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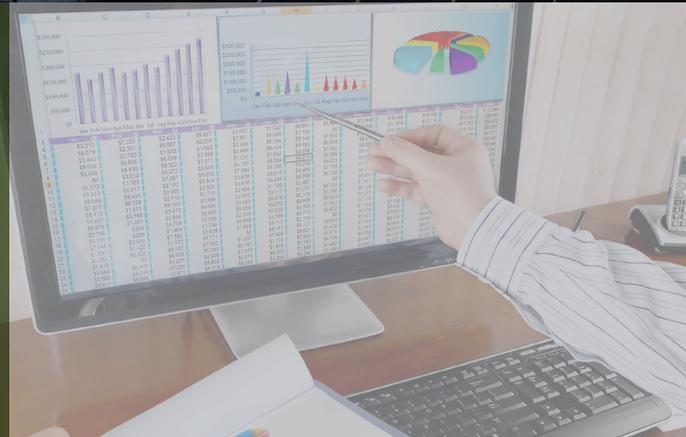
MULTI-MUNICIPAL SEWERAGE SYSTEM COST ALLOCATION STUDY



REPORT #1 OF 3:

WASTEWATER SYSTEM COST ALLOCATION REPORT

FEBRUARY, 2022



Prepared for:
Hamilton Township, New Jersey &
Robbinsville Township, New Jersey

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February 2, 2022

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Subject: Report #1 of 3: Wastewater System Cost Allocation Report

Dear Sewer Rate Study Liaison Committee:

NewGen Strategies and Solutions, LLC (NewGen) is pleased to submit to the Townships of Hamilton and Robbinsville this report detailing our review of the current cost allocation methodology of the Multi-Municipal Sewerage System and our recommendations regarding a revised, industry standard approach. This report provides a background of the 1976 Multi-Municipal Sewerage System Agreement between the Townships, summarizes the current cost allocation methodology, and provides our recommended methodology to calculate the costs of the Multi-Municipal Sewerage System.

We appreciate the opportunity to provide our services to the Townships of Hamilton and Robbinsville and would like to express our sincere appreciation to both Townships. The dedication and assistance provided by everyone at both Townships was essential to the completion of this study. It has been a distinct pleasure to work with the Liaison Committee, and all others involved in the study. Please contact me if you have any questions regarding our study or our recommendations.

Very truly yours,

DocuSigned by:


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List of Abbreviations

| | |
|------|---|
| CIP | Capital Improvement Plan |
| GPD | Gallons per Day |
| MG | Million Gallons |
| MGD | Millions of Gallons per Day |
| MMSS | Multi-Municipal Sewerage System |
| MUA | Washington Township Municipal Utilities Authority |
| O&M | Operating and Maintenance |
| PERS | Public Employees' Retirement System |
| RR | Revenue Requirements |
| SS | Social Security |
| WPC | Hamilton Water Pollution Control |
| WPCF | Water Pollution Control Facility |

Section 1

PROJECT BACKGROUND, SCOPE, AND OBJECTIVES

Background of Hamilton and Robbinsville Wastewater Systems

The Township of Hamilton in Mercer County New Jersey, through its Department of Water Pollution Control (WPC), operates a Water Pollution Control Facility (WPCF) permitted to operate at an average of 16.0 million gallons per day (MGD). Hamilton's WPCF also serves users in Robbinsville Township, New Jersey under the terms of a 1976 Multi-Municipal Sewerage System (MMSS) Agreement (the Agreement).

Hamilton Township's Wastewater Facilities

Hamilton Township WPC operates a regional wastewater treatment facility and collection system with a New Jersey Pollution Discharge Elimination System (NJPDES) permitted capacity of sixteen (16) MGD, and a 2021 actual average daily flow of 7.5 MGD. The utility has been in operation for over 80 years and currently serves over 100,000 residents in Hamilton Township (Mercer County) and Robbinsville Township as well as Mercer County College. The Hamilton Township wastewater collection system includes 350 miles of sewer pipes and 27 pumping stations in its 40-square mile service area. There are a few specific facilities in West Windsor which also flow to Hamilton's WPCF through Hamilton's collection system. All sewage treated at Hamilton's WPCF is discharged into Crosswicks Creek.

Robbinsville Township's Wastewater Facilities

Robbinsville owns and maintains a wastewater collection system located completely within the Township's boundaries. At the township border, there is a flow meter which monitors flows from Robbinsville entering Hamilton's system. Hamilton provides the licensed operator for Robbinsville's collection system and ten (10) pump stations and operates their pump stations. Payments related to the operating agreement and not within the scope of this study.

Shared Wastewater Facilities

In the 1970's Robbinsville requested that Hamilton treat Robbinsville's wastewater at Hamilton's WPCF. To treat Robbinsville's wastewater, the wastewater flow had to pass through Hamilton. Instead of building separate facilities for Robbinsville's wastewater to get to Hamilton's treatment plant, it was more cost effective for the Townships to share existing Hamilton facilities, including pipes and a pump station. In summary, the facilities that Robbinsville uses are approximately four miles of 30-inch to 42-inch gravity pipe from the Hamilton/Robbinsville boundary to Hamilton's Klockner Pump Station, and from there approximately six miles of 30-inch to 60-inch pipe, transitioning from force main to gravity pipe before reaching Hamilton's WPCF.

Study Background

Through a joint engagement, the Townships of Hamilton and Robbinsville engaged NewGen Strategies and Solutions, LLC to complete a Sewer Cost of Service and Rate Study. The objectives of the study were to:

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“Analyze both Hamilton’s and Robbinsville’s different rate structures and charges, with particular attention paid to financial stability, equity, wastewater management and other best management practices. Other important considerations include ratepayer sensitivity, economic competitiveness, ease of implementation, future system needs, affordable housing stock and regulatory/wastewater quality concerns.”

A key component of this analysis was the appropriate cost allocation methodology for Robbinsville’s and Hamilton’s use of the MMSS. NewGen prepared three reports as a part of the study:

- Report #1 of 3: Wastewater System Cost Allocation Report
- Report #2 of 3: Hamilton Sewer Rates Report
- Report #3 of 3: Robbinsville Sewer Rates Report

This is Report #1 of 3: Wastewater System Cost Allocation Report, and it details NewGen’s alternatives regarding an industry standard wholesale cost allocation approach that appropriately allocates the costs of Hamilton’s wastewater system to the MMSS, and further to Hamilton and Robbinsville. The subsequent reports #2 and #3 will detail the impact of the alternative cost allocation on each Township’s individual wastewater financial plan and rates.

Study Scope of Work and Objectives

NewGen’s scope of work included several related tasks. The study has resulted in several alternatives regarding the cost allocation of the MMSS and how best to collect each Township’s wastewater utility revenue. Table 1-1 lists the specific tasks of NewGen’s study.

**Table 1-1
Study Scope of Work Tasks**

| Task # | Description |
|---------------|---|
| Task 1 | Review Existing Data and Project Kickoff Meeting |
| Task 2 | Identify Policy Issues |
| Task 3 | Review Capital Improvement Plan |
| Task 4 | Review O&M Costs |
| Task 5 | Evaluate Current and Projected Demand |
| Task 6 | Analyze Current and Projected Debt Service |
| Task 7 | Evaluate Potential Financing Sources |
| Task 8 | Develop Revenues from Miscellaneous Fees |
| Task 9 | Develop Revenue Requirement From Rates |
| Task 10 | Compare Revenue Requirement to Projected Revenues |
| Task 11 | Develop Cost of Service |
| Task 12 | Identify and Evaluate Rate Alternatives |
| Task 13 | Develop Recommended Rates |
| Task 14 | Document Financial Model |
| Task 15 | Final Report and Presentations |

The broad objectives of the study were as follows:

- Determine the true cost of providing service to the customers of the Hamilton wastewater system, including the appropriate costs for the service to customers in Robbinsville. Customers include residential, commercial, and industrial users.
- Evaluate the current cost allocation methodology used to allocate MMSS costs the Townships and determine whether it is consistent with both industry standards and the Agreement.
- Develop other potential cost allocation methodology or methodologies that may be acceptable in a new agreement between the Townships.
- Develop a financial plan and wastewater rates for both Townships given the potential alternative MMSS cost allocations.

Ultimately, the result of the study was to be a cost allocation methodology (or methodologies) consistent with industry standards, understandable and agreeable to stakeholders at both Townships, and able to be clearly described in a formula to be incorporated into either a revised Agreement or new agreement between the Townships.

Guiding Principles of the Study

NewGen applies several guiding principles to every rate study. These principles inform key decisions throughout the study so that the study's results are consistent with both industry standards and the realities and perceptions of system customers. While these guiding principles serve as benchmarks for results, ultimately the results of any study are based on the data relating to each system's design and operation.

- Each Township's wastewater utility must be financially self-supporting. It is assumed that the cost of operating and maintaining each system will be supported by the wastewater fees and charges collected from each system's customers with no support or subsidy from other Township revenues.
- Each Township's wastewater rates shall be sufficient to ensure the funding of an appropriate level of system rehabilitation and replacement.
- Wastewater rates in each Township are to be kept as low as practical while balancing the other guiding principles of the study.
- Each Township shall maintain reserves to provide for contingencies and unplanned expenses.

These guiding principles allow NewGen to evaluate whether the study has achieved the requirements relating to financial sustainability and stakeholder understanding.

Fiscal Year

Both Townships operate on a fiscal year beginning January 1st and ending on December 31st each year. All years shown in this report refer to the fiscal year ending that year. For example, 2021 refers to the fiscal year beginning January 1, 2021 and ending December 31, 2021.

The 1976 Multi-Municipal Sewerage System Agreement¹

The original 1976 Multi-Municipal Sewerage System Agreement was an agreement between Hamilton Township and the Washington Township Municipal Utilities Authority (MUA). When Robbinsville Township acquired the MUA, the Agreement was assigned to Robbinsville. There have been several subsequent addendums to the Agreement. The Articles and statements herein are not meant to be an exhaustive review of the Agreement, but rather a discussion of the key components of the Agreement that define and inform how costs are allocated to the MMSS paid for between the Townships. The references in this section are relevant to the study and relate to the costs and rates of the MMSS as well as the communication between the Townships. There are many sections of the Agreement that are not discussed or referenced in this report, and any change in the Agreement based on NewGen's conclusions or alternatives should be reviewed for consistency with the Agreement as a whole.

The first Article of the Agreement provides several definitions. Article 1.s. of the Agreement defines the MMSS as:

"The sanitary sewer facilities that serve both the MUA and [Hamilton] Township, including but not limited to interceptors, pump stations, and treatment plants."

While this description is somewhat ambiguous, all parties from Hamilton and Robbinsville agree that the definition of the MMSS consists of the gravity piping beginning where Robbinsville's flow enters Hamilton to the Klockner Pump Station, the Klockner Pump Station itself, the force main and gravity piping from the Klockner Pump Station to Hamilton's WPCF, and the WPCF itself.

Recommendation: Include a more detailed definition of the MMSS in a new Agreement. This description should include specific references to system assets, such as the Klockner pump station and piping by location, diameter, and length.

The Agreement establishes a Liaison Committee of three representatives from the Township (Hamilton) and two from the MUA, the duties of which are:

"to advise during the construction and operation of the system, with administrative duties of review and recommendation for apportionment of cost as provided herein;"

then further defines the Liaison Committee's role as being to:

"advise, inform, and recommend to the governing bodies solutions to problems arising from the operation of the multi-municipal sewer system."

The Liaison Committee has not been formally active for several years. It is important that communication between the Townships is consistent for several reasons. First, owning and operating a wastewater system is a long-term and asset investment intensive endeavor. Careful planning is needed to keep all parties informed of planned investments and costs related to those investments. Second, the system's cost allocation must be understood by all stakeholders during the budgeting and rate adoption process to ensure that there is a stable financial structure supporting the system. Large swings in costs from year to year, if any, must be understood by both Townships to properly plan their future wastewater rates.

¹ Italicized text in this section outside of boxed recommendations is from the Agreement and its amendments verbatim.

Recommendation: Formalize the Liaison Committee with a formal informational role regarding the cost allocation of the MMSS. The Liaison Committee's primary function should be communication between the Townships. The Liaison Committee should not have a decision-making role, but rather the role of keeping both Townships informed regarding planned capital projects involving the MMSS, i.e., not WPC as a whole.

Article 7 of the Agreement establishes the Reserved Capacity of the MUA for the design year of 1995 as 2.0 MGD of an approved treatment plant capacity of 17.0 MGD. An Amendment dated October 16, 1989, amended the MUA's reserved capacity to 2.5 MGD of 16.0 MGD. This capacity reservation, however, is not a consideration in the determination of operating or capital cost allocation of the MMSS. This capacity reservation is simply a limit on the average daily contributed flow from Robbinsville into the WPCF. Robbinsville's cost is defined by the provisions set forth in Article 10 of the Agreement.

Article 10 of the Agreement is titled SERVICE CHARGES and establishes a service charge that is characterized in several ways, as follows:

"shall be sufficient to defray the cost of constructing new facilities, amortizing the cost of existing facilities shared, and maintaining and operating the MMSS."

This language is consistent with both the cash and utility basis of rate making, which will be discussed later in this report. Article 10 continues to describe the purpose of service charges as being:

"sufficient to cover all expenses of the MMSS including amortization of the new construction, amortization of the existing facilities used in the MMSS, operation and maintenance, and other necessary costs applicable to the MMSS, plus a cash reserve for construction and replacements."

Again, even after the inclusion of a cash reserve for future capital, this language is consistent with both the cash and utility basis of rate making. Article 10 describes the way costs are allocated between the Townships as being the same base charge per million gallons (MG) for both Townships:

"It is further agreed that the base charge per million gallons will be the same for both the TOWNSHIP and the MUA."

This language means that ultimately whatever cost is determined to be necessary to build and operate MMSS must be stated as a charge per million gallons of flow that, when applied to both Townships, results in each Township paying the appropriate amount towards the MMSS. Note that Robbinsville's 2.5 MGD capacity reservation has no impact on the ultimate rate (i.e., cost) to Robbinsville.

Finally, the Article 10 states the timing of notification each year for the estimated charges for the next year:

"The TOWNSHIP will notify the MUA by October 1st of each year of the estimated sewage volume and strength proposed for the next calendar year."

A more formally established Liaison Committee would be the vehicle of communication between the Townships regarding the estimated charges for each Township's use of the MMSS.

Article 13 of the Agreement is titled REPAIRS AND MAINTENANCE and contains several provisions regarding certain capital investments in the MMSS that need to be made from time to time:

- a. *"minor repairs which are part of the regular maintenance of the MMSS will be handled by [Hamilton] Township with its own forces"*
- b. *"minor construction and equipment replacements will be financed from cash reserves of [Hamilton] Township's sewer utility.*
- c. *Major capital is referred to Liaison Committee for review and apportionment.*

Section 1

Again, a more formally operating Liaison Committee would be responsible for identifying and approving “Major Capital” investments in the MMSS.

Recommendation: Include a more specific definition of Minor Construction and Equipment and Major Capital in a new Agreement.

An addition to the Agreement (Article 19) was made agreed to on October 16, 1989, that added a MUA service area in Hamilton to:

“address the provision of service to the South Gold Industrial Park and the AAA Office Park”

Article 19 further states that:

“the MUA collects appropriate charges from the users and is responsible to maintain the facilities in the area, including the AAA Pump Station. The flow from this area is not to be computed in determining the Authority’s flow allocation.”

Therefore, the flow of these customers, which are now served and billed by Robbinsville, is excluded from the 2.5 MGD capacity reservation.

Recommendation: Clarify the language in a new Agreement regarding the accounting for flows that are not attributable to Robbinsville’s capacity commitment of 2.5 MGD.

Ultimately, the Agreement does not specify an exact formula or methodology to calculate the appropriate costs of the MMSS between the Townships. While it is clear that the costs of the MMSS must be shared based on proportional flow into the MMSS, the distinction between what costs should be allocated to the MMSS are not clear, nor are which flows should be defined as flow into the MMSS.

This report details the methodology currently used by Hamilton to allocate system costs to Robbinsville and several alternative methodologies based on NewGen’s industry expertise and the data available at the time of the study.

Section 2

HAMILTON WASTEWATER SYSTEM REVENUE REQUIREMENTS

The first step of the rate study is to compile the costs of owning and operating Hamilton’s wastewater utility system. The three cost components included in this analysis are: Operating and Maintenance (O&M), Capital Improvements, and Debt Service (both existing and future). In each scenario, these three cost components total to the amount needed each year to run Hamilton’s wastewater system. These total annual costs must then be allocated to the MMSS to determine the rate per MG to be charged to each Township for the use of the MMSS. While the study is based on the latest available data, there are several major assumptions that are included in the study’s cost projections.

Operating and Maintenance vs. Capital Expenses

Before identifying and projecting the various expenses of the Hamilton wastewater system, it is important to explain the necessity of distinguishing between O&M and capital expenses. Wastewater systems, like any other asset intensive municipal operation (e.g., drinking water, transportation, trash collection, etc.) require a large upfront investment in fixed assets before even the first increment of service can be provided. The building of a wastewater system to provide service is referred to as a system building “capacity”. For a system to be able to provide service it needs to have sufficient capacity. Sufficient capacity is achieved through asset investment, and to leverage economies of scale, wastewater systems are built in large increments of capacity to reduce long-term per-capita costs.

For example, if a municipality needed to serve a customer base with maximum flows of 10.0 MGD, then it would not build ten 1.0 MGD treatment plants each year for ten years. It would build one 10.0 MGD treatment plant all at once. The capital costs related to building the 10.0 MGD plant would be collected from the system’s customers as they connect to the system. If new customers do not connect as quickly as planned, then the capital costs of the system’s capacity must be financed by the customers that do connect. This may spread a high level of capital investment cost over a small amount of active customers.

Conversely, that system’s annual O&M expenses would be more proportional to actual flows. In the early years of the system’s operation, only a few customers would be using the plant’s capacity, so operating costs would be more proportional to system flows. As the system added customers, flows would increase, and operating costs would also increase. Those additional operating cost would then be spread over a larger customer base.

This report will differentiate between operating and capital costs of Hamilton’s wastewater system to properly identify and allocate costs to the MMSS. In general, operating costs are identified and allocated based on the day-to-day spending needs of the system, and capital costs are fixed costs based on historical investments made to build and repair the system.

Operating and Maintenance (O&M) Expenses

The operating expenses of Hamilton’s Wastewater system are organized into several categories:

- Utility Management
- Salaries and Wages
- Statutory Expenses (Benefits)
- Treatment Plant
- Sewer Lines
- Pump Stations

Statutory expenses related to capital (i.e., debt service) will be discussed separately from statutory O&M expenses such as insurance and social security costs. The categories of Sewer Lines, Pump Stations, and Treatment plant are what will be referred to in this report as “functional categories”. These O&M cost categories are directly related to a specific function of Hamilton’s wastewater system. Organizing Hamilton’s wastewater costs in this manner allows for the appropriate accounting for costs and how they should be allocated to the MMSS.

The latest available O&M budget is Hamilton Township’s FY 2021 requested budget. The FY 2021 requested operating budget totals about \$13.97 million as shown in Exhibit 2-1 below.

Table 2-1
Hamilton Wastewater System Total
FY 2021 Requested O&M Budget

| Category | Annual Cost |
|--------------------|---------------------|
| Utility Management | \$1,453,228 |
| Sewer Lines | \$40,000 |
| Pump Stations | \$541,510 |
| Treatment Plant | \$2,629,800 |
| Salaries and Wages | \$6,205,140 |
| Statutory Benefits | \$3,099,901 |
| Total | \$13,969,579 |

The expenses in Table 2-1 reflect the day-to-day operating costs of Hamilton’s wastewater system. The FY 2021 requested budget is escalated by reasonable inflation factors to produce estimated future operating costs for the purposes of projecting future cost allocations in this report. A detailed explanation of those escalation factors will be included in Hamilton’s financial plan and recommended rates report.

Existing Debt Obligations

From time to time, Hamilton Township issues debt to fund wastewater system capital investment, whether to repair, rehabilitate, or replace wastewater system assets. As of 2020, the Township is paying nine outstanding debt obligations with issue dates dating back to 2010. Table 2-2 shows the outstanding principal owed as of 2020 for each debt obligation.

**Table 2-2
Hamilton Wastewater Debt Principal Outstanding
by Issue as of December 31, 2020**

| Loan | Principal Outstanding |
|-------------------------------|------------------------------|
| 2010 NJEIT Loan | \$68,712 |
| 2010 Improvement Bonds | \$3,582,000 |
| 2013 Refunding Bonds | \$8,955,000 |
| 2014 Bonds (Taxable) | \$1,525,000 |
| 2014 Bonds (Non-Taxable) | \$11,912,000 |
| 2015 Bonds | \$1,640,000 |
| 2017B Bonds | \$17,005,000 |
| 2019 Bonds (Taxable) | \$3,005,000 |
| 2019 Bonds (Non-Taxable) | \$3,445,000 |
| Total Debt Outstanding | \$51,137,712 |

Table 2-3 shows the five-year projected debt service payments for each of Hamilton Township’s wastewater related debt issues listed in Table 2-2.

**Table 2-3
Future Hamilton Debt Service Payments – FY 2021 through FY 2025**

| Loan | FY 2021 | FY 2022 | FY 2023 | FY 2024 | FY 2025 |
|---------------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| 2010 NJEIT Loan | \$9,209 | \$9,209 | \$9,209 | \$9,209 | \$9,209 |
| 2010 Improvement Bonds | \$317,786 | \$316,967 | \$320,670 | \$318,880 | \$321,574 |
| 2013 Refunding Bonds | \$2,013,100 | \$2,012,000 | \$2,013,200 | \$2,006,600 | \$2,012,400 |
| 2014 Bonds (Taxable) | \$227,438 | \$221,969 | \$216,063 | \$234,500 | \$227,500 |
| 2014 Bonds (Non-Taxable) | \$877,651 | \$891,901 | \$895,398 | \$892,926 | \$903,958 |
| 2015 Bonds | \$375,650 | \$374,550 | \$374,050 | \$372,800 | \$376,800 |
| 2017B Bonds | \$1,271,825 | \$1,248,075 | \$1,273,075 | \$1,251,700 | \$1,298,325 |
| 2019 Bonds (Taxable) | \$209,835 | \$211,073 | \$203,285 | \$208,285 | \$209,173 |
| 2019 Bonds (Non-Taxable) | \$203,831 | \$201,244 | \$203,600 | \$200,900 | \$203,144 |
| Total Debt Service | \$5,506,325 | \$5,486,988 | \$5,508,550 | \$5,495,800 | \$5,562,082 |

Hamilton’s existing debt service related to the WPC system remains fairly constant over the five-year projection from FY 2021 through FY 2025. The next section of this report will describe assumptions related to potential new debt service to fund the Township’s capital improvement plan.

Capital Improvement Plan

A major component of owning a sustainable wastewater utility is the planning for the rehabilitation and replacement of assets. Hamilton Township’s wastewater system Capital Improvement Plan (CIP) is a detailed listing of projects with planned completion years and anticipated project costs. The Township can either pay cash for projects as they are completed (i.e., from annual revenues, or reserves), or the

Section 2

Township may issue new debt to finance projects with loan proceeds and pay off the loans over a longer term. Tables 2-4 through 2-7 detail the projects included in Hamilton Township’s current wastewater CIP. The Township develops projected projects for four categories: Treatment Plant, Pumping Stations, Collection System, and Miscellaneous Equipment.

Table 2-4
Hamilton Wastewater Capital Improvement Plan – Treatment Plant

| Project | FY 2021 | FY 2022 | FY 2023 | FY 2024 | FY 2025 |
|--|--------------------|---------------------|--------------------|--------------------|--------------------|
| Unanticipated Improvements | \$300,000 | \$300,000 | \$300,000 | \$300,000 | \$300,000 |
| General Engineering | \$300,000 | \$300,000 | \$300,000 | \$300,000 | \$300,000 |
| Grit Chamber Repair & Bypass | \$360,000 | | | | |
| WPCF Electrical Upgrade Phase I | \$1,000,000 | | | | |
| WPCF Electrical Upgrade Phase II | | \$1,530,000 | | | |
| WPCF Electrical Upgrade Phase III | | | \$345,000 | | |
| WPCF Electrical Upgrade Phase IV | | | | \$920,000 | |
| SCADA/Fiber/PLC Upgrades | \$700,000 | | | | |
| RBC Replacement | \$750,000 | \$2,000,000 | \$2,000,000 | \$2,000,000 | \$2,000,000 |
| Digester Engineering Investigation | \$150,000 | | | | |
| Boiler Replacement | \$200,000 | | | | |
| Sludge Filter Press Replacement | \$360,000 | \$4,600,000 | | | |
| Emergency Eye-Wash Upgrade | \$150,000 | | | | |
| Tank Replacements | \$30,000 | | | | |
| Digester Biogas Scrubber System | \$60,000 | \$440,000 | | | |
| Chloromat Building Rehabilitation | \$150,000 | \$1,850,000 | | | |
| Old Laboratory Rehabilitation | \$60,000 | \$200,000 | | | |
| WCPF Roof Replacements | \$100,000 | | | | |
| Curb/Road Repair/Pavement Overlay | \$50,000 | \$450,000 | | | |
| Scrubber #1 Upgrade | | \$60,000 | \$165,000 | | |
| Water Tower Installation | | \$155,000 | | | |
| RBC Building Painting | | | | \$200,000 | \$1,400,000 |
| Master Plan | \$220,000 | | | | |
| NFPA Classification of Plant Buildings | \$25,000 | | | | |
| Plant Perimeter Fence Replacement | \$120,000 | | | | |
| Headworks Building Lighting | \$50,000 | | | | |
| Total Treatment Plant CIP | \$5,135,000 | \$11,885,000 | \$3,110,000 | \$3,720,000 | \$4,000,000 |

Hamilton Wastewater System Revenue Requirements

**Table 2-5
Hamilton Wastewater Capital Improvement Plan – Pumping Stations**

| Project | FY 2021 | FY 2022 | FY 2023 | FY 2024 | FY 2025 |
|-----------------------------------|--------------------|------------------|------------------|------------------|------------------|
| Unanticipated Improvements | \$300,000 | \$300,000 | \$300,000 | \$300,000 | \$300,000 |
| Instrumentation Upgrades | \$30,000 | \$30,000 | \$30,000 | \$30,000 | \$30,000 |
| Emergency Generator | \$180,000 | | | | |
| Yardville-Groveville Pump Station | \$2,000,000 | | | | |
| Melody & Middleton Pump Station | \$500,000 | | | | |
| Kuser Hollow Pump Station | \$100,000 | | | | |
| NJDOT Pump Station Replacement | \$175,000 | \$175,000 | | | |
| Pump Station Driveways | | \$140,000 | | | |
| Pole Barn for Parts Storage | | \$35,000 | | | |
| Route #130 Pump Station Upgrades | | \$100,000 | | | |
| Bioxide Feed System Replacements | | \$20,000 | \$30,000 | | |
| Wet Well Concrete Rehabilitation | | \$45,000 | \$360,000 | | |
| Emergency Generator Replacement | | | \$75,000 | | |
| Total Pump Stations CIP | \$3,285,000 | \$845,000 | \$795,000 | \$330,000 | \$330,000 |

**Table 2-6
Hamilton Wastewater Capital Improvement Plan – Collection System**

| Project | FY 2021 | FY 2022 | FY 2023 | FY 2024 | FY 2025 |
|-------------------------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| Sewer Improvements | \$75,000 | \$75,000 | \$75,000 | \$75,000 | \$75,000 |
| Underground Infrastructure Repair | \$800,000 | \$800,000 | \$800,000 | \$800,000 | \$800,000 |
| Unanticipated Sanitary Sewer | \$250,000 | \$250,000 | \$250,000 | \$250,000 | \$250,000 |
| Vegetation Maintenance | \$50,000 | \$50,000 | \$50,000 | \$50,000 | \$50,000 |
| Force Main Inspections | \$240,000 | \$135,000 | \$55,000 | | |
| Deutzville Force Main Replacement | \$275,000 | | | | |
| Whitehead Force Main Engineering | \$50,000 | | | | |
| Line 42-inch Pipe Crossing Pond Run | | \$150,000 | | | |
| Lining of Larger Diameter Pipe | | \$50,000 | \$500,000 | | |
| Miry Run Interceptor Cleaning | | \$75,000 | \$600,000 | | |
| Lining of Larger Diameter Pipe | | | | \$500,000 | |
| Whitehead Force Main | | | | \$1,000,000 | |
| Total Collection System CIP | \$1,740,000 | \$1,585,000 | \$2,330,000 | \$2,675,000 | \$1,175,000 |

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**Table 2-7
Hamilton Wastewater Capital Improvement Plan – Miscellaneous Equipment**

| Project | FY 2021 | FY 2022 | FY 2023 | FY 2024 | FY 2025 |
|--|------------------|------------------|------------------|-----------------|------------------|
| Lab Equipment Upgrades | \$15,000 | \$15,000 | \$15,000 | \$15,000 | \$15,000 |
| Computers | \$12,000 | \$12,000 | \$12,000 | \$12,000 | \$12,000 |
| Desk & Chair - 6 Supervisors | \$7,000 | | | | |
| Jet/Vac (replacement-#521) | \$450,000 | | | | |
| Lateral Camera (replacement) | \$15,000 | | | | |
| Utility Vehicle (golf-carts) | \$4,000 | \$4,000 | | | \$8,000 |
| Chemical Storage/Transfer Tank | \$20,000 | | | | |
| Tow-Behind Generator | | | \$100,000 | | |
| Tow-Behind Air Compressor | | | \$40,000 | | |
| Ford F-250 Utility Body (replacement) | | \$40,000 | | | |
| Ford Transit Tall Roof (replacement) | | \$40,000 | | | |
| Lawn Mower (replacement) | | \$10,000 | | | \$10,000 |
| Ford F-350 4x4 Utility Body with Plow/Liftgate (replacement) | | | | | \$55,000 |
| Total Misc. Equipment CIP | \$523,000 | \$121,000 | \$167,000 | \$27,000 | \$100,000 |

Table 2-8 summarizes the annual planned capital improvement projects provided to NewGen by Hamilton during the study.

**Table 2-8
Hamilton Wastewater Capital Improvement Plan – Summary**

| | FY 2021 | FY 2022 | FY 2023 | FY 2024 | FY 2025 |
|-----------------------------|---------------------|---------------------|--------------------|--------------------|--------------------|
| Treatment Plant | \$5,135,000 | \$11,885,000 | \$3,110,000 | \$3,720,000 | \$4,000,000 |
| Pumping Stations | \$3,285,000 | \$845,000 | \$795,000 | \$330,000 | \$330,000 |
| Collection System | \$1,740,000 | \$1,585,000 | \$2,330,000 | \$2,675,000 | \$1,175,000 |
| Miscellaneous Equipment | \$523,000 | \$121,000 | \$167,000 | \$27,000 | \$100,000 |
| Total Wastewater CIP | \$10,683,000 | \$14,436,000 | \$6,402,000 | \$6,752,000 | \$5,605,000 |

Note: Capital Planning is an ongoing endeavor and the projects/costs listed above will change in the future. NewGen’s methodology allows for the modification of inputs so that each year changes in plans can be incorporated into the cost allocation formula. The projections contained within this report reflect only the latest available information.

NewGen estimates that future debt issues will be necessary to finance the capital plan described above. While this report includes assumptions regarding future debt service, NewGen understands that future planning will dictate the level and frequency of new debt. NewGen’s methodology regarding the allocation of new debt payments will apply regardless of the level of debt issued by the Township. If Hamilton plans to cash fund any capital projects without the use of capital reserves, then the functional allocation of capital costs should follow NewGen’s approach as well.

Hamilton Wastewater System Revenue Requirements

The Township’s existing capital reserves cannot entirely support the five-year capital program shown in Table 2-8. The estimated capital financing plan included in NewGen’s projections is shown in Table 2-9.²

**Table 2-9
Estimated Wastewater Capital Financing Scenario**

| Cost Component | FY 2021 | FY 2022 | FY 2023 | FY 2024 | FY 2025 |
|-----------------------------|---------------------|---------------------|--------------------|--------------------|--------------------|
| Total Wastewater CIP | \$10,683,000 | \$14,436,000 | \$6,402,000 | \$6,752,000 | \$5,605,000 |
| Funded by Capital Reserves | \$6,733,000 | \$9,536,000 | \$3,352,000 | \$2,502,000 | \$1,155,000 |
| Funded by New Debt Service | \$3,950,000 | \$4,900,000 | \$3,050,000 | \$4,250,000 | \$4,450,000 |

Hamilton Township will utilize currently held capital reserves and a modest amount of new debt service to sustain its planned capital program. Therefore, the annual cash outlays of the system that will need to be recovered by rates are operating and maintenance costs and debt service (existing and future).

Revenue Requirement (RR)

Based on the latest available operating, debt service, and capital expense data and assumptions detailed above, NewGen developed the Total Revenue Requirement forecast for Hamilton Township’s wastewater system shown in Table 2-10. The revenue requirement defines the amount necessary to be funded by rates each year.

**Table 2-10
Hamilton Township Wastewater Revenue Requirement Projection**

| Cost Component | FY 2021 | FY 2022 | FY 2023 | FY 2024 | FY 2025 |
|-----------------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| Operating Expenses | \$13,969,579 | \$14,362,282 | \$14,766,080 | \$15,181,291 | \$15,608,237 |
| Cash Funded Capital | - | - | - | - | - |
| Existing Debt Service | 5,506,325 | 5,486,988 | 5,508,550 | 5,495,800 | 5,562,082 |
| New Debt Service | - | 191,553 | 429,175 | 577,082 | 783,183 |
| Total Revenue Requirements | \$19,475,905 | \$20,040,822 | \$20,703,805 | \$21,254,173 | \$21,953,502 |

NewGen’s study assumes additional debt will need to be incurred in FY 2021 resulting in new debt service payments beginning in FY 2022.

The next section of this report details the currently used and an alternative method developed to allocate Hamilton’s wastewater system revenue requirements to the MMSS and further to Hamilton’s and Robbinsville’s proportional share of the MMSS via a calculated rate per million gallons (MG) for MMSS costs.

² The financing plan shown in Table 2-9 is a hypothetical scenario developed as a part of the study. The actual capital financing plan of Hamilton Township will differ from what is shown in this report.

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MULTI-MUNICIPAL SEWERAGE SYSTEM COST ALLOCATION

This section of the report will detail several methods to allocate costs to a wholesale system. Several use the “Cash Basis”, and one uses the “Utility Basis”. Regardless of the basis used, the key issue is the identification of the costs of Hamilton’s system that should be allocated to the MMSS. Robbinsville is a wholesale user of Hamilton’ system, and therefore should not pay towards a portion of Hamilton’ system costs related to retail level service, i.e., Hamilton’s local collection system, sewer laterals, and customer service and billing. Therefore, there are two steps of the cost allocation process to determine Robbinsville’s costs. First, the portion of Hamilton’s total wastewater system that should be allocated to the MMSS must be developed, then as per the Agreement, the calculation of a per million-gallon (MG) rate that applies to both Townships to determine their proportional share of MMSS costs.

Cash Basis vs. Utility Basis

There are two methodologies for developing a wastewater system’s revenue requirements detailed by the Water Environment Federation’s Manual of Practice 27 – *Financing and Charges for Wastewater Systems*, the preeminent industry textbook for calculating wastewater rates. One is the Cash Basis; the other is the Utility Basis. The methodology used in the previous section to develop Hamilton’s wastewater system revenue requirements is consistent with the Cash Basis of utility ratemaking. Table 3-1 shows the different components of each basis.

Table 3-1
Cash vs. Utility Basis

| Cost Component | Cash Basis | Utility Basis ³ |
|------------------------------------|------------|----------------------------|
| Operating and Maintenance Expenses | ◆ | ◆ |
| Cash Funded Capital Projects | ◆ | |
| Debt Service Principle | ◆ | |
| Debt Service Interest | ◆ | ◆ |
| Contributions to Reserves | ◆ | ◆ |
| Return on Equity | | ◆ |
| Depreciation | | ◆ |

The Cash Basis is the most widely used method for municipally owned utility systems. The Utility Basis is required to be used by most regulated utilities, typically private or investor-owned utilities. This is because the Utility Basis is the standard used by regulatory bodies when evaluating costs and rates of regulated utilities. The most typical reason a municipal system would use the Utility Basis is when that system provides service outside its legal jurisdiction because Utility Basis more clearly defines what can be referred to as an “ownership premium”, that is, the return on investment the owner of a utility system

³ Debt service interest under the Utility basis is stated as a Return on Debt equal to the utility’s system-wide average cost of debt.

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generates by providing service to non-owners, i.e., outside jurisdiction customers. For this reason, some municipal systems use the Utility Basis to calculate cost allocations to outside system or wholesale customers. Typically, this calculation is the result of an agreement between wholesale providers and their customers. In the case of Hamilton and Robbinsville Townships, the study did not indicate a clear desire of both Townships to allocate MMSS costs based on the Utility basis. Nevertheless, NewGen developed a Utility Basis cost allocation, which is described later in this report.

Current Methodology

The current methodology employed by Hamilton Township to allocate system costs to Robbinsville is predicated on the Cash Basis of utility accounting. This section will detail the current O&M and capital cost allocations used by Hamilton Township to allocate wastewater costs to Robbinsville.

Current O&M Cost Allocation

Hamilton uses both direct and indirect allocations to distribute operating costs to the various functions of its system. The direct cost centers are as follows:

- Utility Management
- Treatment Plant
- Sewer Lines
- Pump Stations

Table 3-2 shows the breakdown of Hamilton’s FY 2021 direct O&M cost centers for Hamilton’s entire system. The costs are projected into the future using reasonable escalation rates based on historical cost data of Hamilton’s entire system. A detailed description of the escalation factors is provided in Hamilton’s rate projection report. Overall cost escalation is about 2.0% per year beginning in FY 2022.

**Table 3-2
Projected Direct O&M Costs by Cost Center**

| Direct Cost Center | FY 2021 | FY 2022 | FY 2023 | FY 2024 | FY 2025 |
|-----------------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| Sewer Lines | \$40,000 | \$41,160 | \$42,354 | \$43,582 | \$44,846 |
| Pump Stations | \$541,510 | \$557,214 | \$573,373 | \$590,001 | \$607,111 |
| Treatment Plant | \$2,629,800 | \$2,706,064 | \$2,784,540 | \$2,865,292 | \$2,948,385 |
| Utility Management | \$1,453,228 | \$1,495,372 | \$1,538,737 | \$1,583,361 | \$1,629,278 |
| Total Direct O&M | \$4,664,538 | \$4,799,810 | \$4,939,004 | \$5,082,235 | \$5,229,620 |

The indirect cost centers are:

- Salaries and Wages
- Benefits

The indirect cost centers are essential to the operation of Hamilton’s system; however, they are not directly related to a component of the system’s assets. Rather, they are labor costs incurred to operate and maintain Hamilton’s entire system, and therefore must be allocated to direct cost centers.

**Table 3-3
Projected Indirect O&M Costs**

| Indirect Cost Center | FY 2021 | FY 2022 | FY 2023 | FY 2024 | FY 2025 |
|--------------------------------|-------------|-------------|-------------|-------------|-------------|
| Salaries and Wages | \$6,205,140 | \$6,366,474 | \$6,532,002 | \$6,701,834 | \$6,876,082 |
| Benefits (Insurance, PERS, SS) | \$3,099,901 | \$3,195,998 | \$3,295,074 | \$3,397,221 | \$3,502,535 |

Multi-Municipal Sewerage System Cost Allocation

Allocating indirect cost centers to the direct system components is essential to calculate the true cost of each system component, including both direct and indirect costs. Currently, the indirect cost centers are allocated to the direct cost centers in the manner shown in Table 3-4.

**Table 3-4
Current Indirect O&M Cost Allocation Percentages**

| Direct Cost Centers | Salaries and Wages | Benefits |
|------------------------|--------------------|---------------|
| Sewer Lines | 17.3% | 17.3% |
| Pump Stations | 15.7% | 15.7% |
| Treatment Plant | 58.0% | 58.0% |
| Utility Management | 8.9% | 8.9% |
| Total Allocated | 100.0% | 100.0% |

These percentages represent an allocation of the total salary, wage, and benefit costs to system cost centers so that each cost center reflects the total cost – labor, benefits, materials, supplies, etc., necessary to run Hamilton’s entire system.

The percentages in Table 3-4 are based on the labor costs of employees that spend time working on each system function, which can vary slightly from year to year, and are not the result of a calculation related to the proportion of direct budgeted cost centers. The remainder of this section assumes the percentages listed in Table 3-4 remain constant.

The result of the indirect allocations is an accounting of the overall O&M budget of Hamilton’s wastewater system by function. Costs are escalated based on reasonable inflationary indices at an average rate of about 2.0% per year. A summary of the O&M cost allocations for FY 2021 through FY 2025 is shown in table 3-5.

**Table 3-5
Current Wastewater System O&M Cost By System Function Summary**

| System Function | FY 2021 | FY 2022 | FY 2023 | FY 2024 | FY 2025 |
|----------------------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| <u>Sewer Lines</u> | | | | | |
| Salaries/Benefits allocation % | 17.3% | 17.3% | 17.3% | 17.3% | 17.3% |
| Salaries allocation \$ | \$1,074,730 | \$1,102,673 | \$1,131,343 | \$1,160,758 | \$1,190,937 |
| Benefits allocation \$ | \$536,903 | \$553,547 | \$570,707 | \$588,399 | \$606,639 |
| Sewer Lines Direct O&M | \$40,000 | \$41,160 | \$42,354 | \$43,582 | \$44,846 |
| Total Sewer Lines Costs | \$1,651,633 | \$1,697,380 | \$1,744,403 | \$1,792,738 | \$1,842,422 |
| <u>Pump Stations</u> | | | | | |
| Salaries/Benefits allocation % | 15.7% | 15.7% | 15.7% | 15.7% | 15.7% |
| Salaries allocation \$ | \$976,069 | \$1,001,446 | \$1,027,484 | \$1,054,199 | \$1,081,608 |
| Benefits allocation \$ | \$487,614 | \$502,730 | \$518,315 | \$534,383 | \$550,949 |
| Pump Stations Direct O&M | \$541,510 | \$557,214 | \$573,373 | \$590,001 | \$607,111 |
| Total Pump Stations Costs | \$2,005,193 | \$2,061,391 | \$2,119,172 | \$2,178,582 | \$2,239,668 |

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**Table 3-5
Current Wastewater System O&M Cost By System Function Summary**

| System Function | FY 2021 | FY 2022 | FY 2023 | FY 2024 | FY 2025 |
|--|---------------------|---------------------|---------------------|---------------------|---------------------|
| <u>Treatment Plant</u> | | | | | |
| Salaries/Benefits allocation % | 58.0% | 58.0% | 58.0% | 58.0% | 58.0% |
| Salaries allocation \$ | \$3,600,843 | \$3,694,465 | \$3,790,521 | \$3,889,074 | \$3,990,190 |
| Benefits allocation \$ | \$1,798,873 | \$1,854,638 | \$1,912,131 | \$1,971,407 | \$2,032,521 |
| Treatment Plant Direct O&M | \$2,629,800 | \$2,706,064 | \$2,784,540 | \$2,865,292 | \$2,948,385 |
| Total Treatment Plant Costs | \$8,029,515 | \$8,255,167 | \$8,487,192 | \$8,725,774 | \$8,971,097 |
| <u>Utility Management</u> | | | | | |
| Salaries/Benefits allocation % | 8.9% | 8.9% | 8.9% | 8.9% | 8.9% |
| Salaries allocation \$ | \$553,499 | \$567,889 | \$582,655 | \$597,804 | \$613,347 |
| Benefits allocation \$ | \$276,511 | \$285,083 | \$293,921 | \$303,032 | \$312,426 |
| Utility Management Direct O&M | \$1,453,228 | \$1,495,372 | \$1,538,737 | \$1,583,361 | \$1,629,278 |
| Total Utility Management Costs | \$2,283,238 | \$2,348,344 | \$2,415,313 | \$2,484,197 | \$2,555,051 |
| Total Wastewater System O&M | \$13,969,579 | \$14,362,282 | \$14,766,080 | \$15,181,291 | \$15,608,237 |

Table 3-5 shows the total Hamilton wastewater O&M budget by function, including indirect allocations of salaries and benefits. The next step in the current methodology is to allocate a portion of each function to Robbinsville.

The current allocation to Robbinsville for Hamilton’s total system costs is based on a calculation of Hamilton and Robbinsville inch-miles, Robbinsville’s flow through Hamilton’s sewer lines, and Robbinsville’s flow to Hamilton’s WPCF. Inch-miles is a calculation that multiplies the diameter (in inches) and length (in miles) of a particular sewer line. An example inch-mile calculation is shown in Table 3-6 for a sewer line that is 12 inches in diameter and runs for ten miles.

**Table 3-6
Example Sewer Line Inch-Mile Calculation**

| | | |
|------------------------------|------------|----------------|
| Sewer Line Diameter (inches) | 12 | A |
| Sewer Line Length (miles) | 10 | B |
| Sewer Line Inch-Miles | 120 | = A x B |

This is typically used as a representation of the proportion of a total system a section of sewer line comprises because it accounts for both the length and size of a particular pipe.

The following tables represent the current cost allocation methodology provided to NewGen as a part of the study. The process includes several allocations based on Robbinsville’s proportionate flow at various points in Hamilton’ system for the purposes of allocating Hamilton wastewater costs to the Township of Robbinsville.

Multi-Municipal Sewerage System Cost Allocation

Based on daily flow data, Robbinsville’s percent contribution to daily flows to Hamilton’s WPCF has varied from a low of 10% (10/16/2020) to a high of 29% (12/1/2020). Robbinsville’s average percent contribution of flows to the WPCF over the time period of July 15, 2020 through June 30, 2021 (inclusive) was 18.39%.

Recommendation: Each year, the Robbinsville’s cost allocation should be based on measured flow from July 1 through June 30 (inclusive) each year for both Hamilton’s WPCF and Robbinsville’s flow into Hamilton’s system.

Table 3-7 summarizes the total proportionate flow of Hamilton’s WPCF from the time period available for the study.

**Table 3-7
Robbinsville Percentage Flow of WPCF Calculation (FY 2021)**

| | | |
|---|--------------------|--------------------------|
| 7/15/2020 Meter Reading (gallons) | 0 | A |
| 6/30/2021 Meter Reading (gallons) | 465,213,000 | B |
| Total Gallons | 465,213,000 | = B - A |
| Total Days | 350 | C |
| Robbinsville Average Gallons per Day | 1,329,180 | = (B - A) / C |
| | | |
| WPCF Average Gallons per Day | 7,227,000 | D |
| Robbinsville % of WPCF Flow | 18.39% | = (B - A) / C / D |

Going forward, Hamilton Township should continue to measure and report Robbinsville’s flow to the WPCF. The next several tables will detail the current cost allocations and the data currently used to determine the shared system costs. The current allocation process for sewer lines is shown in Table 3-8.

**Table 3-8
Current Robbinsville Cost Allocation – Sewer Lines O&M**

| Basis | Value |
|---|---------------------------------|
| Inch-Miles of Hamilton’s pipe used by Robbinsville | 330 A |
| % of Flow through Hamilton Pipe from Robbinsville | 50.7% B |
| Robbinsville Flow adjusted Inch-Miles | 167 = A x B |
| | |
| Total Hamilton System Inch-Miles | 3,571 C |
| Robbinsville Flow adjusted Inch-Miles as a % of Total Inch-Miles | 4.7% = A x B / C |
| | |
| Total Sewer Lines Cost | \$1,651,633 D |
| Sewer Line Cost Allocated to Robbinsville | \$77,433 = A x B / C x D |

The percentage of Robbinsville flow through Hamilton pipe (B) is not an easily replicable and definable characteristic of Hamilton’s system. The percentage is developed by Hamilton by tabulating how much flow enters the shared pipe and at what location along the pipe, from Robbinsville to the treatment plant. For example, as Robbinsville’s flow enters Hamilton, it makes up 100% of the pipe flow. As the flow continues downstream, Hamilton connections are made to the gravity main adding flow. The 50.7% is the result of tabulating Robbinsville’s flow as it passes through Hamilton pipes eventually reaching the WPCF.

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The current method used to allocate pump station costs to the MMSS is like the one used for sewer lines; however, it is based on Robbinsville’s flows into the Klockner Pump Station. The pump station allocation is shown in Table 3-9.

**Table 3-9
Current Robbinsville Cost Allocation – Pump Stations O&M**

| Basis | Value | |
|---|------------------|--------------------|
| % of Total Pump Station Flows at Klockner | 28.3% | A |
| % of flow at Klockner from Robbinsville | 46.2% | B |
| Pump Station Flow Factor | 13.1% | = A x B |
| | | |
| Total Pump Stations Cost (FY 2021) | \$2,005,193 | C |
| Pump Stations Cost Allocated to Robbinsville | \$262,171 | = A x B x C |

Again, both percentages A and B in the above table represent variable and difficult to develop (i.e., measure) characteristics. The 28.3% of pump station flow that is attributed to Klockner and the 46.2% of Klockner that is attributed to Robbinsville are the result of flow calculations developed by Hamilton. Percentage B is calculated as described for the sewer lines above. As Robbinsville’s flow enters Hamilton, it makes up 100% of the pipe flow. As the flow continues downstream, Hamilton connections are made to the gravity main adding flow. When the total flow enters the Klockner Pump Station, the percentage attributable to Robbinsville is 46.2%.

The allocation percentage to Robbinsville for both Treatment and Utility Management is 18.39% because that is the flow proportion of Robbinsville at Hamilton’s. Robbinsville’s allocation of Treatment and Utility Management costs are in proportion with the flow contributed to the WPCF (Table 3-7).

Table 3-10 shows the current allocation of the O&M costs to Robbinsville for years FY 2021 through FY 2025.

**Table 3-10
O&M Cost Allocation to Robbinsville – Current Methodology**

| Cost Component | FY 2021 | FY 2022 | FY 2023 | FY 2024 | FY 2025 |
|---|--------------------|--------------------|--------------------|--------------------|--------------------|
| Sewer Lines | \$77,433 | \$79,578 | \$81,782 | \$84,048 | \$86,378 |
| Pump Stations | \$262,171 | \$269,519 | \$277,073 | \$284,841 | \$292,828 |
| Treatment | \$1,476,778 | \$1,518,279 | \$1,560,953 | \$1,604,832 | \$1,649,952 |
| Utility Management | \$419,930 | \$431,904 | \$444,221 | \$456,890 | \$469,921 |
| Total Robbinsville O&M Costs | \$2,236,311 | \$2,299,280 | \$2,364,029 | \$2,430,612 | \$2,499,079 |

Current Capital Cost Allocation

The methodology used by Hamilton to allocate debt service is an “as all others” indirect allocation, based on the total O&M costs allocated to Robbinsville (excluding Utility Management) as a percentage of total system O&M Costs (also excluding Utility Management). Table 3-11 shows the current debt service allocation to Robbinsville.

**Table 3-11
Current Robbinsville Capital Allocation – Debt Service**

| Basis | Value | |
|--|---------------------|----------------------|
| Total Hamilton Wastewater System Debt Service (FY 2021) | \$5,506,325 | A |
| Calculation of Robbinsville Debt Service Allocation % | | |
| Sewer Line Cost Allocated to Robbinsville | \$77,433 | |
| Pump Stations Cost Allocated to Robbinsville | \$262,171 | |
| Treatment Cost Allocated to Robbinsville | \$1,476,778 | |
| Total Robbinsville O&M Costs (excluding Utility Management) | \$1,816,381 | B |
| Total System O&M Costs (excluding Utility Management) | \$11,686,342 | C |
| Robbinsville O&M Costs as a % of Total System O&M Costs | 15.5% | = B / C |
| Total Robbinsville Debt Service Costs | \$855,836 | = A x (B / C) |

This allocation method does not consider the specific functions in which the capital investments were made. Also, debt service expense is not adjusted based on any asset characteristic such as inch-miles, or system capacity. The debt service allocation described above does not reflect an appropriate, data-based cost allocation to Robbinsville. Table 3-12 shows the FY 2021 through FY 2025 projection of Robbinsville’s debt service cost based on the current methodology.

**Table 3-12
Debt Service Cost Allocation to Robbinsville – Current Methodology**

| Cost Component | FY 2021 | FY 2022 | FY 2023 | FY 2024 | FY 2025 |
|-------------------------------|----------------|----------------|----------------|----------------|----------------|
| Total Robbinsville Debt Costs | \$855,836 | \$906,356 | \$994,230 | \$1,017,719 | \$1,060,751 |

Robbinsville’s O&M and Debt Service costs are added to arrive at the total annual cost to Robbinsville for the use of the MMSS, as shown in Table 3-13 for FY 2021 through FY 2025.

**Table 3-13
Total Annual Cost Summary – Current Methodology**

| Cost Component | FY 2021 | FY 2022 | FY 2023 | FY 2024 | FY 2025 |
|---------------------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| Total Robbinsville O&M Cost | \$2,236,311 | \$2,299,280 | \$2,364,029 | \$2,430,612 | \$2,499,079 |
| Total Robbinsville Debt Cost | \$855,836 | \$906,356 | \$994,230 | \$1,017,719 | \$1,060,751 |
| Total Robbinsville Annual Cost | \$3,092,147 | \$3,205,636 | \$3,358,260 | \$3,448,331 | \$3,559,830 |
| Total Hamilton Annual Cost | \$16,383,758 | \$16,987,774 | \$17,804,035 | \$18,280,020 | \$18,872,020 |
| Total Hamilton System Costs | \$19,475,905 | \$20,193,409 | \$21,162,295 | \$21,728,351 | \$22,431,850 |

Summary of Current Cost Allocation Methodology

The current cost allocation methodology's operating cost allocation reflects a reasonable effort to apportion Hamilton's wastewater system costs to Robbinsville. However, in several instances, Robbinsville's flow characteristics at various points in Hamilton's system are used to apportion costs. For instance, the sewer line O&M allocation is based on 50.7% of flow through the MMSS sewer lines being from Robbinsville. Similarly, the pump station allocation is based on 46.2% of Klockner pump station flows being from Robbinsville. These values are not direct measurements of flow, but rather the results of calculations. If these calculations can be demonstrated to, understood by, and agreed to by both Townships, then it is possible for them to be used in the MMSS cost allocation. At the time of this study, the method and data supporting these percentages was unavailable.

The current debt cost allocation methodology apportions debt service costs to Robbinsville based on the ratio of Robbinsville's allocated O&M cost to total system O&M costs. This calculation does not consider any apportionment of Hamilton's debt service to the MMSS or its components (i.e., pipes, pump stations, and treatment). While the O&M allocations are developed using Robbinsville's flow characteristics, there is no rational nexus between the projects funded by Hamilton's debt and the debt cost allocation to Robbinsville.

Alternative Shared System Cash Basis Methodology

The following section details an alternative cash basis cost allocation methodology that complies with Article 10 of the Agreement. While like the current methodology, there are several key points at which this methodology differs.

First, the cost allocation process is different. The costs of Hamilton's entire system are allocated to the MMSS first, then a per million-gallon rate for the MMSS is developed based on total MMSS costs, and then that rate is then applied to the Townships based on their contribution to the MMSS, which is defined as each Township's total flow to the WPCF. This is an industry standard "shared system" approach, rather than identifying flow contributions on an asset-by-asset basis.

Another key difference is the factors used to allocate both O&M and Capital costs to the MMSS. This section will detail the alternative O&M and debt cost allocations.

Alternative O&M Cost Allocation

The first step in allocating operating costs to the MMSS in the alternative methodology differs from the current method in how Utility Administration is allocated. The current methodology treats Utility Administration as a direct cost, whereas the alternative methodology treats it as an indirect cost. This is a recommendation based on the types of charges booked in the Utility Management cost center, which are not directly tied to any particular asset or service provided by the system (office supplies, postage/shipping, uniforms, licenses, vehicle maintenance, etc.).

The indirect cost allocation process continues the use of a proportionality calculation based on labor. Therefore, the first step is to determine the various indirect allocation percentages based on the three calculations shown in Table 3-14.

**Table 3-14
Alternative Indirect O&M Cost Allocation Percentages**

| Direct Cost Center | FY 2021 Direct Cost | Alternative Allocation | Current Allocation⁴ |
|---------------------------|----------------------------|-------------------------------|---------------------------------------|
| Sewer Lines | \$40,000 | 19.0% | 17.3% |
| Pump Stations | \$541,510 | 17.3% | 15.7% |
| Treatment Plant | \$2,629,800 | 63.7% | 58.0% |
| Totals | \$3,211,310 | 100.0% | 91.1% |

Like the current methodology, these percentages are based on the labor costs of employees that spend time working on each system function, which can vary slightly from year to year, and are not the result of a calculation related to the proportion of direct budgeted cost centers. The alternative percentages shown in Table 3-14 were calculated by NewGen by spreading the current allocation of Utility Management (8.9%, shown in Table 3-4) over the other three direct cost centers in proportion to their current allocation.

Recommendation: Distribute Labor, Benefit, and Utility Management costs across the function cost centers of Sewer Lines, Pump Stations, and Treatment Plant to develop functional costs of the Hamilton wastewater system.

The remainder of this section assumes the use of the percentages listed in Table 3-14.

The indirect cost components of Salaries, Benefits, and Utility Management, are shown in table 3-15.

**Table 3-15
Alternative Indirect Cost Components**

| Indirect Cost Center | FY 2021 | FY 2022 | FY 2023 | FY 2024 | FY 2025 |
|--------------------------------|----------------|----------------|----------------|----------------|----------------|
| Salaries and Wages | \$6,205,140 | \$6,366,474 | \$6,532,002 | \$6,701,834 | \$6,876,082 |
| Benefits (Insurance, PERS, SS) | \$3,099,901 | \$3,195,998 | \$3,295,074 | \$3,397,221 | \$3,502,535 |
| Utility Management | \$1,453,228 | \$1,495,372 | \$1,538,737 | \$1,583,361 | \$1,629,278 |

The indirect allocation process remains the same as the current methodology, only now there are three direct and three indirect cost centers. The alternative MMSS O&M cost allocation is shown in Table 3-16.

⁴ The remainder of the current allocation is Utility Management, which is accounted for in the updated allocation as an indirect cost.

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**Table 3-16
Alternative O&M Cost By System Function Summary**

| System Function | FY 2021 | FY 2022 | FY 2023 | FY 2024 | FY 2025 |
|--|---------------------|---------------------|---------------------|---------------------|---------------------|
| <u>Sewer Lines</u> | | | | | |
| Indirect allocation % | 19.0% | 19.0% | 19.0% | 19.0% | 19.0% |
| Salaries allocation \$ | \$1,179,985 | \$1,210,665 | \$1,242,142 | \$1,274,438 | \$1,307,573 |
| Benefits allocation \$ | \$589,485 | \$607,759 | \$626,599 | \$646,024 | \$666,051 |
| Utility Management allocation \$ | \$276,349 | \$284,364 | \$292,610 | \$301,096 | \$309,828 |
| Sewer Lines Direct O&M | \$40,000 | \$41,160 | \$42,354 | \$43,582 | \$44,846 |
| Total Sewer Lines O&M Costs | \$2,085,819 | \$2,143,947 | \$2,203,705 | \$2,265,139 | \$2,328,297 |
| <u>Pump Stations</u> | | | | | |
| Indirect allocation % | 17.3% | 17.3% | 17.3% | 17.3% | 17.3% |
| Salaries allocation \$ | \$1,071,661 | \$1,099,524 | \$1,128,111 | \$1,157,442 | \$1,187,536 |
| Benefits allocation \$ | \$535,369 | \$551,966 | \$569,077 | \$586,718 | \$604,906 |
| Utility Management allocation \$ | \$250,980 | \$258,259 | \$265,748 | \$273,455 | \$281,385 |
| Pump Stations Direct O&M | \$541,510 | \$557,214 | \$573,373 | \$590,001 | \$607,111 |
| Total Pump Stations O&M Costs | \$2,399,521 | \$2,466,962 | \$2,536,310 | \$2,607,616 | \$2,680,938 |
| <u>Treatment Plant</u> | | | | | |
| Indirect allocation % | 63.7% | 63.7% | 63.7% | 63.7% | 63.7% |
| Salaries allocation \$ | \$3,953,495 | \$4,056,285 | \$4,161,749 | \$4,269,954 | \$4,380,973 |
| Benefits allocation \$ | \$1,975,047 | \$2,036,273 | \$2,099,398 | \$2,164,479 | \$2,231,578 |
| Utility Management allocation \$ | \$925,898 | \$952,749 | \$980,379 | \$1,008,810 | \$1,038,066 |
| Treatment Plant Direct O&M | \$2,629,800 | \$2,706,064 | \$2,784,540 | \$2,865,292 | \$2,948,385 |
| Total Treatment Plant O&M Costs | \$9,484,240 | \$9,751,372 | \$10,026,066 | \$10,308,535 | \$10,599,002 |
| Total System O&M Costs | \$13,969,579 | \$14,362,282 | \$14,766,080 | \$15,181,291 | \$15,608,237 |

The total system O&M Costs remains the same as the current methodology, however the direct function totals now include an indirect assignment of Utility Management.

The next step in the alternative O&M cost allocation is to distribute the functionalized costs to the MMSS. NewGen recommends using the allocation factors shown in Table 3-17 to distribute O&M costs to the MMSS based on easily measurable Hamilton system characteristics.

**Table 3-17
Alternative MMSS O&M Cost Allocation Factors**

| Basis | Value | |
|---|---------------|----------------|
| Sewer Line Allocation Factor | | |
| MMSS Inch-Miles | 330 | A |
| Total System Inch-Miles | 3,571 | B |
| MMSS Sewer Line O&M Allocation | 9.3% | = A / B |
| Pump Station Allocation Factor | | |
| Klockner Pump Station Capacity (MGD) | 14.10 | C |
| Total Pump Stations Capacity (MGD) | 28.81 | D |
| MMSS Pump Station O&M Allocation | 48.9% | = C / D |
| Treatment Plant Allocation Factor | | |
| MMSS Treatment Capacity | 16.0 | E |
| Hamilton WPCF Permitted Capacity (MGD) | 16.0 | F |
| MMSS Treatment O&M Allocation | 100.0% | = E / F |

MMSS inch-miles are the pipes in Hamilton’s system that are shared by both Townships. This calculation is a reasonable basis for the proportional allocation of Hamilton’s total sewer line costs to the shared MMSS system.

The Klockner pump station is the only Hamilton pump station shared by both Townships. Using the Klockner pump station capacity relative to total system capacity is a reasonable basis for the proportional allocation of Hamilton’s total pump station costs to the shared MMSS system.

Both Hamilton and Robbinsville utilize Hamilton’s entire WPCF, so all WPCF costs should be considered part of the MMSS.

Each of the factors above is based on a specific system characteristic related to the MMSS as a portion of the total system. Unlike the allocation factors currently used (shown in Tables 3-8 and 3-9), these characteristics are fixed unless major capital investments are made, such as line extensions/upsizing, pump station additions, removals, or upsizing, or treatment plant capacity expansion or reduction. Absent such changes in capital assets, the allocation factors shown in Table 3-17 will remain as they are. Using them as the basis for allocating total system costs to the MMSS provides consistency and predictability in the cost allocation process.

Recommendation: Allocate O&M costs to the MMSS based on fixed asset characteristics related to each system function, such as inch-miles and design capacity, as shown in Table 3-17. Update these characteristics consistent with any changes in fixed assets or treatment capacity.

Using the cost allocation factors in Table 3-17, the final step of the alternative cash basis O&M allocation to the MMSS is shown in Table 3-18 for FY 2021 through FY 2025.

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Table 3-18
Total System O&M Allocation to MMSS – Alternative Methodology

| Cost Component | FY 2021 | FY 2022 | FY 2023 | FY 2024 | FY 2025 |
|---|---------------------|---------------------|---------------------|---------------------|---------------------|
| <u>Sewer Lines</u> | | | | | |
| Total System Sewer Line O&M Cost | \$2,085,819 | \$2,143,947 | \$2,203,705 | \$2,265,139 | \$2,328,297 |
| MMSS Allocation % | 9.3% | 9.3% | 9.3% | 9.3% | 9.3% |
| MMSS Sewer Line O&M Allocation \$ | \$192,996 | \$198,375 | \$203,904 | \$209,588 | \$215,432 |
| <u>Pump Stations</u> | | | | | |
| Total System Pump Station O&M Cost | \$2,399,521 | \$2,466,962 | \$2,536,310 | \$2,607,616 | \$2,680,938 |
| MMSS Allocation % | 48.9% | 48.9% | 48.9% | 48.9% | 48.9% |
| MMSS Pump Station O&M Allocation \$ | \$1,174,380 | \$1,207,388 | \$1,241,328 | \$1,276,227 | \$1,312,113 |
| <u>Treatment Plant</u> | | | | | |
| Total System Treatment O&M Cost | \$9,484,240 | \$9,751,372 | \$10,026,066 | \$10,308,535 | \$10,599,002 |
| MMSS Allocation % | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |
| MMSS Treatment Plant O&M Allocation \$ | \$9,484,240 | \$9,751,372 | \$10,026,066 | \$10,308,535 | \$10,599,002 |
| Total MMSS O&M Cost Allocation | \$10,851,616 | \$11,157,135 | \$11,471,297 | \$11,794,350 | \$12,126,546 |

Alternative Capital Cost Allocation

The current capital cost allocation does not consider the asset categories in which Hamilton has invested in the past. In fact, the current capital allocation is based on a proportional share of O&M expenses, which is a less equitable basis for capital cost allocation. NewGen recommends allocating capital costs (i.e., debt service) based on the specific asset categories into which the proceeds of debt were invested.

As a part of the study, NewGen requested the most detailed available data regarding the various debt obligations of Hamilton Township related to the wastewater system. The most detailed information available were the ordinances adopted by Hamilton Township to authorize the issuance of debt and the associated capital plans for each year's capital program. In each ordinance and capital plan, the functional component of the system is stated for each project being funded. A summary of Hamilton's wastewater capital spending related to currently payable debt issues, by year and asset category, is shown in Table 3-19.

Multi-Municipal Sewerage System Cost Allocation

**Table 3-19
Hamilton Wastewater Capital Spending: 2010 through 2020**

| Year | Misc. Sewer | Sewer Lines | Pump Stations | Treatment Plant | Grand Total |
|----------------------------|--------------------|---------------------|--------------------|---------------------|----------------------|
| 2010 | \$624,450 | \$8,918,500 | \$1,120,000 | \$12,726,050 | \$23,389,000 |
| 2011 | \$60,000 | \$2,000,000 | \$200,000 | \$2,510,000 | \$23,389,000 |
| 2012 | \$399,000 | \$2,550,000 | \$690,000 | \$1,152,500 | \$23,389,000 |
| 2013 | \$565,500 | \$3,615,000 | \$850,000 | \$1,835,000 | \$23,389,000 |
| 2014 | \$424,000 | \$1,300,000 | \$1,300,000 | \$3,183,000 | \$23,389,000 |
| 2015 | \$120,000 | \$2,900,000 | \$970,000 | \$1,180,000 | \$5,911,000 |
| 2016 | \$192,000 | \$1,150,000 | \$725,000 | \$2,280,000 | \$6,379,050 |
| 2017 | \$107,000 | \$1,400,000 | \$600,000 | \$3,004,000 | \$6,116,700 |
| 2018 | \$306,000 | \$2,050,000 | \$175,000 | \$3,530,000 | \$6,800,000 |
| Total Debt Authorizations | \$2,797,950 | \$25,883,500 | \$6,630,000 | \$31,400,550 | \$142,151,750 |
| Direct Allocation % | | 40.5% | 10.4% | 49.1% | |

The direct allocation percentages in Table 3-19 are the percent of each directly assigned category only among directly assigned categories – that is, it excludes the Misc. Sewer category. Periodically, Hamilton Township will authorize additional capital spending for the wastewater system. These investments should be added to the above allocations as they occur. Similarly, as debt service is paid off, older capital investments should be removed from the above calculation.

Recommendation: Use the historical record of capital investment to allocate debt service to system functions and re-allocate the allocations each year based on any capital investments approved by Hamilton’s Council. Remove capital spending from the calculation as debt issues are paid off in full.

NewGen recommends allocating Hamilton’s total wastewater debt service to the MMSS based on the above allocation factors developed in Table 3-19, as shown in Table 3-20.

**Table 3-20
Hamilton System Functional Allocation – Debt Service**

| Basis | Value | |
|---|--------------------|----------------|
| Total Hamilton System Debt Service | \$5,506,325 | A |
| <u>Debt Service Allocation %</u> | | |
| Sewer Line Debt % | 40.5% | B |
| Pump Stations Debt % | 10.4% | C |
| Treatment Plant Debt % | 49.1% | D |
| <u>Debt Service Allocation \$</u> | | |
| Sewer Line Debt Service | \$2,229,916 | = A x B |
| Pump Stations Debt Service | \$571,188 | = A x C |
| Treatment Plant Debt Service | \$2,705,221 | = A x D |

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The total debt service allocated to each component is then further distributed to the MMSS based on the characteristics of the system’s assets that comprise the MMSS, as detailed in Table 3-21. These are the same allocations used in the previous O&M section of this report (Table 3-17).

**Table 3-21
Alternative MMSS Capital Cost Allocation Factors**

| Basis | Value |
|---|-----------------------|
| Sewer Line Allocation Factor | |
| MMSS Inch-Miles | 330 A |
| Total System Inch-Miles | 3,571 B |
| MMSS Sewer Line Debt Service Allocation | 9.3% = A / B |
| Pump Station Allocation Factor | |
| Klockner Pump Station Capacity (MGD) | 14.10 C |
| Total Pump Stations Capacity (MGD) | 28.81 D |
| MMSS Pump Station Debt Service Allocation | 48.9% = C / D |
| Treatment Plant Allocation Factor | |
| MMSS Treatment Capacity | 16.0 E |
| Hamilton WPCF Permitted Capacity (MGD) | 16.0 F |
| MMSS Treatment Plant Debt Service Allocation | 100.0% = E / F |

The capital allocations above are based purely on system capital attributes. That is, the capital allocations of the system to the MMSS are not based on system operating characteristics such as flow, but rather the fixed asset characteristics of the system.

Recommendation: Allocate capital costs to the MMSS based on fixed asset characteristics related to each system function, such as inch-miles and design capacity, as shown in Table 3-21. Update these characteristics consistent with any changes in fixed assets or treatment capacity.

As mentioned previously, these characteristics are fixed in nature and provide a replicable method to allocate capital costs. The ultimate allocation of MMSS capital costs, as per the Agreement, are distributed to the Townships based on a MMSS rate per MG. Table 3-22 below shows the estimated debt service allocations to the MMSS based on the estimated financing plan developed as a part of NewGen’s study.

**Table 3-22
System Capital Allocation to MMSS – Alternative Methodology**

| Cost Component | FY 2021 | FY 2022 | FY 2023 | FY 2024 | FY 2025 |
|--|--------------------|--------------------|--------------------|--------------------|--------------------|
| <u>Sewer Lines</u> | | | | | |
| Total System Sewer Line Debt Cost | \$2,229,916 | \$2,264,275 | \$2,311,439 | \$2,362,772 | \$2,478,722 |
| MMSS Allocation % | 9.3% | 9.3% | 9.3% | 9.3% | 9.3% |
| MMSS Sewer Line Debt Allocation \$ | \$206,329 | \$209,508 | \$213,872 | \$218,622 | \$229,351 |
| <u>Pump Stations</u> | | | | | |
| Total System Pump Station Debt Cost | \$571,188 | \$697,328 | \$720,054 | \$738,008 | \$752,885 |
| MMSS Allocation % | 48.9% | 48.9% | 48.9% | 48.9% | 48.9% |
| MMSS Pump Station Debt Allocation \$ | \$279,552 | \$341,288 | \$352,411 | \$361,198 | \$368,479 |
| <u>Treatment Plant</u> | | | | | |
| Total System Treatment Plant Debt Cost | \$2,705,221 | \$2,856,843 | \$3,349,106 | \$3,426,616 | \$3,571,687 |
| MMSS Allocation % | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |
| MMSS Treatment Plant Debt Allocation \$ | \$2,705,221 | \$2,856,843 | \$3,349,106 | \$3,426,616 | \$3,571,687 |
| Total MMSS Debt Cost Allocation | \$3,191,103 | \$3,407,640 | \$3,915,389 | \$4,006,436 | \$4,169,516 |

The final step in the alternative shared system cash basis allocation is to calculate a rate per MG for use of the MMSS.

Industry standard defines flow contribution for a wholesale customer on a shared system basis. Therefore, flow contribution to the MMSS is defined as each Township’s contribution to Hamilton’s WPCF.

For the time period from July 1, 2020 through June 30, 2021 (inclusive), Hamilton’s WPCF averaged 7,227,000 gallons per day. This equates to 2,638 million gallons (MG). Based on industry standard practice, NewGen determined that the total amount of treated flow should be the basis for the MMSS system rate payable by both Hamilton and Robbinsville.

**Table 3-23
Determination of MMSS Rate per MG – Alternative Methodology**

| Cost Component | FY 2021 | FY 2022 | FY 2023 | FY 2024 | FY 2025 |
|---------------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| Total MMSS O&M Cost Allocation | \$10,851,616 | \$11,157,135 | \$11,471,297 | \$11,794,350 | \$12,126,546 |
| Total MMSS Debt Cost Allocation | \$3,191,103 | \$3,407,640 | \$3,915,389 | \$4,006,436 | \$4,169,516 |
| Total MMSS Annual Cost | \$14,042,719 | \$14,564,774 | \$15,386,687 | \$15,800,787 | \$16,296,063 |
| Total MMSS Flow (MG) | 2,638 | 2,638 | 2,638 | 2,638 | 2,638 |
| MMSS Rate per MG | \$5,324 | \$5,521 | \$5,833 | \$5,990 | \$6,178 |

For the period from July 15, 2020 through June 30, 2021 (inclusive), a total of 350 days, Robbinsville’s flow meter averaged 1,329,180 gallons per day (refer to Table 3-11). Annualizing this total over 365 days (1,329,180 x 365) results in an annual usage of 485 million gallons.

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The cost distribution to the Townships based on the rate per MG applied to each Township's contribution to the MMSS is shown in Table 3-24. Again, by an industry standard definition, the flow contributed by each Township to the WPCF is defined as their contribution to the MMSS.

**Table 3-24
Calculation of Annual MMSS Cost by Township – Alternative Methodology**

| Cost Component | FY 2021 | FY 2022 | FY 2023 | FY 2024 | FY 2025 |
|--|---------------------|---------------------|---------------------|---------------------|---------------------|
| MMSS Annual Flow (MG) | 2,638 | 2,638 | 2,638 | 2,638 | 2,638 |
| Robbinsville Annual Flow (MG) | 485 | 485 | 485 | 485 | 485 |
| Hamilton Annual Flow (MG) | 2,153 | 2,153 | 2,153 | 2,153 | 2,153 |
| MMSS System Rate per MG | \$5,324 | \$5,521 | \$5,833 | \$5,990 | \$6,178 |
| Total Robbinsville Annual MMSS Cost | \$2,582,718 | \$2,678,949 | \$2,830,164 | \$2,906,394 | \$2,997,495 |
| Total Hamilton Annual MMSS Cost | \$11,460,001 | \$11,886,999 | \$12,557,968 | \$12,896,212 | \$13,300,447 |
| Total Hamilton Annual Non-MMSS Cost | \$5,433,186 | \$5,627,462 | \$5,774,163 | \$5,925,745 | \$6,133,907 |
| Total Hamilton System Costs | \$19,475,905 | \$20,193,409 | \$21,162,295 | \$21,728,351 | \$22,431,850 |

The Hamilton Non-MMSS costs shown in Table 3-24 are the costs not attributable to the MMSS based on the allocation factors shown previously in Tables 3-17 and 3-21.

The following table shows a summary of the Alternative shared system cost allocation and the application of a per MG rate for the sample year FY 2021. This table should be updated annually to determine the estimated rate for the next fiscal year, and then populated with actual data to complete a final accounting of the MMSS cost allocation during the last quarter of each fiscal year.

**Table 3-25
Summary of Alternative Cost Allocation Process**

| FY 2021 | Budget | Admin Cost Allocation | Cost Center Allocation | Allocation Factor to MMSS | MMSS O&M | Debt Service | Allocation Factor to MMSS | MMSS Debt Service | Total MMSS Cost |
|----------------|---------------------|-----------------------|------------------------|---------------------------|------------------------|---------------------------------|---------------------------|--------------------|-----------------------|
| Pipes | \$40,000 | 19.02% | \$2,085,819 | 9.25% | \$192,996 | \$2,229,916 | 9.25% | \$206,329 | \$399,325 |
| Pumping | \$541,510 | 17.27% | \$2,399,521 | 48.94% | \$1,174,380 | \$571,188 | 48.94% | \$279,552 | \$1,453,933 |
| Treatment | \$2,629,800 | 63.71% | \$9,484,240 | 100.00% | \$9,484,240 | \$2,705,221 | 100.00% | \$2,705,221 | \$12,189,461 |
| Utility Admin. | \$10,758,269 | | \$ - | | | | | | |
| Totals | \$13,969,579 | | \$13,969,579 | | \$10,851,616 | \$5,506,325 | | \$3,191,103 | \$14,042,719 |
| | | | | | | Unit Cost (\$/MG) | | | \$5,324 |
| | | | | | | Average Daily Flow (GPD) | | (MG) | Annual Billing |
| | | | | | Total MMSS Flow | 7,227,000 | | 2,638 | |
| | | | | | Robbinsville Flow | 1,329,180 | | 485 | \$2,582,718 |
| | | | | | Hamilton Flow | 5,897,820 | | 2,153 | \$11,460,001 |

Asset-by-Asset Allocation Methodology

The modified cash basis approach detailed previously in this section uses what can be referred to as a “shared system” approach to cost allocation and rate setting. The shared system approach considers all contributions to the system, i.e., flow, as the basis for determining cost allocations to customers for the MMSS system as a whole. That means that while MMSS costs are calculated on an asset-by-asset basis, the contribution to those assets is determined only by the system-wide contribution to the MMSS, which is the flow contribution of each Township to Hamilton’s system, and ultimately Hamilton’s WPCF.

While this shared system approach is an industry standard, the Townships may consider an “asset-by-asset” approach, which considers separate flow (and therefore cost) proportions for each system asset based on the proportional contribution of each Township to each system component, i.e., pipes, pump stations, and the WPCF. For example, Robbinsville’s proportional flow to the Klockner pump station may be 50.7%, and therefore 50.7% of pump station costs are allocated to Robbinsville, whereas Robbinsville’s proportional flow to the WPCF is 18.4%, and therefore 18.4% of treatment plant costs are allocated to Robbinsville. Assuming the MMSS allocation factors remain the same as the shared system example discussed previously, Table 3-26 shows the outcome of assigning system costs on an asset-by-asset basis using different flow contributions for each asset class.

Table 3-26
Asset-by-Asset Cost Allocation Alternative

| | FY 2021 | FY 2022 | FY 2023 | FY 2024 | FY 2025 |
|---|---------------------|---------------------|---------------------|---------------------|---------------------|
| Sewer Lines | | | | | |
| Total System Sewer Line Costs | \$4,315,735 | \$4,408,222 | \$4,515,144 | \$4,627,911 | \$4,807,019 |
| MMSS Allocation % | 9.3% | 9.3% | 9.3% | 9.3% | 9.3% |
| % of Sewer Line Flow from Robbinsville | 50.7% | 50.7% | 50.7% | 50.7% | 50.7% |
| MMSS Sewer Line Allocation \$ | \$202,333 | \$206,669 | \$211,682 | \$216,969 | \$225,366 |
| Pump Stations | | | | | |
| Total System Pump Station Costs | \$2,970,708 | \$3,164,291 | \$3,256,363 | \$3,345,624 | \$3,433,823 |
| MMSS Allocation % | 48.9% | 48.9% | 48.9% | 48.9% | 48.9% |
| % of Pump Station Flow from Robbinsville | 46.2% | 46.2% | 46.2% | 46.2% | 46.2% |
| MMSS Pump Station Allocation \$ | \$671,717 | \$715,488 | \$736,307 | \$756,490 | \$776,433 |
| Treatment Plant | | | | | |
| Total System Treatment Plant Costs | \$12,189,461 | \$12,608,215 | \$13,375,172 | \$13,735,151 | \$14,170,688 |
| MMSS Allocation % | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |
| % of Treatment Plant Flow from Robbinsville | 18.4% | 18.4% | 18.4% | 18.4% | 18.4% |
| MMSS Treatment Allocation \$ | \$2,241,869 | \$2,318,886 | \$2,459,943 | \$2,526,150 | \$2,606,254 |
| Total Robbinsville Annual MMSS Cost | \$3,115,919 | \$3,241,638 | \$3,408,665 | \$3,500,531 | \$3,609,006 |
| Total Hamilton Annual MMSS Cost | \$10,926,800 | \$11,324,310 | \$11,979,467 | \$12,302,075 | \$12,688,937 |
| Total Hamilton Annual Non-MMSS Cost | \$5,433,186 | \$5,627,462 | \$5,774,163 | \$5,925,745 | \$6,133,907 |
| Total Hamilton System Costs | \$19,475,905 | \$20,193,409 | \$21,162,295 | \$21,728,351 | \$22,431,850 |

Total System Allocation Methodology

Another alternative that may be considered is a method that apportions Robbinsville's costs based on its contribution to Hamilton's total system. That is, treating Robbinsville as another customer of Hamilton's system. The allocation of system costs is not necessary under this alternative, as Robbinsville's cost would be based solely on its flow contribution to Hamilton's WPCF.

Table 3-27 shows the result of the Total System allocation.

Table 3-27
Total System Cost Allocation Method

| Cost Component | FY 2021 | FY 2022 | FY 2023 | FY 2024 | FY 2025 |
|---------------------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| Total Hamilton System Costs | \$19,475,905 | \$20,193,409 | \$21,162,295 | \$21,728,351 | \$22,431,850 |
| Robbinsville % of WPCF Flow | 18.4% | 18.4% | 18.4% | 18.4% | 18.4% |
| Robbinsville Total Annual Cost | \$3,581,982 | \$3,713,944 | \$3,892,140 | \$3,996,249 | \$4,125,635 |
| Hamilton Total Annual Cost | \$15,893,923 | \$16,479,465 | \$17,270,154 | \$17,732,102 | \$18,306,214 |

The total system allocation distributes costs to Robbinsville without considering any apportionment to a shared system and is the equivalent of treating Robbinsville as a retail level customer. This approach is common for regional, wholesale only wastewater systems, when all contributing parties own and operate their own local collection system. It is not common when one party is an owner of both a retail and wholesale level system. In such cases, it is an industry standard to recognize that the wholesale customer is provided a different level of service when compared to a retail customer.

Table 3-28 shows a comparison of the four cash basis cost allocations described previously in this report.

Table 3-28
Comparison of Alternative and Current Cash Basis Cost Allocation

| Cost Component | FY 2021 | FY 2022 | FY 2023 | FY 2024 | FY 2025 |
|---|----------------|----------------|----------------|----------------|----------------|
| Total Robbinsville MMSS Cost (Current) | \$3,092,147 | \$3,205,636 | \$3,358,260 | \$3,448,331 | \$3,559,830 |
| Total Robbinsville MMSS Cost (Shared System) | \$2,582,718 | \$2,678,949 | \$2,830,164 | \$2,906,394 | \$2,997,495 |
| Total Robbinsville MMSS Cost (Asset-by-Asset) | \$3,115,919 | \$3,241,638 | \$3,408,665 | \$3,500,531 | \$3,609,006 |
| Total Robbinsville MMSS Cost (Total System) | \$3,581,982 | \$3,713,944 | \$3,892,140 | \$3,996,249 | \$4,125,635 |

Utility Basis Alternative

This report will not fully detail the Utility Basis calculation because NewGen was limited in the data available to properly develop the Utility Basis for Hamilton's system. The utility basis relies on a cost component called the system's "Rate Base", which is a calculation of the system's depreciated asset value. Because of Hamilton's accounting structure, the depreciated asset value is not currently available for the system. While NewGen developed a Utility Basis alternative using non-depreciated asset values that Hamilton does track, the results did not reflect an appropriate cost allocation to the MMSS

As a Title 40 municipal utility, Hamilton is entitled to recover all its actual cost, which would include the cost of debt service. Because there is no equity capital in Hamilton's capital structure, there cannot be an equity rate of return included in the utility's revenue requirement under Title 40. Hamilton would need to impute a capital structure (e.g., 60% debt and 40% equity) and then further develop an equity cost rate to determine the weighted cost of capital. This is something that can only be done by agreement of the two Townships.

NewGen understands that Hamilton is in the process of starting a Wastewater System Master Plan. The results of the Master Plan may aid in providing Hamilton with the data needed to complete a depreciation study to determine the depreciated value of its wastewater assets, which could then be used to allocate costs to the MMSS using the Utility Basis. NewGen recommends re-evaluating the Utility Basis based on the data provided by a completed Master Plan.

Recommendation: Re-evaluate the use of the Utility Basis after the completion of Hamilton's Wastewater Master Plan. The Utility Basis may only be implemented if both Townships agree to its use for the purposes of allocating system costs to the MMSS.

Changing Robbinsville's 2.5 MGD Treatment Plant Contribution Limit

Article 10 of the Agreement clearly defines the method of allocating MMSS costs between the two Townships:

"It is further agreed that the base charge per million gallons will be the same for both the TOWNSHIP and the MUA."

Therefore, per the Agreement, although Robbinsville's capacity allocation is defined as an average of 2.5 MGD of the currently permitted plant average day capacity of 16.0 MGD, this capacity commitment has no impact on the cost allocation of the system to the MMSS and the rate per MG paid by both Townships. Robbinsville's cost (as per this provision of the agreement) is solely based on its proportionate flow contribution to the MMSS each year.

It is possible to include a cost allocation based on Robbinsville's capacity commitment that ties Robbinsville's contribution to WPCF capital to its reserved capacity. If the Townships desire to base a portion of Robbinsville's payment to the MMSS on Robbinsville's 2.5 MGD commitment, then a provision to that effect may be added to the Agreement or stated in a new agreement. If afterwards the WPCF's design capacity is reduced, then any agreement between the Townships should be modified to reflect the new capacity.

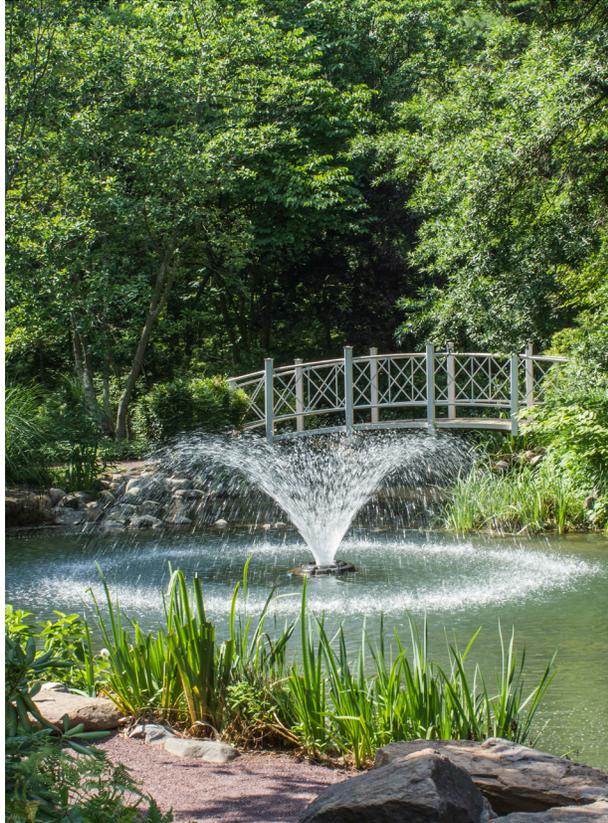
Section 4

RECOMMENDATIONS

Wholesale Cost Allocation Recommendations

NewGen has several recommendations regarding the MMSS Agreement, and the cost allocation methodology currently used to allocate costs to the MMSS and ultimately to the two Townships. Several of our recommendations are stated throughout this report and are summarized here for convenience. Other more general recommendations are also stated in this section.

- Renegotiate a wholesale wastewater service agreement to replace the 1976 Agreement along with all subsequent amendments and addendums.
- Include a more detailed definition of the MMSS in a new Agreement. This description should include specific references to system assets, such as the Klockner pump station and piping by location, diameter, and length.
- Formalize the Liaison Committee with a formal informational role regarding the cost allocation of the MMSS. The Liaison Committee's primary function should be communication between the Townships. The Liaison Committee should not have a decision-making role, but rather the role of keeping both Townships informed regarding planned capital projects involving the MMSS, i.e., not WPC as a whole.
- Include a more specific definition of Minor Construction and Equipment and Major Capital in a new Agreement.
- Clarify the language in a new Agreement regarding the accounting for flows that are not attributable to Robbinsville's capacity commitment of 2.5 MGD.
- Base each coming year's cost allocation on measured flow from July 1 through June 30 (inclusive) of the previous year.
- True-up each fiscal year's cost allocation with actual flow data in the last quarter of each fiscal year.
- Calculate MMSS costs using the cash basis until which time, if there is agreement from both municipalities based on additional data, the agreement may transition to a Utility Basis calculation.
- Distribute Labor and Benefit costs as well as Utility Management costs across the function cost centers of Sewer Lines, Pump Stations, and Treatment Plant to develop functional costs of the Hamilton wastewater system.
- Consider the cost basis approaches described in this report when re-negotiating a new Agreement. If one of the alternatives is agreed to by both Townships, then follow NewGen's recommended allocation factors for the chosen alternative.
- Re-evaluate the use of the Utility Basis after the completion of Hamilton's Wastewater Master Plan. Use of the Utility Basis to determine MMSS costs would need to be included in a new agreement between both Townships.



THANK YOU!



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