revenue Requirement.....	8
C. Cost of Service	10
D. Solid Waste Processing Facility Cost of Service	11
D.1 Functional Cost Allocation	12
D.2 Allocation Factors.....	12
D.3 Solid Waste Processing Facility Cost of Service.....	13
D.4 Rate Issues.....	13
D.5 Solid Waste Processing Facility Proposed Rates.....	14
E. Collection Cost of Service	15
E.1 Functional Cost Allocation	16
E.2 Allocation Factors.....	17
E.3 Collection Cost of Service	17
E.4 Rate Issues.....	18
E.5 Proposed Collection Rates	19

F. Summary	19
SECTION IV: WATER UTILITY	21
A. Introduction	21
B. Revenue Requirement	21
B.1 Operating Forecast	21
Reserves	21
Operating Revenue	21
O&M Expenses	22
Debt Service	22
System Reinvestment	22
B.2 Capital Funding Plan	22
B.3 Summary of Revenue Requirement	23
C. Cost of Service	24
C.1 Customer Class Distinctions	25
C.2 Allocation Factors	25
C.3 Water Fund Cost of Service	26
D. Rate Design	27
D.1 Existing Water Rates	27
D.2 Proposed Water Rates	28
E. Summary	29
SECTION V: WASTEWATER UTILITY	30
A. Introduction	30
B. Revenue Requirement	30
B.1 Operating Forecast	30
Reserves	30
Operating Revenue	30
O&M Expenses	31
Debt Service	31
System Reinvestment	31
B.2 Capital Funding Plan	31
B.3 Summary of Revenue Requirement	32
C. Wastewater Cost-of-Service Analysis	33
C.1 Customer Class Distinctions	34
C.2 Customer Class Allocations	34
C.3 Wastewater Cost of Service	35
D. Rate Design	36
D.1 Existing Wastewater Rates	36

D.2	Proposed Wastewater Rates	37
D.3	Future Rate Design Considerations.....	38
E.	Summary	38
SECTION VI: RATE COMMITTEE		39
TECHNICAL APPENDIX.....		40
SANITATION FUND		41
SANITATION OPERATIONAL EFFICIENCY EVALUATION AND REVIEW OF REVENUE COLLECTION.....		42
WATER FUND.....		43
WASTEWATER FUND.....		44

SECTION I: INTRODUCTION

In 2011, the City of Moscow engaged FCS GROUP to prepare a comprehensive rate study for the Sanitation, Water and Wastewater funds. As part of the rate study, separate but related sanitation analyses were completed by CH2M HILL Engineers, Inc. These additional reviews included an operational efficiency evaluation and review of revenue collection. The intent of both studies is to establish a blueprint for achieving strong financial performance in the future and delivering efficient and effective services to the City's customers. The scope of the FCS GROUP project included the following key elements:

- ◆ Review and establish fiscal policies;
- ◆ Assess revenue needs for a multi-year period that include adequate funding for operations and maintenance, capital projects, debt service, and other program activities;
- ◆ Project long-term capital needs and incorporate these needs into a long-term funding forecast that includes rates, debt and existing reserves;
- ◆ Use industry standard methods to establish a defensible basis for assigning “cost shares” and establishing “equity” for utility customers;
- ◆ Develop and recommend rate structures that generate sufficient revenue to meet each utility's financial obligations on a standalone basis;
- ◆ Complete an efficiency review, revenue audit and franchise agreement review identifying areas for changes and/or improvement; and
- ◆ Engage the Rate Study Committee in the rate study process and incorporate their feedback and input.

The methodology, key factors, conclusions and recommendations for each of the rate study key task areas are summarized in this executive level report. The technical summary related to the Operational Efficiency Evaluation and Review of Revenue Collection can be found in the Technical Appendix of this report.

SECTION II: RATE STUDY METHODOLOGY

A. RATE SETTING PRINCIPLES AND METHODOLOGY

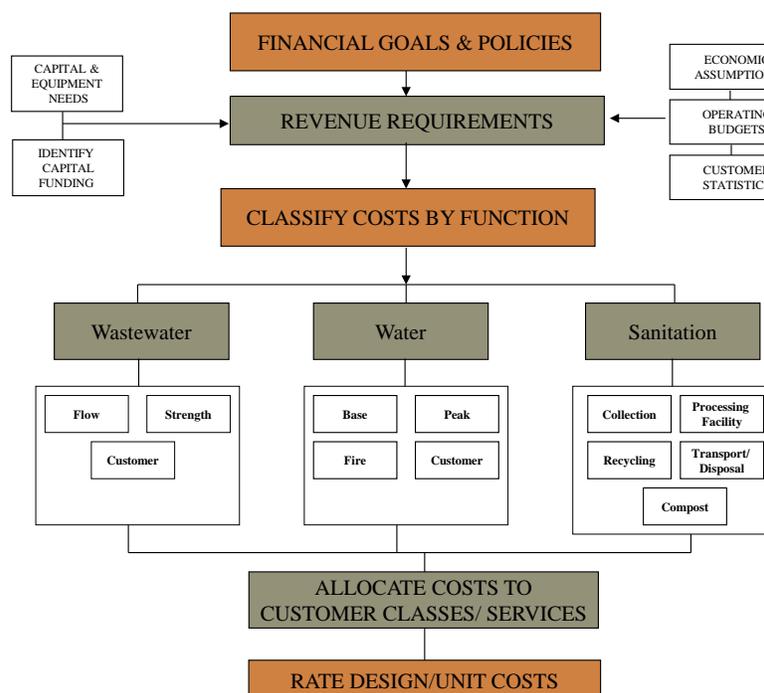
The methods used to establish user rates are based on principles that are generally accepted and widely followed throughout the industry. These principles are designed to produce rates that equitably recover costs from each class of customer by setting the appropriate level of revenue to be collected from ratepayers, and establishing a rate structure to equitably collect those revenues.

The primary tasks of the rate study are listed below:

- ◆ Revenue Requirement Analysis. This analysis identifies the total revenue requirement to fully fund each system on a standalone basis, considering operating and maintenance expenditures, capital funding needs, debt requirements and fiscal policy objectives.
- ◆ Cost of Service Analysis – This analysis equitably distributes costs to each customer class based on their proportional demand and use of the system.
- ◆ Rate Design Analysis. This analysis includes the development of rates that generate sufficient revenue to meet each system’s revenue requirement forecast and continue to address the City’s pricing objectives (e.g. conservation and revenue stability).

Exhibit 2.1 illustrates the rate study process.

Exhibit 2.1: Overview of the Rate Study Process



B. REVENUE REQUIREMENT

A revenue requirement analysis forms the basis for a long-range financial plan and multi-year rate management strategy for each system. It also enables the City to set utility rate structures which fully recover the total cost of operating each system: capital improvement and replacement, operations, maintenance, general administration, fiscal policy attainment, cash reserve management, and debt repayment. Linking rate levels to a financial plan such as this helps to enable not only sound financial performance for the City's funds, but also a clear and reasonable relationship between the costs imposed on utility customers and the costs incurred to provide the service.

A revenue requirements analysis includes the following core elements to form a complete portrayal of the utility's financial obligations:

- ◆ **Fiscal Policy Analysis.** Identifies formal and informal fiscal policies of the City to ensure that current policies are maintained, including reserve levels, capital/system replacement funding and debt service coverage.
- ◆ **Capital Funding Plan.** Defines a strategy for funding the City's capital improvement/equipment replacement program, including an analysis of available resources from rate revenues, debt financing, and any special resources that may be readily available (e.g., grants, outside contributions, etc.).
- ◆ **Operating Forecast.** Identifies future annual non-capital costs associated with the operation, maintenance, and administration of the system.
- ◆ **Sufficiency Testing.** Evaluates the sufficiency of revenues in meeting all financial obligations, including any coverage requirements associated with long-term debt.
- ◆ **Strategy Development.** Designs a forward-looking strategy for adjusting rates to fully fund all financial obligations on a periodic or annual basis over the projections period.

C. COST OF SERVICE

The purpose of a cost of service analysis is to provide a rational basis for distributing the full cost of each utility service to each class of customers in proportion to the demands they place on the system. Detailed cost allocations, along with appropriate customer class designations, help to sharpen the degree of equity that can be achieved in the resulting rate structure design. The key analytical steps of the cost of service analysis are as follows:

- ◆ **Functional Cost Allocation.** Apportions the annual revenue requirement to the major functions of the system:
 - Sanitation: collection, solid waste processing facility, transport/disposal, recycling, compost
 - Water: base (average use), peak (highest use), customer (general customer costs)
 - Wastewater: flow (collection), strength (treatment) and customer (general customer costs).
- ◆ **Customer Class Designation.** Identifies the customer classes that will be evaluated as part of the study. Existing as well as new or revised customer classes or class definitions may be considered. It is appropriate to group customers that exhibit similar usage characteristics and service requirements.
- ◆ **Cost Allocation.** Allocates the costs from the functional cost allocation to different customer classes based on their unique demands for each service as defined by system planning documents, industry standards, and recorded user history (from billing data). The results identify shifts in cost recovery by customer class from that experienced under the existing rate structure.

D. RATE DESIGN

The principal consideration of rate design is for the rate structure to generate sufficient revenues for the system which are reasonably commensurate with the cost of providing service. The pricing structure is largely dictated by the objectives of the system. Most rate designs consist of fixed and variable charges. Fixed costs typically attempt to cover costs of the system that do not vary while variable costs will fluctuate with a change in user demand.

SECTION III: SANITATION FUND

A. INTRODUCTION

The City of Moscow operates a comprehensive solid waste sanitation system. The City provides contract management and acts as a billing agent for other Latah County Cities, the County, University of Idaho (U of I) and some commercial accounts. The City contracts out for all major sanitation fund services. Services contracted through Latah Sanitation, Inc. (LSI) include: solid waste collection, curbside recycling, operation of the City owned recycling center and operation of the solid waste processing facility and inert/demolition landfill. Services contracted through Waste Connections of Idaho (WCI) include transportation and final disposal of municipal solid waste (MSW).

Although all rate studies completed are part of the greater water, wastewater and sanitation fund rate study, each rate study is conducted independently. The sanitation fund study was started first during 2011 and was completed in the first quarter of 2012.

A.1 Rate Study Committee

A key component of the sanitation utility rate study was the involvement of the Rate Study Committee (Committee). This was especially important for the sanitation fund since a formal rate study had never been completed. During the course of the study, the consultant and City project team met with the Committee at key milestones to share results, gain feedback and to incorporate suggestions. The following meetings were held and/or work effort completed by the Committee.

- ◆ **Nov. 22, 2011 first meeting with Committee**
 - Overview of sanitation fund services.
 - Presentation of cost of service rate study results – combined system evaluation and independent collection service and solid waste processing facility evaluations.
 - Summary of efficiency review, revenue audit findings and franchise agreement review.
- ◆ **December 2011 independent Committee input**
 - Matrix survey/questionnaire to Committee related to key sanitation fund issues and decision points
- ◆ **January 11, 2012**
 - Compile matrix survey/questionnaire responses and revise analysis
 - Committee presented with revised analysis, consensus and support for the results.
- ◆ **February 14, 2012 City Council Workshop (some Committee members in attendance)**
 - Presentation of rate study process, committee work, results and recommendations to Council.

B. REVENUE REQUIREMENT

A revenue requirement analysis forms the basis for a long-range financial plan and multi-year rate management strategy. The analysis is developed by identifying current and future annual operating costs and capital/equipment funding needs.

B.1 Operating Forecast

The purpose of the operating forecast is to determine whether the existing rates and charges are sufficient to recover the costs the City incurs to operate and maintain sanitation services. The fiscal year (FY) 2012 budget revenues and expenses formed the baseline for this forecast. The operating forecast was developed for the FY 2013 through 2020 time period. The following list highlights some of the key assumptions used in the development of the sanitation fund operating forecast.

Reserves

- ◆ **Operating Reserve.** A minimum of 25 percent, or 90 days, of operating and maintenance (O&M) expenses (\$1.0 to \$1.2 million, per discussion with City staff).

Operating Revenue

- ◆ **Retail Rate Revenue.** Based on actual detailed customer statistics. Rate revenue is generated from collection fees and revenue received from tipping fees at the solid waste processing facility.
 - Assumes the route management system comes online, resulting with an increase of approximately \$100,000 from Residential customers.
- ◆ **Other Revenue.** This revenue represents additional revenue from loose yardage, extra service, recycling mobile containers and special hauls (pickup truck, packer truck, roll off service).
- ◆ **Program Fee.** This fee (currently \$1.30) is charged to non-city residents of Latah County. Current program fee includes funding for the recycling center, education programs, free tonnage and household hazardous waste.
- ◆ **Customer Growth.** Historical trends for tonnage and customers along with the economic slowdown were considered. Projected growth in tonnage and customers is flat through FY 2016 and a slight increase to 0.50 percent per year thereafter
- ◆ **Interest Earnings Rate.** Rate of 1.0 percent per year (based on discussion with City staff)

O&M Expenses

- ◆ **General Cost Inflation.** 2.68 percent per year (based on analysis of five-year historical Consumer Price Index (CPI) data and discussion with City staff);
- ◆ **LSI contract.** 2.68 percent per year (based on analysis of five-year historical Consumer Price Index data). Contract costs factored at 100 percent of CPI.
- ◆ **WCI contract.** 2.44 percent per year (based on CPI Urban Wage Earners Index March to March provided by City). Contract costs factored at 80 percent of CPI-U.
- ◆ **Construction Cost Inflation.** 3.41 percent per year (based on Engineering News Record Construction Cost Index 5-year average);
- ◆ **Labor Cost Inflation.** 3.00 percent per year (based on discussions with City staff); and
- ◆ **Benefits.** 10.00 percent per year (based on discussion with City staff).

Debt Service

- ◆ There is currently no debt associated with the sanitation fund and no new debt service is anticipated during the time period under review.

B.2 Capital/Equipment Funding Plan

The sanitation fund is anticipating \$3.5 million in capital costs in FY 2013 through 2020. The most significant capital costs anticipated include:

- Recycling Center Property, Bin Relocation, Redemption Building, Storage Addition, Storage Enclosure and East Parking Area: \$2.6 million
- Future Disposal Option Studies: \$556,000
- Equipment Purchase \$259,000

Funding for the capital/equipment identified includes existing fund balance, interest and transfers of surplus from the operating fund after meeting the fund balance target. **Exhibit 3.1** provides a summary of the available funding for the annual capital/equipment costs.

Exhibit 3.1: Sanitation Fund Capital Funding Summary

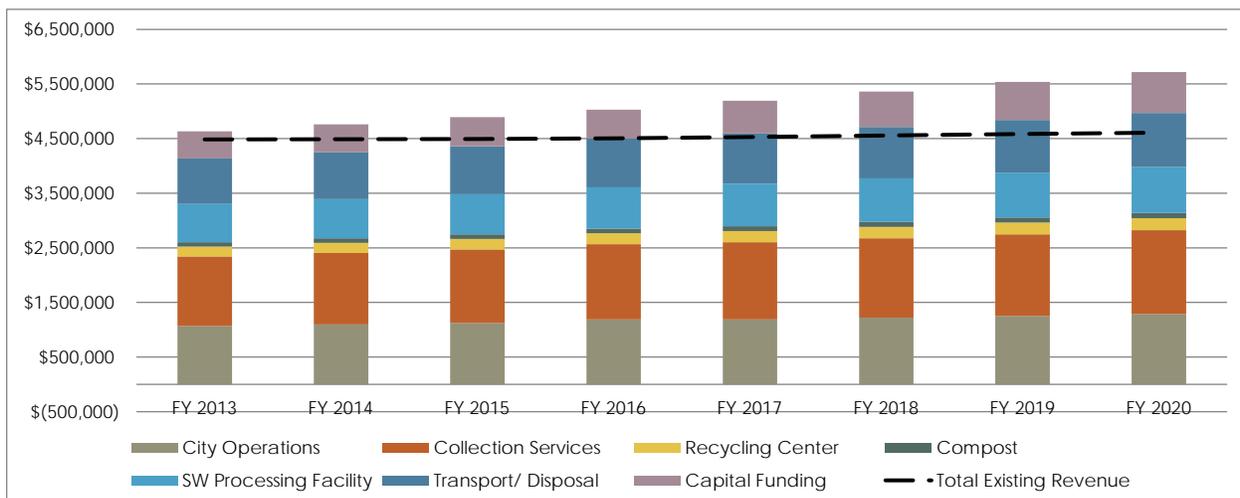
	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020
Fund Balance Available For Capital	\$ 1,679,925	\$ 880,388	\$ 1,039,198	\$ 1,548,928	\$ 937,856	\$ 835,289	\$ 1,457,021	\$ 2,133,628
Plus: Interest Earnings	16,799	8,804	10,392	15,489	9,379	8,353	14,570	21,336
Transfer of Surplus from Operating Fund	471,166	486,173	503,912	488,542	580,172	618,437	667,268	718,762
Total Available for Capital	\$ 2,167,890	\$ 1,375,365	\$ 1,553,502	\$ 2,052,958	\$ 1,527,407	\$ 1,462,079	\$ 2,138,859	\$ 2,873,726
Less: Capital/Equipment Costs	(1,287,501)	(336,167)	(4,574)	(1,115,102)	(692,118)	(5,058)	(5,231)	(5,409)
Ending Balance	\$ 880,388	\$ 1,039,198	\$ 1,548,928	\$ 937,856	\$ 835,289	\$ 1,457,021	\$ 2,133,628	\$ 2,868,318

Exhibit 3.1 shows there is sufficient fund balance available to meet the annual capital/equipment funding needs. In addition, there is an anticipated ending fund balance of \$2.8 million in FY 2020 available for the anticipated future disposal funding needs that will be identified upon completion of the disposal option studies.

B.3 Summary of Revenue Requirement

The operating forecast for the sanitation fund includes the costs associated with personal services, contractual services including LSI contract services, commodities, transfers, recycling center costs, compost facility costs, transfer station costs including waste connections contract services and capital/equipment costs. All expenses combined form the multi-year revenue requirement. The revenue requirement is compared to the overall revenue available to the sanitation fund to evaluate the sufficiency of rates on an annual basis. **Exhibit 3.2** provides a comparison of the sanitation fund revenue requirement to the existing revenue. Details can be found in the Technical Appendix.

Exhibit 3.2: Comparison of Sanitation Fund Existing Revenue to Revenue Requirement



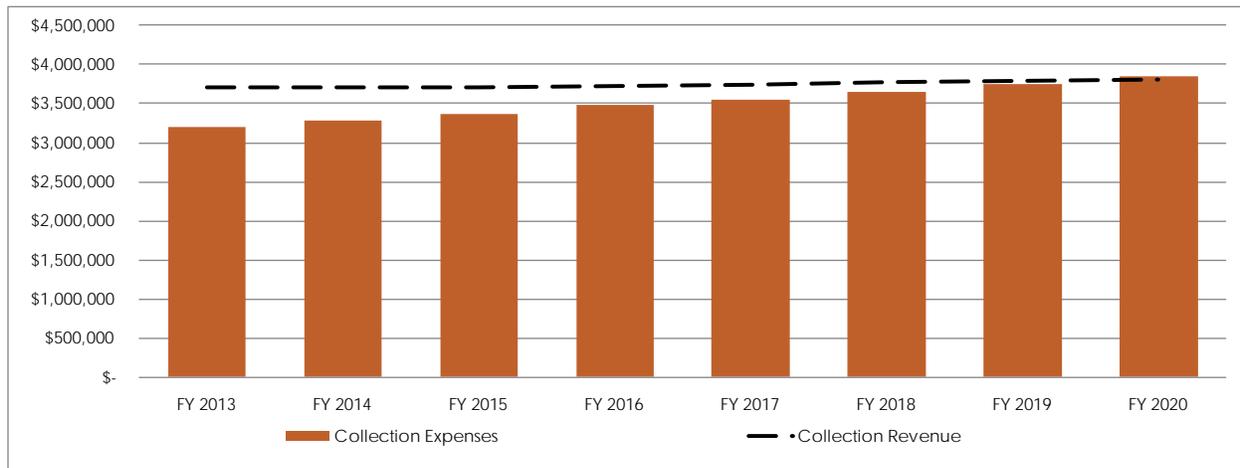
Summary of Revenue Requirement:

- ◆ Current rate revenue levels meet operating needs through 2016; however fall short of the total revenue requirement when capital funding needs are added. Rate pressure is also experienced from inflation levels outpacing annual revenue growth;
- ◆ To meet the projected long-term funding needs of the sanitation fund, an overall 3.0 percent annual rate increase is necessary.

The revenue requirement was also evaluated independently for collection service and the solid waste processing facility.

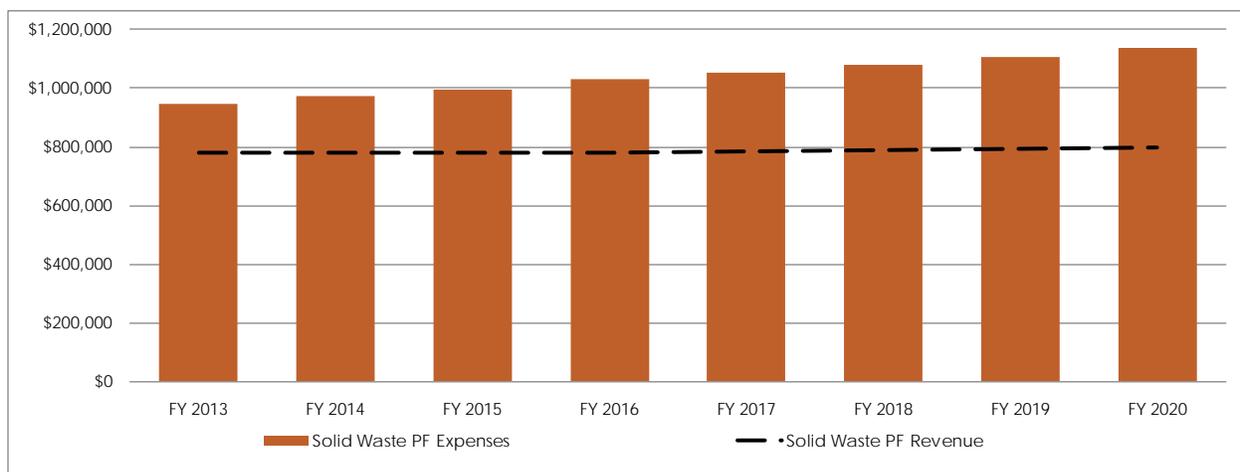
Exhibit 3.3 and **Exhibit 3.4** provide a comparison of the collection service and solid waste processing facility revenue requirement to the current revenue. Details can be found in the Technical Appendix.

Exhibit 3.3: Comparison of Collection Service Existing Revenue to Revenue Requirement



- ◆ The current revenue from collection rates and fees is generating more than the overall revenue needs for the collection service.
- ◆ Over time, future capital needs will drive the need for rate increases.

Exhibit 3.4: Comparison of Solid Waste Processing Facility Existing Revenue to Revenue Requirement



- ◆ The solid waste processing facility existing revenue does not meet the annual expenses to operate the facility.

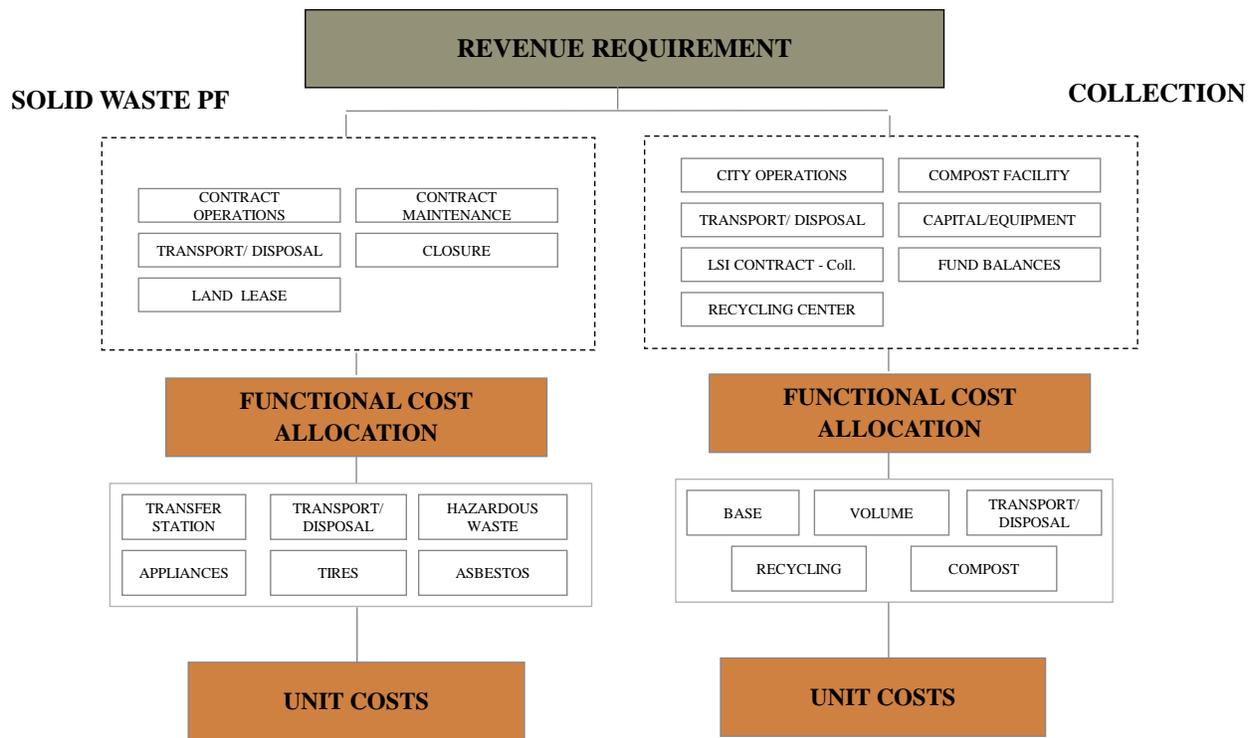
On a combined basis, the current revenue received from collection and sanitation show a rate increase of 3.0 percent is required annually through 2020. Upon further analysis, the rate increase is driven mainly by the fees of the solid waste processing facility not covering the required revenue needs identified.

The sanitation fund charges separate rates and fees for collection services and the solid waste processing facility. Each of the services will be evaluated independently to determine the rate adjustments required.

C. COST OF SERVICE

The combined revenue requirement of the financial plan must be separated to evaluate the cost of service independently for the collection system and solid waste processing facility. **Exhibit 3.5** illustrates the cost of service process that was completed to evaluate the cost of service and ultimate rates for each system.

Exhibit 3.5: Overview of Sanitation Fund Cost of Service Process



D. SOLID WASTE PROCESSING FACILITY COST OF SERVICE

The solid waste processing facility is owned and operated by LSI for the City. The facilities include: entrance scale and scale building, household hazardous waste collection building, transfer station, compost facility and distribution, inert demolition landfill, and collection and processing facilities for yard waste, tires, white goods, tin and metals.

The tickets and tons processed are key factors when determining the unit costs for the services provided. Summaries of the tickets and tons processed at the solid waste processing facility are shown in **Exhibit 3.6** and **Exhibit 3.7**

Exhibit 3.6: Solid waste Processing Facility Tickets

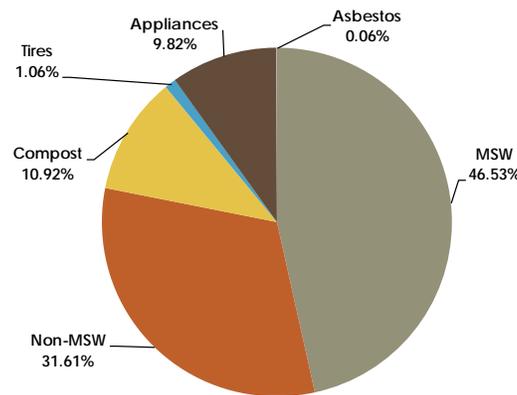
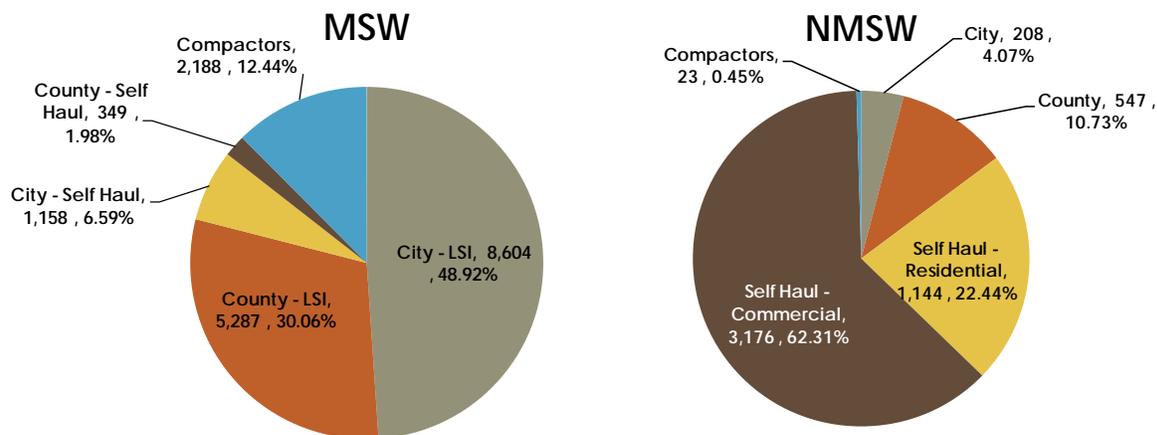


Exhibit 3.7: Solid waste Processing Facility Tons – Municipal Solid Waste (MSW) and Non-Municipal Solid Waste (NMSW)



Approximately 30,000 tons were processed based on 2008 – 2010 reports that were provided. Sixty one percent was for Municipal Solid Waste (MSW) and 18.0 percent was for Non MSW. Recycling/Compost make up the remainder of the tonnage. Free tonnage accounts for 4.6 percent of the MSW and 17.6 percent of the NMWS. Free tonnage of up to 500 lbs per day of yard waste, scrap metal, white goods and demolition debris; up to 100 lbs per day of municipal solid waste; appliance disposal (without CFC) and 100 lbs of tires is currently allowed at the processing facility free of charge.

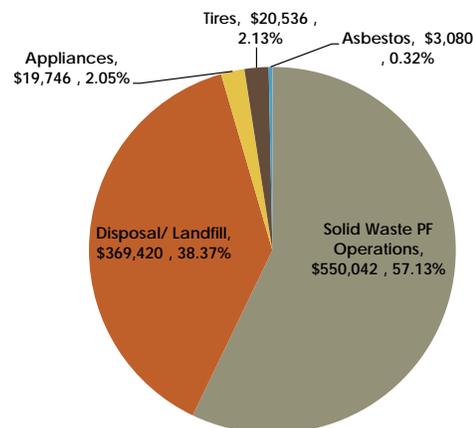
D.1 Functional Cost Allocation

The cost-of-service allocation process for the solid waste processing facility operation involves allocating costs by system service functions, development of service specific allocation factors and allocating cost to customer classes. The functions of service analyzed are unique to the processing facility. The functions of service to which the solid waste processing facility costs have been allocated are listed below:

- ◆ **Solid Waste Processing Facility Operations.** These costs are associated with the fees paid to LSI for operating the facility (O&M, repair and maintenance, utility expense and land lease) and city operating costs related to supporting facility operations.
- ◆ **Disposal/Landfill.** These costs are associated with fees paid to WCI for transport and disposal of municipal solid waste to the landfill in Oregon.
- ◆ **Direct Assignment.** These costs can be directly associated with receiving and processing appliances, tires and asbestos.

Exhibit 3.8 provides a summary of the functional cost allocation results.

Exhibit 3.8: Solid waste Processing Facility Functional Cost Allocation Summary



D.2 Allocation Factors

Allocation factors are developed to derive the cost of service for each processing facility function of service. The allocation factors are intended to equitably allocate total costs to those benefitting from the service. For this study, the processing facility costs were allocated based on the following:

- ◆ Processing Facility and City Operations – allocated based on number of tons.
- ◆ Disposal/landfill – allocated by municipal solid waste tons.
- ◆ Direct Assignment – Allocated directly to appliances, tires and asbestos.

D.3 Solid Waste Processing Facility Cost of Service

The total allocated cost distributed by the allocation factors results in cost-based unit costs. **Exhibit 3.9** summarizes the cost of service rates per ton.

Exhibit 3.9: Summary of Solid Waste Processing Facility Cost of Service, Per Ton

Fee	S.W. PF Operations & Disposal	Direct Assignment	COSA
Municipal Solid Waste	\$85.83	\$0.00	\$85.83
Non Municipal Solid Waste	42.73	-	42.73
Appliances - CFC Removal	-	25.56	25.56
Appliances - Large	-	6.92	6.92
Tires	42.73	247.33	290.05
Asbestos	42.73	137.39	180.12

D.4 Rate Issues

The results of the cost of service analysis indicate a need for an increase in all fees charged at the processing facility. In addition, there were a number of other rate issues the City wanted to address during the cost of service rate study. A survey was provided to the Committee members for their feedback on key issues.

- ◆ Eliminate free tonnage at processing facility?
 - Currently there is free disposal at the processing facility. This free service includes; up to 500 lbs per day of yard waste, scrap metal, white goods and demolition debris; up to 100 lbs per day of municipal solid waste; appliance disposal (without CFC) and 100 lbs of tires. An analysis of the existing program estimated a cost for free service at \$80,000 per year.
 - A majority of the Committee favored elimination of the free tonnage.
- ◆ Institute a \$10.00 minimum fee at solid waste scale house?
 - All waste streams delivered to the processing facility have an associated cost to process and/or dispose. Instituting a minimum fee assumes a 25 percent reduction in trips. This would help ease traffic congestion and queue times at the facility.
 - The minimum fee would apply to residential and commercial self-haul and include 200 lbs of MSW, 460 lbs of NMSW and 280 lbs of Mixed Waste.
 - A majority of the Committee respondents voted in favor of instituting a minimum fee of \$10.00 at the SWPF scale house
- ◆ How should the cost of service be approached for tires?
 - There was concern that a rate increase would increase illegal dumping of tires.
 - The fee options discussed were a) tie to the cost of service (includes direct costs and their share of contract costs related to the solid waste processing facility), b) charge only the direct costs of disposal or c) increase fee by the overall 3.0 percent sanitary fund increase.
 - The majority of the Committee initially preferred to only apply an average of 3.0 percent increase to this fee. Additional discussion regarding the subsidy and the specific costs associated with tire processing resulted in a revised recommendation to charge tires the direct pass through costs only.

- ◆ How should the cost of service be approached for Asbestos?
 - The fee options discussed were a) tie to the cost of service (includes direct costs and their share of contract costs related to the solid waste processing facility), b) charge only the direct costs of processing and disposal for this waste or c) increase fee by the overall 3.0 percent sanitary fund increase.
 - The majority of the committee understood the cost associated with this special waste and preferred to charge the cost of service based fee.

Exhibit 3.10 summarizes the revised cost of service based on Committee input and feedback related to the cost of service questions and other rate issues.

Exhibit 3.10: Summary of Revised Solid Waste Processing Facility Rates, Per Ton

Fee	Existing Fee	Revised COSA
Minimum Fee	\$0.00	\$10.00
Municipal Solid Waste > Min	67.95	73.80
Non Municipal Solid Waste > Min	29.80	30.10
Appliances - CFC Removal	31.00	25.55
Appliances - Large	2.60	6.90
Tires	138.50	188.10
Asbestos	128.45	167.50

D.5 Solid Waste Processing Facility Proposed Rates

The final rates recommended for the solid waste processing facility were a result of the cost of service analysis and extensive discussion and analysis with staff and the Committee on the other rate related issues. **Exhibit 3.11** summarizes the recommended rates for the solid waste processing facility.

Exhibit 3.11: Summary of Solid Waste Processing Facility Proposed Rates, Per Ton

Fee	Existing Fee	Proposed FY2013	FY2014	FY2015	FY2016	FY2017	FY2018	FY2019	FY2020
Minimum Fee	\$0.00	\$10.00	\$10.00	\$10.00	\$10.00	\$10.00	\$10.00	\$10.00	\$10.00
Municipal Solid Waste > Min	67.95	73.80	76.00	78.30	80.65	83.05	85.55	88.10	90.75
Non Municipal Solid Waste > Min	29.80	30.10	31.00	31.95	32.90	33.90	34.90	35.95	37.05
Appliances - CFC Removal	31.00	25.55	26.30	27.10	27.90	28.75	29.60	30.50	31.40
Appliances - Large	2.60	6.90	7.10	7.30	7.50	7.75	8.00	8.25	8.50
Tires	138.50	157.95	162.70	167.60	172.65	177.85	183.20	188.70	194.35
Asbestos	128.45	167.50	172.55	177.75	183.10	188.60	194.25	200.10	206.10

Notes: Rates were rounded to the nearest nickel every year.

- ◆ A minimum charge of \$10.00 is proposed which will reduce the unit cost rate for other waste;
 - The \$10.00 charge will remain in place until the next cost of service update.
- ◆ Tires were increased to collect only direct costs.

E. COLLECTION COST OF SERVICE

The curbside collection and recycling service includes curbside collection for residential, multi-family and commercial customer. Residential pickup is one time per week. The service includes same day recycling and cannot exceed a 36 gallon can. Customers are allowed extra set-outs if a tag is purchased. The multi-family and commercial service includes both cans and mechanical containers. The customer can select the frequency of service per week. Roll off service is available upon request. The City offers collection service to the University of Idaho which owns compactors and a mechanical container.

The number of accounts, containers and volume (based on frequency of pickups) are key factors when determining the unit costs for the collection services provided. A summary of the collection service cans and volume are summarized in **Exhibit 3.12** and **Exhibit 3.13**

Exhibit 3.12: Collection System Units

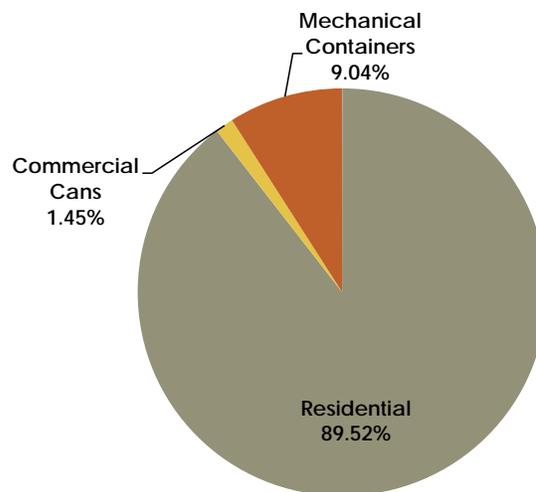
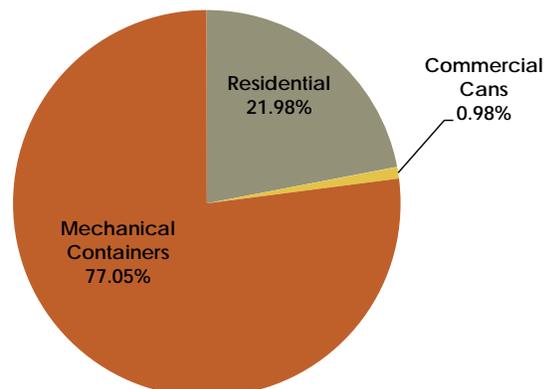


Exhibit 3.13: Collection System Volume



Although residential represents 89.50 percent of the billed units, they only represent 21.98 percent of the volume. The mechanical containers represent the most volume with 77.00 percent of the total, yet only represent 9.00 percent of the billed units.

The recycling center accepts recyclables, electronic waste and yard waste. The center serves as the main processing facility for recycled material collected at curbside and the center. The center is

operated by Latah Sanitation, Inc. who is responsible for day-to-day operations, curbside collection of recyclable material and delivery to the center, load and transport of acceptable material and compostable waste, public information and the education program. LSI has the right to the revenue from recyclable commodities.

E.1 Functional Cost Allocation

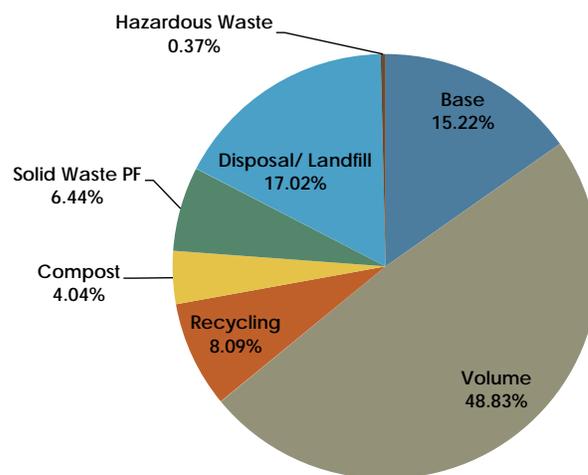
The cost-of-service allocation process for the collection operation involves similar steps to the processing facility: allocate costs by utility service function, develop customer specific allocation factors and allocate cost to customer classes. However, the functions of service are unique to the collection operation.

The functions of service to which the collection operation service costs have been allocated are listed below:

- ◆ **Base.** These costs are associated City operations (administration, billing, yard waste, drop off, free residential waste drop off and the processing facility and other services).
- ◆ **Volume.** These costs are associated with City operations and LSI collection.
 - Collection’s Share of Solid Waste Processing Facility. These costs relate to operating the facility, other related operations and landfill closure costs.
 - Collection’s Share of Disposal/Landfill. These costs relate to fees paid to Waste Connection for transport and disposal of municipal solid waste to the landfill in Oregon.
- ◆ **Recycling.** These are costs related to fees paid to LSI for operation of the recycling program and center.
- ◆ **Compost.** These costs relate to fees paid to LSI for composting and yard waste services.
- ◆ **Direct Assignment.** These costs relate to residential customer household hazardous waste.

Exhibit 3.14 provides a summary of the collection service functional cost allocation results.

Exhibit 3.14: Collection Operation Functional Cost Allocation Summary



E.2 Allocation Factors

Allocation factors are developed to derive the cost of service for each collection service. The allocation factors are intended to equitably allocate total collection costs to those benefitting from the service. For this study, the collection costs were allocated based on the following:

- ◆ Base – Allocated by number of billable units.
- ◆ Volume – Allocated by container size, frequency of pickup and number of containers.
- ◆ Recycling – Allocated based on a 36 gallon residential equivalent unit
- ◆ Compost – Allocated to residential only.
- ◆ Solid Waste Processing Facility – Allocated by container size, pickups and number of containers.
- ◆ Disposal/Landfill – Allocated by container size, pickups and number of containers.
- ◆ Direct Assignment – Allocated to residential only.

E.3 Collection Cost of Service

The total allocated cost distributed by the allocation factors results in the cost of service for each class/container size. **Exhibit 3.15** summarizes the monthly cost of service rates per account.

Exhibit 3.15: Summary of Collection System Monthly Cost of Service Rates

Class / Container Size	BASE	VOLUME	RECYCLING	COMPOST	COSA TOTAL
Residential Base	\$ 6.67		\$ 1.23	\$ 1.92	\$ 9.81
Residential Volume		6.40			6.40
Commercial Cans					
1 can	6.49	9.66	1.23		17.37
2 cans	6.49	19.31	2.45		28.25
Mechanical Containers					
1 yd	6.49	54.17	6.88		67.54
2 yd	6.49	108.35	13.75		128.59
3 yd	6.49	162.52	20.63		189.64
4 yd	6.49	216.70	27.50		250.69
6 yd	6.49	325.04	41.26		372.79
8 yd	6.49	433.39	55.01		494.89

Notes:

Base includes Direct Assignment to Residential

Volume includes Solid Waste PF and Disposal/ Landfill

Sample rates above do not include the full detailed rate schedule

E.4 Rate Issues

Similar to the processing facility, the collection service rates appear to warrant adjustments between container sizes. Along with discussing the cost of service results with the Committee, other rate issues were addressed. A survey was provided to Committee members for their feedback on key issues.

- ◆ Raise program fee from \$1.30 to \$1.87 for county residents?
 - The program fee is charged to non-City residents of Latah County per billed rural Latah County Collection Unit. The existing fee is \$1.30 per billed collection unit and covers recycling, composting, household hazardous waste, education programs and free tonnage. The current fee generates \$90,000 per year
 - The free tonnage includes yard waste, scrap metal, white goods demolition debris up to 500lbs per day, MSW up to 100lbs per day, Appliance disposal (without CFC) and 100lbs of tires.
 - A cost analysis was completed for the program fee indicating the fee should be increased to \$1.87
 - The committee recommended maintaining the existing rate at \$1.30 but eliminating the free tonnage included in the fee.
- ◆ Institute a program fee for UofI on campus students?
 - The issue is whether to charge students for use of sanitation programs since they are available free to UofI students who live on-campus
 - The Committee felt that the new revenue that may be realized from this program fee may not outweigh the administrative burden. This fee was not recommended.
- ◆ Eliminate UofI 5% administrative fee?
 - The majority of the Committee voted in favor of eliminating the UofI 5% administrative fee
- ◆ Hold collection rates at existing level or charge full cost of service rates?
 - The majority of the Committee voted to hold collection rates at existing level
 - Holding rates can defer a collection rate increase until FY 2015

E.5 Proposed Collection Rates

The final rates recommended for the collection system were a result of the cost of service analysis and extensive discussion and analysis with staff and the Committee on the other rate related issues previously identified. In addition, the City implemented a new Roll Cart Program that converts the existing residential and commercial can program to different size roll carts. The change to the roll cart system was effective August 1, 2013. **Exhibit 3.16** summarizes the recommended rates for the collection system.

Exhibit 3.16: Summary of Collection System Proposed Monthly Rates

Class/Container Size	Existing	Proposed FY2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY2020
Residential									
Base Fee	\$ 11.85	\$ 10.15							
Service Level - One Can	6.65	6.60							
Residential Roll Cart Program									
35 Gallon		\$ 17.65	\$ 17.65	\$ 18.20	\$ 18.75	\$ 19.30	\$ 19.90	\$ 20.50	\$ 21.10
65 Gallon		23.15	23.15	23.85	24.55	25.30	26.05	26.85	27.65
90 Gallon		28.65	28.65	29.50	30.40	31.30	32.25	33.20	34.20
Commercial Can									
1x1 time	\$ 20.65	\$ 17.95							
2x1 time	30.30	29.25							
Commercial Roll Cart Program									
35 Gallon		\$ 18.85	\$ 18.85	\$ 19.40	\$ 20.00	\$ 20.60	\$ 21.20	\$ 21.85	\$ 22.50
65 Gallon		28.45	28.45	29.30	30.20	31.10	32.05	33.00	34.00
90 Gallon		38.00	38.00	39.15	40.30	41.50	42.75	44.05	45.35
Mechanical Containers									
1 yd	\$ 58.95	\$ 69.85	\$ 69.85	\$ 71.95	\$ 74.10	\$ 76.30	\$ 78.60	\$ 80.95	\$ 83.40
2 yd	117.85	133.05	133.05	137.05	141.15	145.40	149.75	154.25	158.90
3 yd	176.75	196.20	196.20	202.10	208.15	214.40	220.85	227.50	234.35
4 yd	235.70	259.35	259.35	267.15	275.15	283.40	291.90	300.65	309.65
6 yd	353.55	385.65	385.65	397.20	409.10	421.35	434.00	447.00	460.40
8 yd	471.40	512.00	512.00	527.35	543.15	559.45	576.25	593.55	611.35

- ◆ The residential base and volume rates were converted to the new roll cart system with 35, 65 and 95 gallon carts.
- ◆ The commercial 1can and 2 can rate was also converted to the new roll cart system with 35, 65 and 95 gallon carts.
- ◆ The collection system revenue level is maintained at existing levels through 2015.
- ◆ Rates between container sizes were adjusted based on the cost of service results; however the changes are revenue neutral.
- ◆ The full rate schedules can be found in the Technical Appendix.

F. SUMMARY

The sanitation rate study includes a review of both the solid waste processing facility and the collection service. On a combined basis, the sanitation fund requires a 3.0 percent per year increase in FY 2013 through FY 2020. Upon further review of the independent services, the collection service appears to be over-collecting and the processing facility appears to be under-collecting. The unit costs identified in the cost of service will begin to correct the revenue disparity between the two services. The collection revenue levels will be maintained at current levels until 2015 at which point it will increase by the overall average annual adjustments. The new roll cart program for residential

and commercial customers became effective August 1, 2013. The solid waste processing facility implemented the proposed cost of service based adjustment in FY 2013 after which the increase will be tied to the overall annual increase of 3.0 percent per year.

We recommend that the City annually revisit the rate study to review if revenue and expense projections are consistent when compared to actual experience. If significant changes have or are anticipated to occur the City should update the rate study and rate plan to incorporate the changes. Any significant or unexpected changes will require adjustment to the rate strategy proposed. A more detailed study should be completed as the future disposal option studies are completed and the City has a better understand of the future needs of the fund.

The detailed technical exhibits developed as part of the sanitation fund rate study can be found at the end of this report in the Technical Appendices.

SECTION IV: WATER UTILITY

A. INTRODUCTION

The City of Moscow owns and operates its water system. The system provides water to customers within the City limits with the exception of the University of Idaho which maintains a separate water system. Water service is provided to a population of approximately 23,000. The City has five active groundwater wells that depend upon the Palouse Groundwater Aquifer for supply. The water is treated with chlorine gas prior to distribution. Water is delivered by four storage reservoirs, six booster stations and 93 miles of water mains. The City of Moscow's Department of Public Works ensures that the water provided meets state and federal standards.

B. REVENUE REQUIREMENT

A revenue requirement analysis forms the basis for a long-range financial plan and multi-year rate management strategy. The analysis is developed by identifying current and future annual operating costs and capital/equipment funding needs.

B.1 Operating Forecast

The purpose of the operating forecast is to determine whether the existing rates and charges are sufficient to recover the costs the City incurs to operate and maintain the water system. The FY 2014 budget formed the baseline for this forecast. The operating forecast was developed for the FY 2015 through FY 2020 time period. The following list highlights some of the key assumptions used in the development of the water utility operating forecast.

Reserves

- ◆ **Operating Reserves.** A minimum of 25 percent, or 90 days, of total expenses (\$1.1 to \$1.5 million, per discussion with City staff).
- ◆ **Capital Contingency Reserves.** A target of 1 percent of plant in service (\$210,000 to \$390,000, per discussion with City staff and industry standards).

Operating Revenue

- ◆ **Retail Rate Revenue.** Based on actual detailed customer accounts and use statistics from the City's billing system.
- ◆ **Non Rate Revenue.** Non rate revenue consists of water permit fees, turn on/off, physical connection charges and interest income and other miscellaneous revenue.
- ◆ **Customer Growth.** A 0.5 percent per year increase was applied to forecast revenue in FY 2014 and FY 2015, followed by a 0.75 percent growth rate in FY 2016 and FY 2017 and 1.0 percent per year thereafter.

- ◆ **Interest Earnings.** A rate of 1.00 percent per year (based on discussion with City staff).

O&M Expenses

- ◆ **General Cost Inflation.** 2.68 percent per year (based on analysis of five-year historical Consumer Price Index data and discussion with City staff);
- ◆ **Construction Cost Inflation.** 3.41 percent per year (based on Engineering News Record Construction Cost Index 5-year average);
- ◆ **Labor Cost Inflation.** 3.00 percent per year (based on discussions with City staff);
- ◆ **Benefits.** 10.00 percent per year (based on discussion with City staff).

Debt Service

- ◆ **Existing Debt.** The water fund has no existing debt service.
- ◆ **New Debt.** Four new debt issues are anticipated to fund the \$20.9 million (\$18.7 million 2014\$) capital program.
 - \$2.7 million DEQ loan in FY 2014 for Well 10 and Transmission Improvements
 - \$2.4 million revenue bond in FY 2014 for the Northwest Tank Replacement
 - \$2.3 million revenue bond in FY 2017 for Operations Facility
 - \$5.5 million revenue bond in FY 2020 for the New Reservoir and long-term water supply facility

The four new debt issues will add \$366,000 to \$1.1 million in new annual debt service.

System Reinvestment

- ◆ System reinvestment funding is to ensure system integrity through reinvestment in the system. Ideally, the minimum funding would be an amount equal to or greater than depreciation expense.
- ◆ This financial plan begins to fund system reinvestment starting at \$150,000 per year increasing to \$400,000 by the end of the time period. This level of funding falls short of the projected depreciation expense of slightly over \$900,000 by FY 2020. Since the water fund is taking on future debt obligations, the level of system reinvestment funding targeted is closer to depreciation less debt principal outstanding. The City should continue to increase the level of system reinvestment funding supported through future rate revenue.

B.2 Capital Funding Plan

The water utility is anticipating **\$20.9** million in capital costs in FY 2014 through FY 2020 inflated at 3.41 percent per year to date of construction. Some of the more significant projects include; well 10, long-term alternative water supply facilities, northwest tank replacement, new water tank/reservoir and the operations facility. Funding for the capital identified includes cash balances (including interest), rate funded system reinvestment, general facility charge revenue and new debt service. New revenue bonds and loans account for 62 percent of the capital funding. **Exhibit 4.1** identifies the anticipated use of annual funding sources to cover the total capital projects in any given year. Any additional funding available beyond what is needed to cover the annual capital costs will be added to reserves for use in the future. A detailed capital plan can be found in the water Technical Appendix.

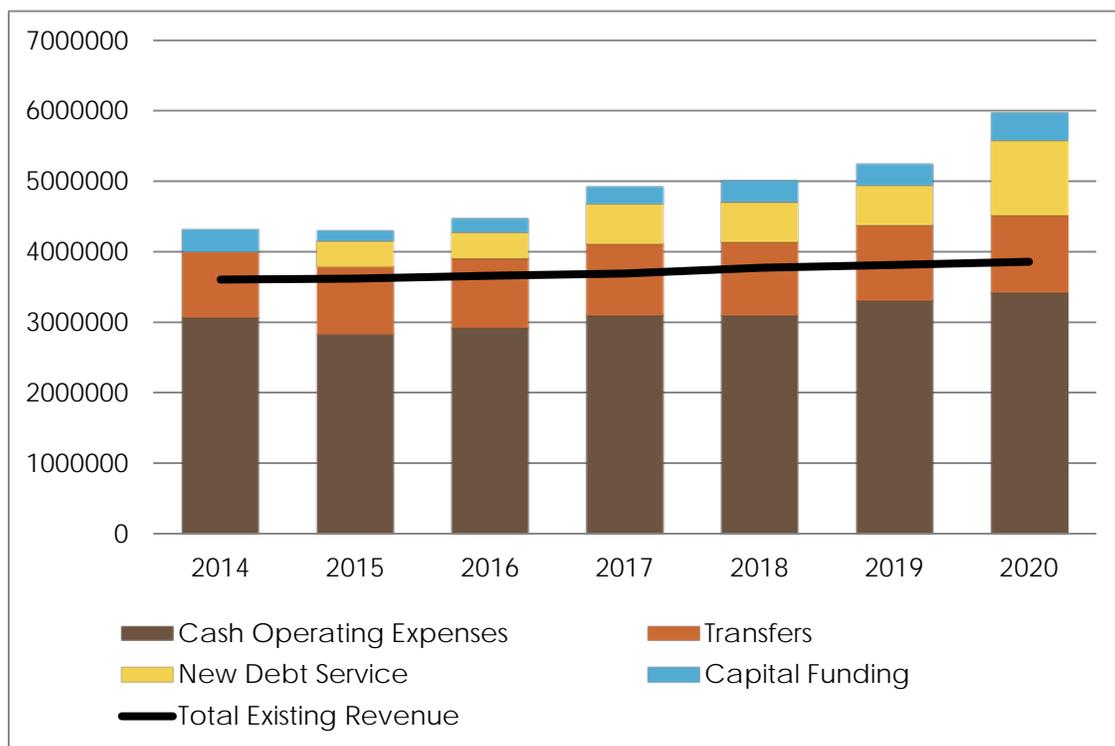
Exhibit 4.1: Water Capital Funding Summary

Funding Summary	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	Total
Total Capital Costs	\$ 2,624,750	\$ 4,633,885	\$ 1,116,512	\$ 1,177,249	\$ 3,342,613	\$ 986,327	\$ 7,040,037	\$ 20,921,372
Funding Sources								
Cash Balances	\$ -	\$ 1,797,109	\$ 966,512	\$ -	\$ 1,994,140	\$ 686,327	\$ 1,231,219	\$ 6,675,307
Rate Funded Capital	-	323,335	150,000	-	250,000	300,000	300,000	1,323,335
Loan Proceeds	2,624,750	75,250	-	-	-	-	-	2,700,000
Revenue Bond Proceeds	-	2,438,191	-	1,177,249	1,098,473	-	5,508,818	10,222,730
Total Capital Funding	\$ 2,624,750	\$ 4,633,885	\$ 1,116,512	\$ 1,177,249	\$ 3,342,613	\$ 986,327	\$ 7,040,037	\$ 20,921,372

B.3 Summary of Revenue Requirement

The components of O&M expenses, debt service that funds the capital improvement program and cash funded system reinvestment combined form the multi-year revenue requirement. The revenue requirement is compared to the overall revenue available to the water fund to evaluate the sufficiency of rates on an annual basis. **Exhibit 4.2** provides a comparison of the water fund revenue requirement to the existing revenue.

Exhibit 4.2: Comparison of Water Fund Existing Revenue to Revenue Requirement



Summary of Water Revenue Requirement:

- ◆ Current rate revenue levels are not sufficient to meet existing water fund annual financial obligations;
- ◆ Existing rate revenue is deficient \$730,000 increasing to \$2.1 million;

- ◆ To meet the total projected financial obligations of the water fund, rate increases are proposed at 10.0 percent in FY 2014 through 2015 followed by 6.3 percent increases in FY 2016 through 2019 and a 3.5 percent increase in 2020;
- ◆ Increased revenue supports :
 - \$12.9 million in new debt proceeds to fund capital project costs resulting in \$366,000 to \$1.1 million in annual debt service.
 - Cash funded system reinvestment capital is increased over time from \$150,000 to \$400,000 per year;
 - The operating fund balance is at or near the target 90 day level in all years;
 - The capital fund target of 1.0 percent of plant in service is exceeded in every year of the study period with the exception of 2020 due to the large capital costs during that year; and
 - Debt service coverage is well above the 1.25 minimum bond covenant requirement. This is favorable as the City will need to access future debt.

C. COST OF SERVICE

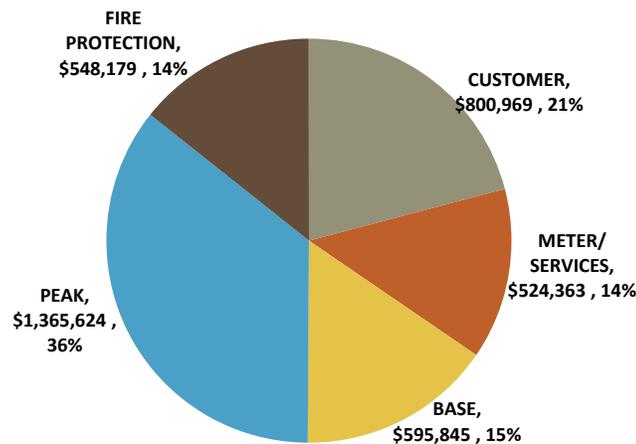
A cost-of-service analysis determines the equitable recovery of costs from customers according to unique demands each class places on the system. There are three fundamental steps to allocating the calculated annual revenue requirement to customer classes and developing the final rates – 1) allocate total utility costs by function, 2) develop customer specific allocation factors and 3) allocate costs to customer classes. The methodology used conforms to industry standards as identified by the American Water Works Association (AWWA) Principles of Water Rates, Fees and Charges, M1 Manual.

The functions of service to which **water** service costs were allocated are listed below:

- ◆ **Customer.** These are the costs associated with establishing, maintaining, and serving water customers and tend to include administrative and billing costs and customer service. These costs are generally uniform by customer regardless of their meter size and demand placed on the water system.
- ◆ **Meters & Services Costs.** These costs are associated with installation, maintenance, and repairs of meters and services. These costs are typically associated with the number of connections and meter size.
- ◆ **Base Costs.** These costs relate to average service provided on demand and are essentially correlated with year-round water consumption.
- ◆ **Peak Costs.** These costs relate to peak demand service typically associated with the ability of the system to provide capacity to customers with higher than average volume, which usually occurs during the summer months.
- ◆ **Fire Protection.** These are the costs associated with the ability of the system to provide adequate capacity and water flow corresponding to minimum fire safety standards required to serve its customer demographic. These are mostly incremental costs related to providing storage, transmission capacity, and hydrants for fire protection.

Exhibit 4.3 provides a summary of the functional cost allocation results.

Exhibit 4.3: Water Utility Functional Cost Allocation Summary



The water utility cost allocation indicates that the majority of costs (36 percent) relate to meeting peak demands.

C.1 Customer Class Distinctions

The City's current customer classes consist of residential (including single family, duplex and triplex with individual meter per unit), non-residential (including multi-family with one meter serving multiple units and commercial) and cemetery. Although the multi-family class is stated separately in the City's rate schedule, the rate schedule is the same as the non-residential rate; therefore, this class was combined for the cost of service evaluation.

The cost of service was completed for the following classes:

- ◆ Residential
- ◆ Non-residential
- ◆ Cemetery

One of the main objectives of the cost of service rate study is to evaluate if cost differences exist when serving different customer classes of the system.

C.2 Allocation Factors

Once the customer classes were defined, functional cost pools (shown in **Exhibit 4.3**) were then allocated to these customer classes based on the demand each class places on the system. In order to complete this task, the analysis consisted of first developing allocation factors that identified customer characteristics including number of accounts, consumption levels, peak demand patterns, and fire flow requirements. The allocation factors are intended to equitably allocate total costs to those benefitting from the service. For this study, the water fund costs were allocated based on the following:

- ◆ **Customer.** Based on customer accounts.
- ◆ **Meters & Services Costs.** Based on number of meter service equivalents.
- ◆ **Base Costs.** Based on total annual water use.
- ◆ **Peak Costs.** Based on use during the class' peak bimonthly period

- ◆ **Fire Protection.** Based on fire flow requirements identified in the City’s Comprehensive Plan. Fire flow requirements expressed in a rate of 1,500 to 4,750 gallons per minute.

C.3 Water Fund Cost of Service

Exhibit 4.4 provides a comparison between current rate revenue distribution between customer classes and the results of the cost-of-service analysis.

Exhibit 4.4: Comparison of Water Current Revenue Distribution to Cost-of-Service Distribution

Class	Current FY2014 Revenue	Percent of Total	COSA 2014	Percent of Total	Change	Percent of Total
Residential	\$ 1,915,530	54.92%	\$ 2,046,784	53.35%	\$ 131,254	6.85%
Non Residential	1,560,640	44.75%	1,730,340	45.10%	169,700	10.87%
Cemetery	11,431	0.33%	59,237	1.54%	47,806	418.21%
Total	\$ 3,487,601	100.00%	\$ 3,836,361	100.00%	\$ 348,760	10.00%

The cost of service shows some interclass adjustments are warranted as shown by the change in revenue distribution. The residential and non-residential classes are close to the overall 10 percent average increase for the system. The cemetery class has the greatest disparity to reach cost of service.

To minimize the rate impact to the cemetery class, a few options were presented for consideration:

1. No cost of service adjustment and apply the non-residential rate increase
2. Phase-in to full cost of service by 2020
3. Partial phase-in to tie to non-residential rates by 2020

Option 3 was selected that moved towards a partial phase-in of the cemetery cost of service by the year 2020. This option helped reduce the impact on the cemetery class, it also allows the cemetery to implement operational changes that could reduce their cost of service allocation in the future. Since this class will not be paying the full allocated cost of service, it required that the proposed rates for the residential and non-residential classes increase slightly to meet the total revenue requirement of the fund. It is important to note that the cemetery will only be at 49.00 percent of its full cost of service at the end of the study period.

Exhibit 4.5 provides a comparison of the current rate revenue distribution between customer classes and the revised cost-of-service analysis with the cemetery phase-in.

Exhibit 4.5: Comparison of Current Revenue Distribution to Cemetery Phase-in Cost-of-Service Distribution

Class	Current FY2014 Revenue	Percent of Total	Revised COSA 2014	Percent of Total	Change	Percent of Total
Residential	\$ 1,915,530	54.92%	\$ 2,065,879	53.85%	\$ 150,349	7.85%
Non Residential	1,560,640	44.75%	1,746,482	45.52%	185,842	11.91%
Cemetery	11,431	0.33%	24,000	0.63%	12,569	109.96%
Total	\$ 3,487,601	100.00%	\$ 3,836,361	100.00%	\$ 348,760	10.00%

The cost of service adjustments as shown in **Exhibit 4.5** will be implemented during the first year of the study period (FY 2014). All future rate adjustments should be applied equally to the residential and non-residential class. The cemetery will be phased-in to the non-residential volume rate by FY 2020.

D. RATE DESIGN

The principal objective of the rate design stage of this rate study was to implement water rate structures that collect the appropriate level of revenue.

Establishing rates is a blend of “Art” and “Science” and especially so when it comes to the rate levels and structures. Several variables must be balanced to arrive at optimal rates. The results of the revenue requirement analysis were used to develop new water rate alternatives to recover the projected revenue from customers.

D.1 Existing Water Rates

The existing water rates are composed of a fixed monthly charge and a variable consumption charge per hundred cubic feet (CCF) for all water use. All customers pay the same fixed monthly charges depending on their meter size. The commodity charge is different by customer class.

- ◆ The residential class has a three block structure that increases the rate as more water is used. Block 1 = 0 - 7 CCF, Block 2 = 7.01 - 20 CCF and Block 3 = 20.01+ CCF.
- ◆ The non residential class pays a uniform consumption rate for all water use.
- ◆ The cemetery has a separate uniform consumption rate that is also based on all water use.

Exhibit 4.6 provides a summary of the existing water utility rates.

Exhibit 4.6: Existing Water Rates

Meter	Existing
Fixed Charges	
5/8"	\$ 20.65
1"	25.85
1.5"	51.55
2"	82.45
3"	154.55
4"	260.55
Consumption Charge	
Residential	
Block 1 (0-7) ccf	\$ 1.75
Block 2 (7.01-20) ccf	2.10
Block 3 (20.01+) ccf	3.55
Non Residential	
Non Residential	\$ 2.10
Cemetery	0.85

D.2 Proposed Water Rates

No rate structure changes were proposed for the water utility. Three options were developed for consideration to apply the rate increase.

1. Across the board adjustments – equal increases to the fixed meter charge and variable consumption charges.
2. Increase the fixed charge more than the consumption charge to account for the increase in future fixed cost to the system (e.g. new debt service and cash funded capital), consumption charge to collect the remainder.
3. Increase the fixed charge by the overall average increase, consumption charge to collect the remainder.

Since all customers pay the same service fixed meter charges, any change in the service charge for the residential rate applied to all classes. The City chose to apply option 2.

Exhibit 4.7 provides a summary of the selected option proposed rates for the 7-year study period.

Exhibit 4.7: Proposed Water Rates

Meter	Existing	FY2014	FY2015	FY2016	FY2017	FY2018	FY2019	FY2020
Fixed Charges								
5/8"	\$ 20.65	\$ 23.65	\$ 26.00	\$ 27.65	\$ 29.40	\$ 31.25	\$ 33.20	\$ 34.35
1"	25.85	29.61	32.55	34.60	36.80	39.10	41.55	43.00
1.5"	51.55	59.04	64.95	69.05	73.40	78.00	82.90	85.80
2"	82.45	94.43	103.90	110.45	117.40	124.80	132.65	137.30
3"	154.55	177.02	194.70	206.95	220.00	233.85	248.60	257.30
4"	260.55	298.42	328.25	348.95	370.95	394.30	419.15	433.80
Consumption Charge								
Residential								
Block 1 (0-7) ccf	\$ 1.75	\$ 1.74	\$ 1.90	\$ 2.02	\$ 2.15	\$ 2.28	\$ 2.43	\$ 2.51
Block 2 (7.01-20) ccf	2.10	2.09	2.30	2.44	2.60	2.76	2.94	3.04
Block 3 (20.01+) ccf	3.55	3.53	3.90	4.15	4.41	4.68	4.98	5.15
Non Residential								
Non Residential	\$ 2.10	\$ 2.32	\$ 2.55	\$ 2.70	\$ 2.85	\$ 3.05	\$ 3.25	\$ 3.35
Cemetery	0.85	1.88	2.10	2.30	2.50	2.80	3.05	3.35

E. SUMMARY

The analysis described above concludes the rate study for the water utility. After performing a rate revenue analysis it was identified that the revenues at current levels are not sufficient to fund ongoing water system obligations and the planned \$20.9 million in capital project costs. Although existing cash balances, rate funding and general facility charge revenue will help fund the capital program, \$11.1 million in revenue bond issues (including bond reserves) and \$2.7 million in loan proceeds are required to complete the capital plan. As a result a 10.00 percent increase is proposed in FY 2014 and FY 2015 followed by 6.3 percent annual increases in FY 2016 through FY 2019 and a 3.5 percent increase in 2020.

The cost of service adjustments recommended for the residential and non-residential class will occur in FY 2014 and all future increases are anticipated to be applied equally to each class of service and to the fixed monthly meter charges and variable consumption charges. The cemetery class will be phased-in to the non-residential consumption rate by FY 2020

We recommend that the City revisit the study findings during each budget cycle to check that the assumptions used are still appropriate and no significant changes have occurred that would alter the results of the study. The City should use the study findings as a living document, continuously referencing the study outcomes to actual revenues and expenses. Any significant or unexpected changes will require adjustment to the rate strategy proposed.

The detailed technical exhibits developed as part of the water rate study can be found at the end of this report in the Technical Appendices.

SECTION V: WASTEWATER UTILITY

A. INTRODUCTION

The City of Moscow owns and operates an advanced secondary treatment wastewater treatment plant that was completely replaced in 2002 with a Biological Nutrient Removal (BNR) process. Most recently, effluent filters were added to enhance phosphorus removal. The City is regulated under the Environmental Protection Agency National Pollutant Discharge Elimination System (NPDES) permit and discharges the treated wastewater into Paradise Creek on the west side of Moscow. The City provides service to a population of approximately 25,000. The collection system services all of the City of Moscow, the SE Moscow Water and Sewer District and the University of Idaho (UofI). Approximately 81 miles of pipelines (4" to 36"), 1,820 manholes; and four lift stations complete the collection system. UI owns and operates its own collection system on campus.

B. REVENUE REQUIREMENT

Similar to the water utility, a revenue requirement was completed for the wastewater utility and forms the basis for the long-range financial plan and multi-year financial management strategy.

B.1 Operating Forecast

The purpose of the operating forecast is to determine whether the existing rates and charges are sufficient to recover the costs the City incurs to operate and maintain the wastewater system. The FY 2014 budget formed the baseline for this forecast. The operating forecast was developed for the FY 2015 through FY 2020 time period. The following list highlights some of the key assumptions used in the development of the wastewater utility operating forecast.

Reserves

- ◆ **Operating Reserves.** A minimum target of 25 percent, or 90 days, of total expenses (\$1.6 to \$1.9 million, per discussion with City staff). The fund nearly reaches this minimum target by the end of the planning period.
- ◆ **Capital Contingency Reserves.** A target of 1 percent of plant in service (\$520,000 to \$700,000, per discussion with City staff and industry standards).

Operating Revenue

- ◆ **Retail Rate Revenue.** Based on actual detailed customer statistics from the City's billing system;
- ◆ **Non Rate Revenue.** Consists of sewer tap and refunds and reimbursements.
- ◆ **Customer Growth.** For consistency, customer growth was tied to the water utility. A 0.50 percent growth rate is used for FY 2014 and 2015, 0.75 percent for FY 2016 and 2017 and 1.00 percent per year growth rate thereafter; and

- ◆ **Interest Earnings.** A Rate of 1.00 percent per year (based on discussion with City staff).

O&M Expenses

- ◆ **General Cost Inflation.** 2.68 percent per year (based on analysis of five-year historical Consumer Price Index data and discussion with City staff);
- ◆ **Construction Cost Inflation.** 3.41 percent per year (based on Engineering News Record Construction Cost Index 5-year average);
- ◆ **Labor Cost Inflation.** 3.00 percent per year (based on discussion with City staff);
- ◆ **Benefits.** 10.00 percent per year (based on discussion with City staff).

Debt Service

- ◆ **Existing Debt.** The wastewater utility's existing debt service consists of the following:
 - 2011 refinancing of 2002 revenue bonds that carry an annual debt obligation of approximately \$700,000.
 - 2008 revenue bonds that carry an annual debt obligation of approximately \$450,000
- ◆ **New Debt.** Three new debt issues are anticipated to fund the \$20.3 million (\$18.6 million 2014\$) capital program.
 - \$7.5 million revenue bond in FY 2015 for WWTP Phase V
 - \$2.3 million revenue bond in FY 2017 for Operations Facility
 - \$1.5 million revenue bond in FY 2020 for Main Replacements

The three new debt issues will add \$668,000 to \$1.0 million in new annual debt service

System Reinvestment

- ◆ System reinvestment funding is to ensure system integrity through reinvestment in the system. Ideally, the minimum funding would be an amount equal to or greater than depreciation expense.
- ◆ This study assumes annual funding for system reinvestment is phased-in up to depreciation levels by 2020. Funding begins at \$450,000 per year increasing to \$1.0 million.

B.2 Capital Funding Plan

The wastewater utility is anticipating \$20.3 million in capital costs in FY 2014 through FY 2020 inflated at 3.41 percent per year to date of construction. Some of the more significant capital projects include; WWTP Phase V, sewer pipe replacement program, SW trunk line phase 4 and phase 5 and the operations facility. Funding for the capital identified include cash balances (including interest), rate funded system reinvestment, general facility charge revenue and new debt service. New revenue bonds account for 56 percent of the capital funding. **Exhibit 5.1** identifies the anticipated use of annual funding sources to cover the total capital projects in any given year. Any additional funding available beyond what is needed to cover the annual capital costs will be added to reserves for use in the future.

Exhibit 5.1: Wastewater Capital Funding Summary

Funding Summary	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	Total
Total Capital Costs	\$ 2,015,575	\$ 5,917,094	\$ 4,299,869	\$ 958,740	\$ 3,336,781	\$ 941,274	\$ 2,790,482	\$ 20,259,815
Funding Sources								
Cash Balances	\$ 2,015,575	\$ -	\$ 2,132,199	\$ -	\$ 1,269,799	\$ 91,274	\$ 316,980	\$ 5,825,828
Rate Funded Capital	-	-	550,000	-	750,000	850,000	1,000,000	3,150,000
Revenue Bonds Proceeds	-	5,917,094	1,617,670	958,740	1,316,982	-	1,473,502	11,283,988
Total Capital Funding	\$ 2,015,575	\$ 5,917,094	\$ 4,299,869	\$ 958,740	\$ 3,336,781	\$ 941,274	\$ 2,790,482	\$ 20,259,815

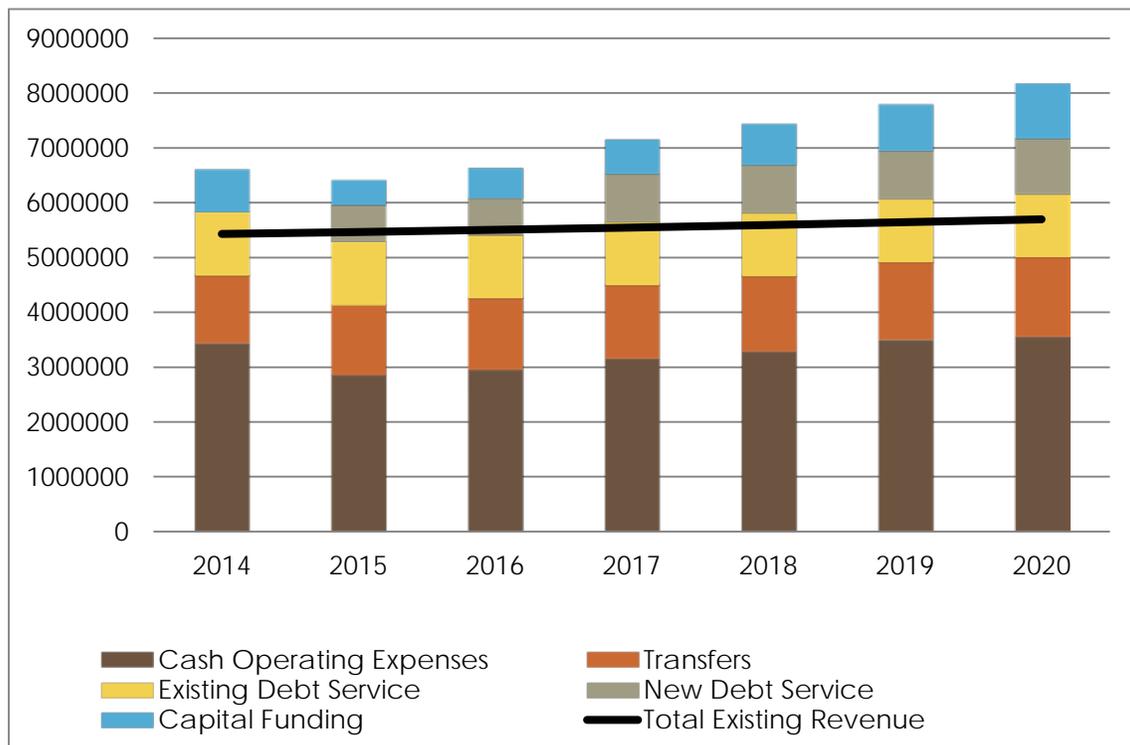
A detailed capital plan can be found in the wastewater Technical Appendix.

B.3 Summary of Revenue Requirement

The components of O&M expenses, debt service and cash funded system reinvestment combine to form the multi-year revenue requirement. The revenue requirement is compared to the overall revenue available to the wastewater fund to evaluate the sufficiency of rates on an annual basis.

Exhibit 5.2 provides a comparison of the wastewater fund revenue requirement to the existing revenue.

Exhibit 5.2: Comparison of Wastewater Fund Existing Revenue to Revenue Requirement



Summary of Wastewater Revenue Requirement:

- ◆ Current revenue levels are not sufficient to meet existing wastewater fund annual obligations.
- ◆ The annual existing rate deficiency is \$1.1 million in FY 2014 increasing to \$2.5 million by FY 2020
- ◆ To meet the total projected financial obligations like the capital plan and system reinvestment of the wastewater fund, rate increases are proposed at 7.5 percent in FY 2014, 2015 and 2016, decreasing to 4.5 percent in FY 2017 and 2018 and 4.0 percent in FY 2019 and 2020;
- ◆ Increased revenue supports
 - \$11.3 million in new debt proceeds is added to fund capital projects resulting in an additional \$668,000 to \$1 million in annual debt service.
 - Cash funded system reinvestment capital is increased over time from \$450,000 to \$1 million.
 - The operating fund remains below the target balance of 90 days during the study period. The balance increases to 88 days by FY 2020;

- Due to the significant level of capital funding needs during the time period, the capital fund is positive, however does not achieve the 1.0 percent of plant in service target;
- Debt service coverage ranges from a low of 1.40 to a high of 1.79. The City holds a coverage stabilization reserve of \$450,000 that can be accessed in any year if coverage does not meet the minimum requirements.

C. WASTEWATER COST-OF-SERVICE ANALYSIS

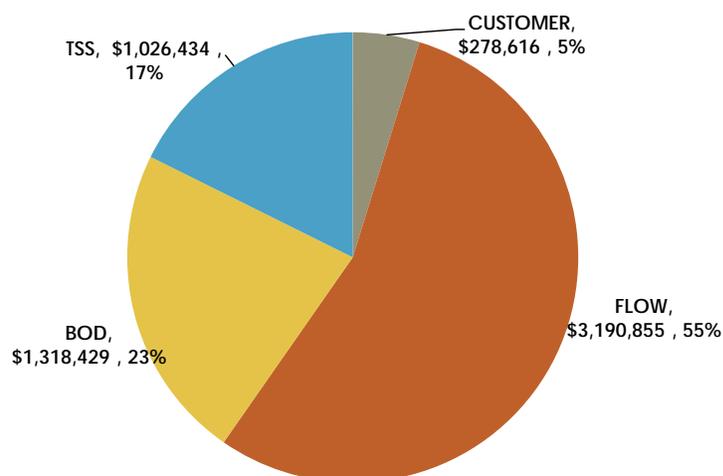
Similar to the water utility, the cost-of-service allocation process for the wastewater utility involves three steps - 1) allocate total utility costs by function, 2) develop customer specific allocation factors and 3) allocate costs to customer classes. The methodology used conforms to industry standards as identified by the Water Environment Federation (WEF) Financing and Charges for Wastewater Systems Manual 27.

The functions of service to which **wastewater** service costs have been allocated are listed below:

- ◆ **Customer.** These costs are associated with providing service to customers regardless of wastewater contribution, such as billing and office support.
- ◆ **Wastewater Flow.** These costs relate to actual and estimated wastewater volume processed within the system in a year.
- ◆ **Strength.** These costs reflect strength of sewage processed. Strength is tracked by two measurements – biochemical oxygen demand (BOD) and total suspended solids (TSS). BOD is the parameter used to characterize the organic strength of wastewater and TSS is the parameter that measures the amount of particles suspended in water that will not pass through a filter and require treatment.

Exhibit 5.3 provides a summary of the functional cost allocation results.

Exhibit 5.3: Wastewater Utility Functional Cost Allocation Summary



The wastewater utility cost allocation indicates that 40 percent of the costs are related to strength and 55 percent are related to flow.

C.1 Customer Class Distinctions

The City's current wastewater customer classes consist of 13 separate classes of service.

- ◆ Single family
- ◆ Trailer Homes
- ◆ Multi family (includes duplex)
- ◆ Motels
- ◆ Rooming House
- ◆ Schools
- ◆ Churches
- ◆ Bars & Taverns
- ◆ Restaurants
- ◆ Other Commercial
- ◆ Mixed use <10 units
- ◆ Mixed use >10 units
- ◆ University of Idaho

The cost of service analysis evaluated 10 classes of service. Trailer homes were combined with multi-family and both churches and bars/taverns were combined into the other commercial class. The combined classes were deemed appropriate since the existing rates as well as strength characteristics were very similar.

C.2 Customer Class Allocations

The next step in the cost-of-service analysis, involved distribution of the allocated system costs to the customer classes served by the system. The functionally allocated system-wide costs are allocated to these customer classes as follows:

- ◆ Customer costs are allocated to the customer classes based on their proportional share of total system number of accounts.
- ◆ Wastewater flow costs are allocated based on annual and estimated volume contributed to the wastewater system.
 - Billed volume was used for customers with a consumption charge.
 - All other customer's volume was based on estimated gallons per capita day figures from the Comprehensive Plan and historical water consumption.
- ◆ Strength related costs were allocated based on average flow adjusted for the different strength factors associated with each customer class. The strength factors applied rely on the previous cost of service analysis with additional monitoring data applied to refine the restaurant class
 - Residential or domestic strength is (216 mg/l BOD and 245 mg/l SS).
 - Motels, schools and restaurants are the only classes above domestic strength (310mg/l, 250 mg/l and 500 mg/l respectively for BOD) and only schools and restaurants are above domestic strength for TSS (350 mg/l and 500 mg/l respectively);
 - The University of Idaho based on flow monitoring data (216 mg/l BOD and 245 mg/l SS) derived in an apportionment study conducted by the Moscow Sewer Department.

C.3 Wastewater Cost of Service

Exhibit 5.4 provides a comparison of the distribution of revenues under existing rates to the distribution of revenues indicated from the cost-of-service analysis.

Exhibit 5.4: Comparison of Wastewater Current Revenue Distribution to Cost-of-Service Distribution

Class	Current FY2014 Revenue	Percent of Total	COSA 2014	Percent of Total	Change	Percent of Total
Singlefamily	\$ 1,970,107	36.42%	\$ 1,998,406	34.37%	\$ (28,300)	1.44%
Multifamily	1,787,338	33.05%	1,751,811	30.13%	35,527	-1.99%
Motels	87,847	1.62%	106,545	1.83%	(18,697)	21.28%
Rooming House	114,016	2.11%	130,053	2.24%	(16,037)	14.07%
Schools Sewer	30,307	0.56%	49,895	0.86%	(19,588)	64.63%
Other Commercial	427,846	7.91%	560,170	9.63%	(132,324)	30.93%
Restaurants Sewer	125,992	2.33%	227,419	3.91%	(101,427)	80.50%
Mixed Use < 10	78,542	1.45%	65,664	1.13%	12,879	-16.40%
Mixed Use > 10	45,428	0.84%	35,450	0.61%	9,978	-21.96%
Uofl	741,260	13.70%	888,922	15.29%	(147,662)	19.92%
Total	\$ 5,408,683	100.00%	\$ 5,814,335	100.00%	\$ (405,651)	7.50%

- ◆ Some interclass adjustments are warranted as shown in the cost of service results.
- ◆ Single family shows a below average increase of 1.44 percent
- ◆ Multi family and the mixed use classes show a rate reduction
- ◆ All other classes show an increase ranging from 14 percent to 80 percent.
- ◆ The schools and restaurant show similar results to the last study which indicated the cost of service phase-in would likely continue through this (next) rate study.
- ◆ To minimize a significant rate impact to any customer class, a two-year cost of service phase-in is recommended.

Exhibit 5.5 provides a summary of the proposed two-year cost of service phase-in.

Exhibit 5.5: Wastewater Two-Year Cost-of-Service Phase-in

Class	Phase-In FY 2014	Phase-in FY 2015	2014%	2015%
Singlefamily	\$ 2,057,382	\$ 2,159,028	4.43%	4.42%
Multifamily	1,787,338	1,892,613	0.00%	5.36%
Motels	100,313	115,108	14.19%	14.18%
Rooming House	126,262	140,506	10.74%	10.73%
Schools Sewer	40,320	53,905	33.04%	33.03%
Other Commercial	507,597	605,193	18.64%	18.63%
Restaurants Sewer	175,507	245,698	39.30%	39.30%
Mixed Use < 10	74,458	70,941	-5.20%	-5.20%
Mixed Use > 10	41,608	38,300	-8.41%	-8.41%
Uofl	841,627	955,591	13.54%	13.54%
Total	\$ 5,752,411	\$ 6,276,884	6.36%	8.57%

The cost of service adjustments as shown in **Exhibit 5.5** will be implemented during FY 2014 and FY 2015. The overall average rate increase for FY 2014 should be 7.50 percent. Due to the two-year phase in, the City will be using approximately \$62,000 of fund balance to cover the revenue requirement in that year. The residential class will see a lower than average increase in both FY 2014 and 2015. The multi family class will have no rate change in FY 2014 and a lower than average increase in FY 2015. The mixed use class will see a rate reduction in both years. All future rate adjustments should be applied equally to each class of service.

D. RATE DESIGN

The principal objective of the rate design stage is to implement rate structures that collect the appropriate level of revenue as outlined by the revenue requirement.

D.1 Existing Wastewater Rates

The existing wastewater rates consist of a fixed flat rate for some classes and a fixed rate plus volume rate per hundred cubic feet (CCF) of flow (metered water used as surrogate) for other classes.

- ◆ Single family pays a fixed monthly charge per account.
- ◆ Multi family and motels pay a fixed charge per unit.
- ◆ Rooming houses, schools and other commercial are charged a fixed monthly charge plus a consumption charge for all flow.
- ◆ The mixed use < 10 units and > 10 units includes a fixed monthly charge, a consumption charge for all flow plus an extra unit charge.
- ◆ University of Idaho pays a fixed rate based on their cost of service allocation.

Exhibit 5.6 provides a summary of the existing wastewater utility rates.

Exhibit 5.6: Existing Wastewater Rates

Class	Existing Rates
Fixed Charges	
Singlefamily	\$ 37.80
Multifamily	28.70
Motels	12.60
Rooming House	221.25
Schools Sewer	86.10
Other Commercial	40.25
Restaurants Sewer	125.95
Mixed Use < 10	95.35
Mixed Use > 10	95.35
UoFl	741,260.00
Extra Unit Charges	
Mixed Use < 10	22.90
Mixed Use > 10	22.90
Consumption Charges	
Rooming House	2.00
Schools Sewer	2.20
Other Commercial	1.90
Restaurants Sewer	2.95
Mixed Use < 10	2.65
Mixed Use > 10	1.95

D.2 Proposed Wastewater Rates

No rate structure changes were proposed at this time for the wastewater system. The cost of service phase-in identified in the previous section is applied equally to each applicable rate component for each class. **Exhibit 5.7** provides a summary of the proposed rates for the multi-year rate period. FY 2014 and FY 2015 implement the cost of service changes by class, rates beginning in FY 2016 are applied equally to each customer class and to each rate component (fixed and variable charges, where applicable).

Exhibit 5.7 provides a summary of rates for the 7-year study period.

Exhibit 5.7: Proposed Wastewater Rates

Class	Existing Rates	FY2014	FY2015	FY2016	FY2017	FY2018	FY2019	FY2020
Fixed Charges								
Singlefamily	\$ 37.80	\$ 39.45	\$ 41.20	\$ 44.30	\$ 46.30	\$ 48.40	\$ 50.35	\$ 52.35
Multifamily	28.70	28.70	30.25	32.50	33.95	35.50	36.90	38.40
Motels	12.60	14.40	16.45	17.70	18.50	19.35	20.10	20.90
Rooming House	221.25	245.00	271.30	291.65	304.75	318.45	331.20	344.45
Schools Sewer	86.10	114.55	152.40	163.85	171.20	178.90	186.05	193.50
Other Commercial	40.25	47.75	56.65	60.90	63.65	66.50	69.15	71.90
Restaurants Sewer	125.95	175.45	244.40	262.75	274.55	286.90	298.40	310.35
Mixed Use < 10	95.35	95.35	95.35	102.50	107.10	111.90	116.40	121.05
Mixed Use > 10	95.35	95.35	95.35	102.50	107.10	111.90	116.40	121.05
UoFl	741,260.00	841,626.60	955,591.20	1,027,260.55	1,073,487.25	1,121,794.20	1,166,665.95	1,213,332.60
Extra Unit Charges								
Mixed Use < 10	22.90	20.50	18.35	19.75	20.65	21.60	22.45	23.35
Mixed Use > 10	22.90	20.50	18.35	19.75	20.65	21.60	22.45	23.35
Consumption Charges								
Rooming House	2.00	2.20	2.45	2.65	2.75	2.85	2.95	3.05
Schools Sewer	2.20	2.95	3.90	4.20	4.40	4.60	4.80	5.00
Other Commercial	1.90	2.25	2.65	2.85	3.00	3.15	3.30	3.45
Restaurants Sewer	2.95	4.10	5.70	6.15	6.45	6.75	7.00	7.30
Mixed Use < 10	2.65	2.50	2.35	2.55	2.65	2.75	2.85	2.95
Mixed Use > 10	1.95	1.85	1.75	1.90	2.00	2.10	2.20	2.30

D.3 Future Rate Design Considerations

The cost of service disparity and rate increase adjustments for the restaurant class resulted in a discussion with staff and the Committee regarding wastewater cost drivers. It was explained that cost drivers for wastewater utilities relate to both the amount of flow treated and also the level of strength contributed. The restaurant customer class in particular has a very high strength classification resulting in higher strength costs allocated to this class. An alternative that was discussed for consideration is the idea of combining the commercial accounts and differentiating the rates based on strength contribution rather than customer type. For example, three classes could be developed for the non-residential class that would include a low/domestic strength class, medium strength class and high strength class. The non-residential customers would then be assigned to one of these classes depending on strength contribution. The emphasis of this approach is to better align rates to those causing the cost to be incurred (higher strength customers). Currently, there may be customers included in a class that may not be contributing high strength but because they are a restaurant they are assigned a higher strength and therefore pay a higher rate. Although this would increase equity, flow monitoring individual accounts such as restaurants may be required to determine the proper strength category. This may result in increased labor time and other costs yet to be determined. The committee was interested in the city exploring this option within the next year. Depending on the results, the second year of the cost of service phase-in may require adjustment.

E. SUMMARY

The analysis described above concludes the wastewater utility rate study. After completing the cost of service rate study it was determined that existing rate levels are not sufficient to meet total wastewater system financial obligations. As capital needs increase, the City will increase the level of rate funded capital and secure \$20.3 million in additional debt. Although existing cash balances, rate funding and general facility charge revenue will help fund the capital program, \$11.3 million in revenue bond proceeds is required to complete the capital plan (see water edits). To cover the revenue deficiency and phase in cost of service rates over a two year period a 6.4 percent increase is proposed in FY 2014 followed by an 8.6 percent increase in FY 2015. The rate increase projections for the following five years include a 7.5 percent increase in FY 2016 followed by a 4.5 percent increase in FY 2017 and 2018 and a 4.0 percent increase in FY 2019 and FY 2020. The initial revenue requirement results indicated an increase of 7.5 percent in both FY 2014 and 2015. Due to the two-year cost of service phase-in, the rate strategy changed to the increases noted above (6.4 percent in FY 2014 and 8.6 percent for FY 2015). The rate increase will fall short in FY 2014 approximately \$62,000 of the target revenue. This amount will be covered by fund balance.

We recommend that the City annually revisit the rate study to review if revenue and expense projections are reasonable when compared to actual experience. If significant changes have or are anticipated to occur, the City should update the rate study and rate plan to incorporate the changes.

The detailed technical exhibits developed as part of the wastewater rate study can be found at the end of this report in the Technical Appendices.

SECTION VI: RATE COMMITTEE

A key component of the water and wastewater utility rate study was the involvement of the Rate Committee (Committee). The City has historically convened a Committee to obtain customer feedback and engagement in the process. During the course of the study, the consultant and City project team met with the Committee at key milestones to share results, gain feedback and to incorporate suggestions. The following meetings were held with the Committee.

- ◆ Nov. 27, 2012 first meeting with Committee
 - Overview of each system
 - Discussion of capital needs
 - Presented revenue requirement findings
- ◆ Jan. 17 City meeting with Committee
 - Address follow up questions
 - Review capital project needs
- ◆ May 22 meeting with Committee
 - Presented the water and sewer cost of service findings and proposed rates
- ◆ July 8 City Council Workshop (some Committee members in attendance)
 - Presentation of rate study findings and proposed rates

TECHNICAL APPENDIX

SANITATION FUND

SANITATION OPERATIONAL EFFICIENCY EVALUATION AND REVIEW OF REVENUE COLLECTION

WATER FUND

WASTEWATER FUND
