



Great Lakes Water Authority

Sewer Cost of Service Methodology Review

Final Report / December 6, 2019

TABLE OF CONTENTS

INTRODUCTION	1
REVENUE REQUIREMENT	1
ALLOCATION OF REVENUE REQUIREMENT TO FUNCTIONS	1
Operations and Maintenance Expense	2
Capital Expenses	3
ALLOCATION OF FUNCTIONAL COSTS TO COST DRIVERS	3
UNITS OF SERVICE	3
FLOW BALANCE	4
Suburban Customers	4
Detroit+	4
CSO Discharges.....	4
Common Flow	4
Determination of Sanitary, DWII, WWII Flows	5
POLLUTANTS	5
Pollutant Strengths.....	5
SHARES	5
CUSTOMER CHARGES	5
AREAS FOR CONSIDERATION	6
MEMBER PARTNER MEETINGS	7
MEMBER PARTNER KEY CONCERNS	8
POTENTIAL CHARGE APPROACHES	9
AVERAGE VOLUME	9
POLLUTANTS	9
CSO FACILITIES	10
OMID SPECIFIC	10

SUBURBAN ONLY	11
SANITARY VOLUME	11
PEAK VOLUME	11
POPULATION	12
LAND AREA	12
PATH FORWARD	12
RECOMMENDED CHARGE METHODOLOGY	12
SUBSEQUENT DISCUSSIONS	14
APPENDIX A: ‘THINK TANK’ MEMORANDUM	20

LIST OF FIGURES

Figure 1: Personnel Cost Allocation	15
Figure 2: Allocation of O&M Functions to Cost Drivers	15
Figure 3: Total Revenue Requirement Allocation	16
Figure 4: Current Strength of Flow	16
Figure 5: Strength of Flow Calculation	17
Figure 6: Development of SHARES	18
Figure 7: Customer Charge Development	19

INTRODUCTION

The methodology used to allocate wholesale service costs in the greater Detroit area has been continually evolving for the past half century. A series of agreements between the City of Detroit and surrounding suburbs in the late 1970's laid the groundwork for today's charge methodology. The current process distributes costs between wholesale customers of the Great Lakes Water Authority (GLWA) based on their estimated use of the system, measured by estimates of flow volume and amount of pollutants contributed.

The process of determining charges begins with a total revenue requirement. Each component of the requirement is allocated to a function of providing service, and each function is allocated to a cost driver as a way of distributing those costs to customers based on their unique usage characteristics.

GLWA has engaged Raftelis, in conjunction with HDR, to assist both GLWA and the Member Partner Communities in review the existing methodology for recovering costs, provide expertise and assistance in proposing potential changes to the methodology, and determine the steps necessary to move forward with such proposed changes.

This report summarizes our findings for this engagement. The major sections of this report are in chronological order as they have been developed through this engagement, we began by reviewing and documenting the existing methodology and provided our perspective on areas for consideration based on preliminary direction from GLWA staff. We next conducted member interviews with Member Partner Communities and have documented the feedback we received in those meetings. We then discuss potential charge approaches that currently are or could be incorporated into the sewer charge methodology for GLWA moving forward. This report then discusses how the proposed 'Path Forward' that was presented on May 3, 2019 relates to those potential charge approaches. We then propose a methodology based on our discussions with the Member Partner Communities. Based on our proposal and discussion a smaller 'Think Tank' consisting of GLWA and Member Partner representatives was formed and held multiple meetings culminating in a presentation to the Sewer SHARES Work Group on October 18, 2019. That presentation set forth key principles for a path forward, which is discussed in the final section of this report.

REVENUE REQUIREMENT

At a basic level, the total revenue requirement includes operating expenses, debt service, and charge financed capital. After GLWA develops a detailed financial plan forecasting these expenses, they conduct a cost of service study to determine how much each Member Partner pays for service.

ALLOCATION OF REVENUE REQUIREMENT TO FUNCTIONS

The first step in the cost of service process is to allocate the revenue requirement to functions. The WRRF functions currently used by GLWA are:

WRRF:

1. Primary Pumping
2. Rack and Grit

3. Primary Treatment
4. Aeration
5. Secondary Treatment
6. Dewatering
7. Sludge Disposal
8. WRRF General

Wastewater Collections:

9. Lift Stations
10. Combined Sewer Overflow (CSO) Facilities
11. Interceptors
12. Industrial Waste Control
13. Master Meters
14. GLWA Sewer General

Operations and Maintenance Expense

The Operations & Maintenance (O&M) revenue requirement is divided into seven departments:

1. Wastewater Operations
2. Wastewater Process Control
3. Wastewater Primary Processing
4. Wastewater Secondary Processing
5. Wastewater Dewatering Process
6. Wastewater Incinerations Process
7. Biosolids Dryer Facility

Each of these departments are subdivided into Personnel, Electricity, Chemicals, Other Utilities, and Other. The resulting 35 categories plus Wastewater Engineering and Analytical Laboratory costs are allocated to the functions listed above based on judgement and experience. Figure 1 presents an example allocation of FY 2019 Personnel Costs¹. In addition, costs associated with lift stations, CSO facilities, and Industrial Waste Control, are separated from the seven departments and allocated 100% to their respective functions.

Administrative and centralized costs are allocated proportionally based on the results of an annual analysis of those departments which considers resource allocation and specific identification of certain costs for assignment to water or sewer. In total, approximately 54% of the total GLWA budgets for Centralized Services and Administrative Services are allocated to the sewer utility. The sewer portion of Centralized Services is allocated between WRRF General and Wastewater Collection functions, while administrative services are allocated 100% to GLWA Sewer General.

Costs allocated to WRRF General are allocated to the other seven WRRF functions based on the proportions of directly allocated non-commodity costs (Personnel, Other, Support Services). GLWA Sewer General costs

¹ All cost allocation examples based on FY 2019 Cost of Service Study and may no longer be applicable to the FY 2020 Study. Figures may be different than published TFG figures due to rounding.

are allocated among the other 12 functions based on the proportions of all previously allocated non-commodity costs.

Capital Expenses

GLWA Debt Service, transfers to Improvement & Extension (I&E) and Repair & Replacement (R&R), and non-charge revenues are allocated to functions in the same proportion as existing assets plus construction work-in-progress (CWIP). Once all assets are allocated to functions, total annual depreciation and current net book value for each function are used to determine a utility basis capital revenue requirement. The return and depreciation components are added to obtain a total capital revenue requirement by function.

ALLOCATION OF FUNCTIONAL COSTS TO COST DRIVERS

The second step in the Cost of Service is to allocate functionalized costs to cost drivers.

The current allocation factors are based on the 1979 and 1980 Settlement Agreements. The functions are allocated to ten cost drivers:

1. Flow
2. BOD (Biochemical Oxygen Demand)
3. TSS
4. PHOS (Phosphorous)
5. FOG (Fats, Oils, and Grease)
6. Suburban
7. Oakland=Macomb Interceptor Drain Drainage District (OMID)
8. CSO
9. Industrial Waste Control
10. Detroit Only

Figure 2 shows the current O&M cost allocation factors in use. Different factors are used for O&M and capital.

Final cost pools are determined using the proportions of each cost driver developed in this step (for total O&M, non-commodity O&M, and capital) to allocate all budget elements as shown in Figure 3.

- » O&M and Contribution to Operating Reserves are allocated on the O&M basis.
- » Pension Obligations are allocated on the non-commodity O&M basis
- » Debt Service and transfers to I&E and R&R are allocated on the capital basis
- » WRAP, Lease Payment, and non-charge revenues are allocated proportionally to everything else.

UNITS OF SERVICE

The SHARES process introduced a simplified method of distribution costs among all customers. At a basic level, it determines what “share” of common to all costs each customer should be responsible for based on a four-year average (currently FY13 to FY16) of contributed volume and estimated pollutant strengths. This average is then used for distributing costs in the next three fiscal years.

FLOW BALANCE

The first step of developing SHARES is conducting a flow balance to determine total flows for suburban customers (M), the Detroit+ (D+) group, and common inflow and infiltration (Z).

Suburban Customers

The process begins with error-corrected meter readings for each of the suburban customers to measure their total volume contribution. This total is then corrected for known factors; the amount of inflow and infiltration (I&I) from GLWA water mains, referred to as Net Non-Revenue Non-Local Water (NNNW), is estimated based on known non-revenue water from the system and proportionally subtracted from M customers based on inch-miles of GLWA water mains within their sewer service area.

Historic M flows for appropriate customers are also corrected for the OMID diversion in 2016 and Western Township Utilities Authority (WTUA) flows being sent to Ypsilanti Communities Utility Authority (YCUA) beginning in FY 2018. The net amount for each customer represents their total flows into the WRRF.

Detroit+

The D+ area includes Detroit, Hamtramck, Highland Park, and a few small parts of other communities. Flow from D+ is not directly metered, however there are 13 system meters covering areas referred to as D+ Direct. Data from these meters are used to estimate total flows from the Direct districts in a similar manner as the M customers.

Districts within the D+ area that do not contain a system meter are referred to as D+ Incremental. Total flows in the D+ Incremental area are built up from three components: sanitary (discussed below), dry weather inflow and infiltration (DWII) and wet weather inflow and infiltration (WWII). DWII and WWII are estimated through a process that considers WWII or DWII per unit of impervious area within the D+ Direct areas relative to impervious area in D+ Incremental areas, an estimate of interceptor DWII, and an estimate of DWII related to non-revenue water.

D+ Direct and D+ incremental are added for a total estimate of D+ flow, which is then adjusted for NNNW.

CSO Discharges

During extreme wet weather events, wet weather flows can exceed WRRF treatment capacity and CSO basin storage capacity. The excess amount is discharged into the Detroit River and is not treated. 11.3% of this excess is subtracted from M flows in proportion to their CSO cost allocation, and the remaining 88.7% is subtracted from D+ flows. The sum of the final M and D+ flows are referred to as Total Wastewater Toward Treatment.

Common Flow

However, total WRRF influent (after historic OMID and WTUA adjustments) is not equal to Total Wastewater Towards Treatment. The portion of this difference that is not attributable to recycled flows used in the treatment process is considered common flow. These are not allocable units to which costs can be distributed, effectively making the cost to treat this common flow shared proportionally among all customers.

Determination of Sanitary, DWII, WWII Flows

In the D+ area, sanitary flows are assumed to be 95% of retail and industrial winter water sales; in the M areas, sanitary flows are 90% of winter water sales. DWII is estimated by subtracting the sanitary flows from total flows on “dry” days. WWII is estimated by subtracting total flow on dry days from total flow on wet days.

POLLUTANTS

The second step is estimating the amount of BOD, TSS, Phosphorus, and Fats, Oils, and Greases each customer contributes to the system.

Pollutant Strengths

Due to the infeasibility of measuring each customer’s strength of flow, the current process assumes that all customers have the same strengths for each category of flow. Using published national data, the Strength of Flow Subcommittee estimated DWII and WWII strengths as a proportion of sanitary flow strengths for each pollutant and used weighted WRRF loadings and volumes to estimate strengths for each type of flow. See Figure 4 for currently used strengths and ratios, and Figure 5 for the development of these strengths. Total pounds of pollutants for each customer are calculated using these estimated strengths and the sanitary, DWII, and WWII flows previously estimated.

SHARES

Now that volume and pollutant totals have been developed for each M customer and D+, total flow volumes and pounds of each pollutant are converted to percentages for each customer. Common to All SHARES are calculated with a weighted average, currently set to 50%/50%, of the volume SHARE and pollutant SHARE. Figure 6 contains an example of SHARE development using FY 2018 units of service.

Suburban only SHARES are based on each M customer’s portion of total M flow.

CSO SHARES are based on the 1999 Settlement Agreement. 83% of CSO costs are distributed to Detroit. The remaining 17% is distributed among suburban customers based upon an agreed upon methodology by those customers.

CUSTOMER CHARGES

Industrial surcharges revenues are netted out of the total customer revenue requirement. Remaining flow, BOD, TSS, PHOS, and FOG costs are combined to create a single common to all cost pool. This total is then multiplied by each customer’s CTA SHARE. The same process is performed with suburban only costs and SHARES, OMID only costs and SHARES, and CSO costs and SHARES. The sum of these costs for each customer represents their share of GLWA’s revenue requirement. See Figure 7 for an example of the development of customer charges.

The final step is to account for Detroit's equity in the system and suburban bad debt. Each of these costs is distributed to suburban customers using Suburban Only SHARES, and the equity amount is subtracted from Detroit's total charge. The final annual total is billed to each customer on a fixed monthly basis.

AREAS FOR CONSIDERATION

Based on our preliminary review of the existing methodology and our experience assisting wastewater utilities with examination and development of cost of service methodologies, we have identified several areas that warrant consideration for change. The existing methodology is more complicated than typical, even for a utility like GLWA that provides service to its numerous member communities on solely a wholesale basis. The desire expressed by GLWA and Member Partner Communities to simplify further is consistent with the views of other wastewater utilities.

One area that warrants consideration for simplification is the use of strength of flow in the existing methodology. It is important that pollutant strength and the costs associated with the treatment and disposal of regulated pollutants be considered for purposes of determining excess strength surcharges for industrial customers to meet EPA requirements. In some cases, utilities analyze wastewater samples from wholesale customers, however, this is less common due to recognition of the difficulty of securing representative samples and the associated costs of such sampling and analysis as well as the variability in the results. GLWA's existing methodology that considers the strength of flow for sanitary discharges dry weather I/I, river induced I/I and wet weather-related flows is a level of complexity not typically seen. Great effort has been made to estimate the strength of these different flows in the GLWA system, but ultimately, they remain to be estimates with a limited level of accuracy. While additional effort and resources could be expended to improve the accuracy of these estimates, the results would remain relatively inaccurate compared to the other units of service used to allocate and distribute costs to customers.

However, it should be noted that removal of strength of flow without consideration of other facets of the cost of service methodology would not be consistent with the overriding objective of achieving a fair distribution of costs. The existing methodology that accounts for the volume of wet weather and dry weather I/I somewhat necessitates consideration of strength of flow to reasonably allocate costs to those customers with high wet weather volumes and dry weather I/I. Some utilities with similar service areas, for instance, Northeast Ohio Regional Sewer District (NEORS) in the metropolitan Cleveland area, charge their customers based primarily on sanitary flow, so all customers share in wet weather and dry weather I/I costs proportional to their sanitary flow.

Another area of consideration is the split of costs for the CSO facilities that are currently allocated 83% to DWSD and 17% to other Member Partner Communities. While we understand that these numbers are based on many years of technical discussions, hydraulic modeling and negotiation and as such may be a reasonable estimate of DWSD's use of CSO facilities at that time, such an allocation may not appropriately recognize the historic nature of the development of the system with relation to regulation of combined sewer systems. For example, as mentioned previously, NEORS recovers cost in proportion to sanitary flow of all communities, even though some areas are combined and others are separated.

Some consideration should be given to distributing costs to Member Partner Communities based on peak flow. Peak flow is a driver of many sewer utility's capital and operating costs; facilities must be sized to meet peak flow and some regulatory requirements are driven by peak flow impacts. By recognizing peak flow as a factor in cost of service, there is a price signal to customers that reducing peak flow will reduce their share of costs of the utility.

Based on our preliminary discussion with the Member Partner Communities, the impact of facilities constructed, funded, and operated by Member Partner Communities that can benefit the entire regional system may need to be recognized. As GLWA begins its next round of negotiations with MDEQ for its NPDES permit renewal, optimization of the collections system, including the components of the networks within the Member Partner Communities could achieve desired levels of environmental quality at a lower cost than would otherwise be required.

Finally, some consideration will need to be given to the timing of any changes and future updates. We understand that GLWA and the Member Partner Communities appreciate the consistency of the current approach where the distribution of costs is only updated every three years. To mitigate impacts on customers, GLWA might consider determining the impact of proposed changes in advance of implementation so that the Member Partner Communities can prepare and react, and then the changes may also be phased in over multiple years.

MEMBER PARTNER MEETINGS

An important aspect of this engagement is input from the Member Partner Communities. To that end the Raftelis Project Team, in conjunction with GLWA's Member Outreach Consultant, Bridgeport Consulting, conducted meetings with most of the Tier 1 Member Partner Communities over the course of several weeks in early May 2019. The Member Partner Communities that met with us, in order of their meeting were:

- » Macomb County (OMID)
- » Detroit Water and Sewerage Department
- » Oakland County (OMID and Oakland GWK)
- » Melvindale
- » Highland Park
- » Grosse Pointe Park
- » Southeast Macomb Sanitary District (SEMSD) and Harper Woods
- » Dearborn
- » Allen Park
- » Grosse Pointe Farms
- » Farmington
- » Wayne County (Rouge Valley)

The Member Partner Communities were encouraged to provide their honest and frank feedback concerning their perspective and concerns regarding GLWA's methodology for recovering sewer costs from all Member Partner Communities.

The Member Partner Communities also had the opportunity to provide feedback during the course of our engagement during presentations of our interim findings and preliminary recommendations at SHARES Work Group sessions on June 28, 2019 and July 26, 2019. Member Partner Communities provided alternative approaches during the July 26, 2019 SHARES Work Group that were influential in refinements made to the recommendations in this report.

MEMBER PARTNER KEY CONCERNS

Based on the meetings with the Member Partner Communities, the Raftelis Project Team compiled a list of Key Concerns about the sewer charge methodology. These concerns are general in nature, not necessarily directed at only the existing methodology, but meant to provide guidance on consideration of changes to the methodology.

Issues are ranked by the number of Member Partner Communities that expressed their concern with that issue, in descending order. Communities were unanimous in their concern with stability and simplification.

1. Stability in charges – Minimize each Member Partner Community’s change in charges from GLWA.
2. Simplification of methodology / Understanding of methodology – Simplify charge methodology so it can be easily understood and explained to others (e.g., elected officials)
3. Incentives to remove / reduce flows – Provide pricing signal for Member Partner Communities that reduce contributions to the regional GLWA system.
4. Phase-In / Grace period on any changes implemented – Allow Member Partner Communities an opportunity to respond to changes in the charge methodology before they are implemented or fully implemented.
5. Recognition of peak flows and how it relates to existing 83/17 CSO allocation – How does any new methodology supplement or supplant the existing 83/17 CSO allocation.
6. Recognition of investments in local systems that benefit the GLWA regional system – Member Partner Communities that reduce peaks for the benefit of the regional system through storage or other operational measures would like to know how it benefits them from a charge perspective.
7. Recognition of contract capacities – How does the charge methodology recognize contract capacities for customers.
8. Minimize change in distribution among communities – Some Member Partner Communities expressed concern how changes would disproportionately impact other communities in the region.²
9. Affordability – Address affordability considerations for Member Partner Communities retail customers.
10. Impact of new development / connection fees – Should there be recognition for new retail customers that are benefitting from the GLWA regional system.
11. Accuracy of existing cost / asset allocations – Are the existing cost and asset allocations suitable for any proposed new charge methodology.
12. Cost Causation – Does the proposed charge methodology recommend cost causation.

² This differs from item 1 in that this item indicates concern about shifting costs to communities other than themselves. Even if their share of costs were unchanged under a new methodology, they are concerned about the share of costs being shifted to other Member Partner Communities.

In our consideration of the above concerns raised by representatives of the Member Communities we have identified which can best tie to the charge methodology and which better tie to charge implementation or GLWA policies to support long term strategies of GLWA. In our opinion we believe that the concerns that can be effectively met through the charge methodology include items 2, 5, 7, 11, and 12. Issues that can be effectively addressed as part of the implementation of a new charge methodology include item 1, 4, 8 and 9. Issues that can be addressed through GLWA policies and programs a part from the charge methodology include items 3, 6, and 10.

POTENTIAL CHARGE APPROACHES

Based on the concerns of the Member Partner Communities and the understanding that the existing GLWA sewer charge methodology accounts for basically five factors in allocating and distributing costs (Average Volume, Pollutants, CSO facilities, OMID Specific, and Suburban Only), we will examine how the existing and other factors may be considered and used as part of the GLWA sewer charge methodology moving forward.

AVERAGE VOLUME

Average volume in effect recognizes each Member Partner Communities' total volumetric contributions to the GLWA regional system for the year. The average volume includes sanitary volume, dry weather I/I, and wet weather volume. While some of GLWA's costs relate to total volume treated, electricity and chemicals for example, many of GLWA's costs are driven by other factors besides total volume treated. Under the current methodology approximately 42% of the GLWA revenue requirement is recovered from Member Partner Communities based on average volume.

While average volume certainly accomplishes the objective of being simple and understandable, due to the nature of the GLWA regional system and the D+ customers, some assumptions need to be made to determine the share of average volumes among customers, so there may be some concern over the accuracy of that allocation.

The primary concern we have with average volume is that it does not differentiate the historic development of the system and recognize the average volumes from combined areas differently from separated areas on its own. Under the existing methodology, this is accomplished through the strength of flow allocation of costs associated with pollutants, which will be discussed separately.

Some other utilities with both older inner-city combined areas as well as newer suburban separated areas do not consider average volume or similar measures because of the burden it would place on those customers with combined systems.

POLLUTANTS

Pollutants recognizes the cost of treating extra strength surcharge pollutants by the GLWA treatment facilities, specifically BOD, TSS, Phosphorous, and FOG. Philosophical arguments can be made that if not for the pollutants in the wastewater we would not need any treatment facilities, but generally accepted allocation approaches recognize that treatment is driven by the volume of wastewater as well as pollutant loadings.

Under the current methodology approximately 42% of the GLWA revenue requirement is recovered from Member Partner Communities as well as retail surcharge customers. This share of costs allocated to pollutants is based on the 50/50 allocation of costs between volume and pollutants that was established during the previous charge simplification process. Based on our experience, this is a very high allocation of costs to pollutants for a large regional wastewater utility.

In the context of the GLWA charge methodology, the use of pollutants as a cost allocation factor, especially when considering the strength of each component of flow, is important because of the use of average volume. If only average volume were considered, those customers with combined systems would pay a much greater share of the GLWA regional costs due to their high levels of rain dependent I/I.

Throughout our customer meetings in discussing potential simplification, the strength of flow is one area that Member Partner Communities universally had concern about because of the number of assumptions needed to arrive at a determination.

No matter what is ultimately decided there will always need to be a consideration of pollutants in determining excess strength surcharges, but there is a desire among the Member Partner Communities to simplify this aspect of the charge methodology. Any adjustment must be considered carefully due to its impact on costs of different types of flow (i.e., sanitary volume, dry weather I/I, and wet weather volume).

CSO FACILITIES

Costs are allocated to CSO facilities and those facilities are allocated based on the 83/17 split between the City of Detroit and other customers. The 83/17 split was negotiated about 20 years ago and has been in place since while the allocation of the 17% split among the suburban customers was based on an analysis performed around the same time. The share of the revenue requirement allocated to CSO facilities is approximately 13% under the current methodology.

There are concerns about what costs are included in this pool, with some Member Partner Communities believing more should be included in the cost pool while the City of Detroit thinks some costs should be excluded.

There are also concerns related to the 83/17 split and whether it is representative of the cost of service.

Given the concern over this specific cost pool, both what is included and how it is allocated, it may be desirable to move to another cost allocation approach to accomplish the same pricing objectives in the charge structure. One approach may be to use wet weather volume in place of the 83/17 split for some cost pools.

OMID SPECIFIC

Certain debt service and O&M costs as well as shares in GLWA's other costs are allocated directly to OMID in addition to their share of other costs. This allocation would most likely remain in place regardless of any proposed change in methodology for the remainder of the GLWA's revenue requirement under the existing contractual agreements. There was no mention of concerns about this cost allocation during our meetings

with the Member Partner Communities. This represents approximately 2% of GLWA's total revenue requirement.

SUBURBAN ONLY

There is an allocation of costs to suburban only customers, related primarily to the cost of measuring their volumes. There was no mention of concerns about this cost allocation during our meetings with the Member Partner Communities. This accounts for approximately 2% of the total GLWA revenue requirement.

These costs are allocated proportionally based on average volume excluding the City of Detroit. Given the minimal share of the total revenue requirement, any simplification may consider the elimination of this cost pool and allocation.

SANITARY VOLUME

A common methodology to allocating costs for sewer utilities is the use of sanitary volume. Sanitary volumes are typically estimated based on metered water usage, especially in regions like Michigan where winter average water usage should provide a reasonable estimate of sanitary volumes for most retail customers.

Some other large regional sewer utilities that serve both combined and separated areas use sanitary volume as a key component of their charge methodology. In effect this results in customers throughout their service area paying for combined areas in proportion to their sanitary volume. The rationale for this approach is often based on a historical perspective that the combined areas were the nucleus of the larger metropolitan area and they were built to accepted standards at the time, which allowed for combined sewers and the overflow of those sewers during rain events.

It may be appropriate to consider allocation of some of GLWA's revenue requirement on the basis of sanitary flow. A potential approach would be to have two primary cost pools, conveyance and treatment, with the treatment cost pool being allocated based on sanitary flows. However, there may still be challenges with such an approach in how some future CSO facilities are allocated between conveyance and treatment.

PEAK VOLUME

Many facilities and operations in the GLWA system are constructed to meet peak volume demands, yet it is not a component of the existing GLWA charge methodology. One potential challenge is the difficulty of determining peak volume by Member Partner Communities. An attempt has been made for some recent discussions, but that estimate is for peak month, while ideally such a determination would be for a shorter period of time, such as a peak day or possibly a longer period to encompass a peak event over more than a 24-hour period.

Peak volume may be a good approach for allocating some costs of the GLWA regional system, and in particular it may make the most sense to allocate the cost of conveyance facilities that need to be sized to meet potential peak volumes.

POPULATION

There has been discussion that population may be a factor used to allocate some portion of GLWA's revenue requirements. In our discussions with Member Partner Communities there is some concern over how population is measured (e.g., permanent residents, daytime workforce, etc.). There is also a concern that population and another proposed factor, sanitary volume, are closely correlated and may provide the appearance of a more precise approach than is really being delivered.

It is not common to use population as a cost allocation methodology (though it is common for utilities to allocate some costs based on number of customers, which may also correlate with population).

LAND AREA

The use of land area has been proposed as an approach to be considered, with distinction between land area with different characteristics related to their sewer service (e.g., combined/separated collection system and presence of foundation drains). While this would offer some advantages in terms of simplification and should be relatively easy to measure with current GIS technology, it would need to be determined at what level different land types would be classified, at the parcel level or some larger grouping (acre, block, square mile, entire Member Partner Community).

The most significant challenge would be determining the difference between different types of characteristics, for example, if a service area with separated system and no foundation drains is considered to have a units of service factor of 1.0, what is the factor for a service area served by combined sewers with foundation drains?

PATH FORWARD

A potential option for a 'Path Forward' with regards to the sewer SHARES and charge simplification was presented on May 3, 2019 to the SHARES Work Group. This approach would use sanitary volume, peak volume, and population to allocate a simplified cost pool that includes everything but industrial surcharge revenues and OMID specific costs.

Each of the three factors was discussed in the previous section of this report. The largest concern from the Member Partner Communities related to population, how it would be measured and whether it was significantly different from sanitary volume.

Combining all costs into a single cost pool may be a little too extreme for cost simplification, as mentioned in the previous section it may make sense for some cost pools to still be used such as conveyance and treatment, depending on the units of service ultimately decided upon to allocate costs.

RECOMMENDED CHARGE METHODOLOGY

Based on the discussion presented throughout this report, including feedback from Member Partner Communities, we are recommending a simplified charge methodology that we believe would provide equity among customers while simplifying the cost of service allocation process. Minimizing impacts on each

Member Partner Community while simplifying the charge methodology was the most important consideration of any proposed change. That was based on feedback we received from the Member Partner Communities throughout this engagement, as discussed in the Member Partner Key Concerns section of this report.

We believe that a three-factor methodology based on sanitary volume, peak volume, and average volume will meet the objectives of Member Partner Communities that tie to charge methodology. Each of these factors would have an associated cost pool, for sanitary volume we believe that cost pool may consist of secondary treatment and solids handling costs at the treatment plant. The cost pool allocated based on peak volume may consist of capital costs associated with the collection and conveyance system, including CSO facilities. Average volume would be used to allocate primary treatment costs at the treatment plant and operating costs of the collection and conveyance system, including CSO facilities. In addition to these primary cost pools, pollutants would still be considered for determining high strength surcharges for industrial customers and OMID Specific costs would be considered under the existing methodology per existing contractual agreements.

Summary of Recommended Charge Methodology

	Sanitary Volume	Peak Volume	Average Volume	Pollutants	OMID Specific
Cost Pool	Secondary Treatment and Solids Handling at Treatment Plant	Capital Cost of Collection/Conveyance System (including CSO Facilities)	Primary Treatment at Treatment Plant and Operational Cost of Collection/Conveyance System (including CSO Facilities)	Pollutant Costs (Surcharge Customers Only)	Direct Allocation (Current Methodology)
Units of Service	Sanitary Volume as reported by Member Partner Communities	Peak Volume as determined by GLWA	Total Average Volume as determined by GLWA	Surcharge Pollutant Loads	Direct Allocation (Current Methodology)

We believe this methodology addresses the key concerns which tie to charge methodology indicated by Member Partner Communities throughout this process, as summarized in the Member Partner Communities Key Concerns section of this report. We believe this is a more simple and understandable approach in terms of the cost pools and units and service that recognizes peak flows of Member Partner Communities, while providing incentive through lower charges to reduce peak flows and tying to cost causation principles. Other key concerns will need to be addressed through implementation, including how stability in charges and impacts on communities are addressed, including how changes may be phased in over a period of time.

Our project team did not have the schedule or budget in this engagement to undertake a more thorough analysis of the impact of this change on all Member Partner Communities, and additional consideration needs to be given to the details of both the cost pools (i.e., what costs should be included in each cost pool) and the units of service (i.e., what period would peak volumes be considered over, would contract capacities be used as peak volumes, and how will sanitary volume be determined). Undertaking this analysis will be important in determining an implementation approach that addresses the Member Partner Communities' key concerns.

We believe that this proposed approach addresses the objectives of the Member Partner Communities while providing an equitable approach to cost allocation that treats each Member Partner Community fairly.

SUBSEQUENT DISCUSSIONS

Following our presentations and discussions with the SHARES Work Group in June and July 2019 a small SHARES ‘Think Tank’ was convened to work towards a methodology that could be agreed upon by the larger group. The ‘Think Tank’ presented their preliminary findings to the SHARES Work Group on October 18, 2019, their memorandum is included in Appendix A of this report.

The conceptual proposal offered by the ‘Think Tank’ indicated that Cost Pools would be reduced to two or three and that units of service would focus on volume measures that could be agreed upon by members and not require lengthy and costly analysis that only provides an ‘illusion of accuracy’. The proposal indicated peak flow will be a unit of service they will consider and that strength of flow is one they would eliminate.

We agree with the concepts and perspectives set forth in the memorandum that these principles are generally consistent with our recommendations in this report, though further development and refinement still needs to be made to more exactly define the cost pools and units of service for each before a more definitive endorsement of the proposal can be made.

Figure 1: Personnel Cost Allocation

Revenue Requirement	WRRF							Wastewater Collection Facilities						
	Primary Pumping	Rack and Grit	Primary Treatment	Aeration	Secondary Treatment	Sludge Dewatering	Sludge Disposal	WRRF General	Lift Stations	CSO Facilities	Interceptors	Industrial Waste Control	Master Meters	General
Personnel Costs														
Wastewater Operations	1,257,900	7.50%	4.00%	8.00%	16.00%	12.00%	10.00%	37.50%				5.00%		
Wastewater Process Control	2,318,500	7.50%	4.00%	8.00%	16.00%	12.00%	25.00%	25.00%				2.50%		
Wastewater Primary Processing	3,701,800	10.00%	15.00%	75.00%										
Wastewater Secondary Processing	3,997,200				50.00%	50.00%								
Wastewater Dewatering Process	3,723,300						100.00%							
Wastewater Incinerations Process	3,953,700							100.00%						
Biosolids Dryer Facility	806,100							100.00%						
Total: Personnel Costs	\$19,758,500	\$ 638,410	\$ 698,326	\$ 3,062,462	\$ 2,570,824	\$ 2,427,768	\$ 4,428,715	\$ 5,811,138	\$ -	\$ -	\$ -	\$ -	\$ 120,858	\$ -

Figure 2: Allocation of O&M Functions to Cost Drivers

Function	Revenue Requirement	Common to All									
		Flow	BOD	TSS	PHOS	FOG	Suburban	OMID	CSO	IWC	Detroit
Primary Pumping	6,369,710	100.00%									
Rack and Grit	4,069,013	100.00%									
Primary Chemical Additon	2,103,000				100.00%						
Primary Sedimentation	10,615,000			70.00%	20.00%	10.00%					
Aeration	17,140,010		100.00%								
Secondary Clarification	11,000,100		25.00%	65.00%	10.00%						
Chlorination	2,639,900	100.00%									
Dewatering	18,098,439		15.00%	70.00%	15.00%						
Sludge Treatment	56,791,383		100.00%								
Process Water and Outfall	-	100.00%									
Lift Stations	22,533,175	75.00%					25.00%				
CSO Facilities	18,781,675							100.00%			
Interceptors	11,814,478	96.50%					3.50%				
Industrial Waste Control	7,239,484								100.00%		
Master Meters	3,926,133					100.00%					
Total: O&M	\$ 193,121,500	\$ 41,379,475	\$ 79,396,184	\$ 27,249,472	\$ 8,040,776	\$ 1,061,500	\$ 3,926,133	\$ 6,046,800	\$ 18,781,675	\$ 7,239,484	\$ -
		21.43%	41.11%	14.11%	4.16%	0.55%	2.03%	3.13%	9.73%	3.75%	0.00%

Figure 3: Total Revenue Requirement Allocation

		Common to All										
<u>Allocation Proportion</u>		<u>Flow</u>	<u>BOD</u>	<u>TSS</u>	<u>PHOS</u>	<u>FOG</u>	<u>Suburban</u>	<u>OMID</u>	<u>CSO</u>	<u>IWC</u>	<u>Detroit</u>	
O&M Total		1	21.43%	41.11%	14.11%	4.16%	0.55%	2.03%	3.13%	9.73%	3.75%	0.00%
O&M Non-Commodity		2	20.81%	38.86%	14.02%	3.08%	0.60%	2.47%	3.80%	11.80%	4.55%	0.00%
Capital		3	47.92%	10.73%	18.28%	3.71%	0.48%	2.05%	1.31%	15.37%	0.14%	0.00%
Indirect		4	34.99%	25.42%	16.24%	3.88%	0.52%	2.06%	2.23%	12.73%	1.94%	0.00%
<u>Budget Elements</u>												
O&M	193,122,000	1	41,379,582	79,396,390	27,249,543	8,040,797	1,061,503	3,926,143	6,046,816	18,781,724	7,239,503	-
Operating Pension	10,824,000	2	2,252,796	4,206,322	1,517,956	333,383	65,240	267,054	411,301	1,277,521	492,427	-
Debt Service	214,991,000	3	103,033,504	23,075,582	39,296,791	7,981,223	1,025,543	4,407,728	2,817,116	33,042,669	310,845	-
Non Operating Pension	11,620,700	2	2,418,612	4,515,929	1,629,685	357,922	70,042	286,710	441,574	1,371,553	528,672	-
WRAP	2,261,000	4	791,052	574,657	367,269	87,663	11,646	46,663	50,445	287,726	43,879	-
R&R	627,000	3	300,487	67,298	114,605	23,276	2,991	12,855	8,216	96,366	907	-
Detroit I&E	27,500,000	4	9,621,372	6,989,412	4,467,008	1,066,226	141,649	567,554	613,555	3,499,537	533,686	-
I&E	12,010,600	3	5,756,028	1,289,131	2,195,339	445,876	57,293	246,240	157,380	1,845,948	17,366	-
Operating Reserves	1,853,800	1	397,207	762,135	261,571	77,185	10,189	37,687	58,044	180,288	69,493	-
Non Operating Revenue	(4,570,900)	4	(1,599,212)	(1,161,742)	(742,482)	(177,222)	(23,544)	(94,336)	(101,982)	(581,674)	(88,706)	-
Total: Revenue Requirement	\$ 470,239,200		164,351,428	119,715,114	76,357,286	18,236,328	2,422,552	9,704,300	10,502,466	59,801,657	9,148,068	\$ -

Figure 4: Current Strength of Flow

<u>Strengths (mg/l)</u>	<u>BOD</u>		<u>TSS</u>		<u>PHOS</u>		<u>FOG</u>	
Sanitary	274.45	100.00%	322.94	100.00%	7.62	100.00%	34.82	100.00%
DWII	6.59	2.40%	6.78	2.10%	0.30	4.00%	-	0.00%
WWII	14.55	5.30%	125.95	39.00%	0.19	2.50%	13.96	40.10%

Figure 5: Strength of Flow Calculation

<u>Item</u>	<u>Item Description</u>	<u>BOD</u>	<u>TSS</u>	<u>PHOS</u>	<u>FOG</u>	
1	Total: WRRF Loadings (lbs)	<i>4-year average</i>	176,697,300	255,289,900	4,910,400	27,112,600
2	DWII SoF - Sanitary %	<i>SoF Work Group</i>	2.40%	2.10%	4.00%	0.00%
3	WWII SoF - Sanitary %	<i>SoF Work Group</i>	5.30%	39.00%	2.50%	40.10%
<u>Total Influent Volumes</u>						
4	Sanitary	<i>4-year average</i>	9,634,000	9,634,000	9,634,000	9,634,000
5	DWII	<i>4-year average</i>	12,822,200	12,822,200	12,822,200	12,822,200
6	WWII	<i>4-year average</i>	7,090,300	7,090,300	7,090,300	7,090,300
7	Total: Flows		29,546,500	29,546,500	29,546,500	29,546,500
<u>Weighted Influent Split</u>						
8	Sanitary	= (4)	9,634,000	9,634,000	9,634,000	9,634,000
9	DWII	= (2) * (5)	307,733	269,266	512,888	-
10	WWII	= (3) * (6)	375,786	2,765,217	177,258	2,843,210
11	Total: Weighted Influent		10,317,519	12,668,483	10,324,146	12,477,210
<u>Loading Allocation Factors</u>						
12	Sanitary	= (8) / (11)	93.4%	76.0%	93.3%	77.2%
13	DWII	= (9) / (11)	3.0%	2.1%	5.0%	0.0%
14	WWII	= (10) / (11)	3.6%	21.8%	1.7%	22.8%
<u>Allocated Loadings</u>						
15	Sanitary	= (1) * (12)	164,991,394	194,140,282	4,582,151	20,934,390
16	DWII	= (1) * (13)	5,270,216	5,426,138	243,941	-
17	WWII	= (1) * (14)	6,435,690	55,723,480	84,308	6,178,210
<u>Strengths (mg/l)</u>						
18	Sanitary	= (15) / (4), converted	274.45	322.94	7.62	34.82
19	DWII	= (16) / (5), converted	6.59	6.78	0.30	-
20	WWII	= (17) / (6), converted	14.55	125.95	0.19	13.96

Figure 6: Development of SHARES

Customer	Sanitary	DWII	WWII	Total	BOD	TSS	PHOS	FOG	Volume	BOD	TSS	PHOS	FOG	Volume	Pollutant	CTA
	mcf	mcf	mcf	mcf	lbs	lbs	lbs	lbs						Share	Share	SHARE
1 OMIID	2,181,200	524,900	244,900	2,951,000	37,793,156	46,101,443	1,050,327	4,953,078	12.46%	21.80%	19.34%	21.82%	19.48%	12.46%	20.42%	16.44%
2 Rouge Valley	1,449,200	751,500	506,200	2,706,900	25,587,274	33,499,970	709,589	3,590,151	11.43%	14.76%	14.05%	14.74%	14.12%	11.43%	14.36%	12.89%
3 Oakland GWK	1,011,100	645,800	820,900	2,477,800	18,326,596	27,100,097	502,950	2,912,390	10.46%	10.57%	11.37%	10.45%	11.46%	10.46%	11.01%	10.73%
4 Evergreen Farmington	997,400	472,500	222,100	1,692,000	17,477,225	22,044,645	486,016	2,360,849	7.14%	10.08%	9.25%	10.10%	9.29%	7.14%	9.61%	8.38%
5 NE Wayne Co	571,600	306,500	454,900	1,333,000	10,328,072	15,223,458	283,106	1,638,452	5.63%	5.96%	6.39%	5.88%	6.45%	5.63%	6.19%	5.91%
6 Allen Park	23,300	8,600	10,100	42,000	411,737	552,548	11,366	59,431	0.18%	0.24%	0.23%	0.24%	0.23%	0.18%	0.23%	0.21%
7 Center Line	28,700	7,800	12,400	48,900	505,976	679,104	13,946	73,169	0.21%	0.29%	0.28%	0.29%	0.29%	0.21%	0.29%	0.25%
8 Farmington	30,400	18,700	10,100	59,200	537,482	699,898	14,935	74,859	0.25%	0.31%	0.29%	0.31%	0.29%	0.25%	0.30%	0.28%
9 Grosse Pointe Park	41,700	25,200	32,300	99,200	753,828	1,104,834	20,697	118,758	0.42%	0.43%	0.46%	0.43%	0.47%	0.42%	0.45%	0.43%
10 Melvindale	41,800	18,600	15,200	75,600	737,306	969,666	20,416	104,075	0.32%	0.43%	0.41%	0.42%	0.41%	0.32%	0.41%	0.37%
11 Grosse Pointe Farms	53,100	43,100	46,800	143,000	969,582	1,456,094	26,632	156,164	0.60%	0.56%	0.61%	0.55%	0.61%	0.60%	0.59%	0.60%
12 Dearborn	420,200	286,700	346,200	1,053,100	7,628,401	11,309,844	209,428	1,214,747	4.45%	4.40%	4.74%	4.35%	4.78%	4.45%	4.59%	4.52%
13 Hamtramck	51,200	106,500	44,600	202,300	961,105	1,427,346	26,908	150,119	0.85%	0.55%	0.60%	0.56%	0.59%	0.85%	0.58%	0.72%
14 Grosse Pointe	12,800	26,700	11,200	50,700	240,352	357,261	6,729	37,573	0.21%	0.14%	0.15%	0.14%	0.15%	0.21%	0.15%	0.18%
15 Harper Woods	3,600	7,500	3,200	14,300	67,641	100,869	1,893	10,611	0.06%	0.04%	0.04%	0.04%	0.04%	0.06%	0.04%	0.05%
16 Highland Park	76,000	158,300	66,200	300,500	1,426,725	2,118,783	39,946	222,830	1.27%	0.82%	0.89%	0.83%	0.88%	1.27%	0.86%	1.06%
17 Redford Township	3,200	6,600	2,800	12,600	60,057	89,284	1,681	9,393	0.05%	0.03%	0.04%	0.03%	0.04%	0.05%	0.04%	0.04%
18 Wayne County #3	500	1,000	400	1,900	9,337	13,643	262	1,435	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%
19 Total: Suburban Customers	6,997,000	3,416,500	2,850,500	13,264,000	123,821,854	164,848,787	3,426,826	17,688,083	55.99%	71.44%	69.15%	71.20%	69.58%	55.99%	70.13%	63.06%
20 Detroit	2,637,000	5,491,200	2,298,600	10,426,800	49,504,518	73,528,449	1,386,019	7,733,031	44.01%	28.56%	30.85%	28.80%	30.42%	44.01%	29.87%	36.94%
21 Total: Allocable Units	9,634,000	8,907,700	5,149,100	23,690,800	173,326,372	238,377,237	4,812,845	25,421,114	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

Figure 7: Customer Charge Development

	<u>CTA</u>	<u>Suburban</u>	<u>OMID</u>	<u>CSO</u>	<u>IWC</u>	<u>Total</u>		
Budget From Charges								
Total Revenue Requirement	381,082,708	9,704,300	10,502,466	59,801,657	9,148,068	470,239,200		
Allocated to Industrial	5,115,100				9,148,068	\$ 14,263,168		
Net Budget from Charges	375,967,608	9,704,300	10,502,466	59,801,657	-	455,976,032		
							Ownership	
<u>Customer</u>	<u>CTA</u>	<u>Suburban</u>	<u>OMID</u>	<u>CSO</u>	<u>IWC</u>	<u>Total</u>	<u>Adj.</u>	<u>Adj. Total</u>
OMID	61,792,156	2,152,556	10,502,466	1,585,342		76,032,520	1,223,529	77,256,050
Rouge Valley	48,475,384	1,974,558	-	1,767,737		52,217,679	1,122,354	53,340,033
Oakland GWK	40,360,123	1,807,449	-	1,349,125		43,516,697	1,027,368	44,544,065
Evergreen Farmington	31,496,686	1,234,229	-	888,055		33,618,970	701,545	34,320,515
SE Macomb San District	22,219,686	972,417	-	702,071		23,894,174	552,730	24,446,904
Dearborn	17,138,483	781,114	-	975,365		18,894,962	443,991	19,338,953
Grosse Pointe Farms	2,240,767	104,379	-	301,400		2,646,546	59,330	2,705,876
Grosse Pointe Park	1,635,459	72,409	-	37,077		1,744,945	41,158	1,786,102
Melvindale	1,379,801	55,127	-	44,253		1,479,182	31,335	1,510,516
Farmington	1,035,791	43,203	-	31,097		1,110,091	24,557	1,134,648
Center Line	928,640	35,599	-	33,489		997,728	20,235	1,017,963
Allen Park	772,613	30,588	-	18,539		821,740	17,386	839,126
Highland Park	3,908,183	209,967	-	1,234,904		5,353,055	119,347	5,472,402
Hamtramck	3,088,574	171,257	-	953,836		4,213,668	97,344	4,311,012
Grosse Pointe	751,935	40,438	-	136,348		928,721	22,985	951,707
Harper Woods	208,662	10,887	-	7,774		227,323	6,188	233,512
Redford Township	137,228	7,085	-	79,536		223,850	4,027	227,877
Wayne County #3	20,678	1,037	-	20,931		42,646	589	43,235
Subtotal: Suburban Wholesale	237,590,850	9,704,300	10,502,466	10,166,880	-	267,964,496	5,516,000	273,480,496
City of Detroit	138,380,518	-	-	49,635,375	-	188,015,893	(5,516,000)	182,499,893
Total:	375,971,368	9,704,300	10,502,466	59,802,255	-	455,980,389	-	455,980,389

APPENDIX A: 'THINK TANK' MEMORANDUM

MEMORANDUM

Wastewater Charges Methodology
Status Report

October 16, 2019

To: Sewer SHAREs Work Group

From: SHAREs Think Tank Group

Suzanne Coffey	Carrie Cox / Tim Minor
Bart Foster	Vyto Kaunelis
Tim Prince	Eric Rothstein
Maria Sedki	Sam Smalley

The small SHAREs “Think Tank” work group has devoted significant time and effort seeking to establish a recommended new wastewater charge methodology. Many alternative approaches have been considered, and an extraordinary amount of detailed data has been analyzed. A robust discussion of potentially including or refining a number of different factors into the methodology has been undertaken. The group has achieved a general consensus on a recommended path forward for Sewer SHAREs that embraces the guiding principles of simplicity and stability in wastewater charges.

The approach under consideration requires further vetting of technical data and development of a carefully prepared process to inform stakeholders as they consider the recommendation. In addition, an alternative approach remains on the table that will require further consideration of incorporating “peaking” into the methodology

The group believes it is imprudent to attempt to complete transition to a new methodology for the FY 2021 wastewater charges. The group is structuring a work plan to complete the path forward by June 2020 in order to support full consideration for FY 2022 wastewater charge development. This work plan will seek to strategically use further information emerging from the Master Plan including proposed project concepts that may not directly align with traditional assignments to the 83/17 Combined Sewer Overflow (CSO) Cost Pool.

The group also believes it would be imprudent to make an interim adjustment to SHAREs while final details of a new approach and further understanding of Master Plan projects are in progress. We are concerned that two separate adjustments, which may be directionally inconsistent with respect to methodology and impact, could only serve to confuse stakeholders and frustrate our overarching objective of ultimate acceptance of a simpler, stable and equitable methodology. As such the group recommends that the existing SHAREs remain in effect for determination of FY 2021 wastewater charges.

Path Forward Agreements in Principle

The group has coalesced around these general preferences regarding a proposed new charge methodology:

1. Establish two or three “Cost Pools” and related Units of Service measures and eliminate the rest
 - *Consistent with general Raftelis study recommendations*
2. Focus on simplified, volume-based categories to establish Units of Service
 - *No Strength of Flow / Pollutants*
3. Reduce reliance on expensive studies that provide an “illusion of accuracy”
 - *Consistent with Raftelis study recommendations*
 - *Reduce costs, saving money for all customers*
4. Use discretely measurable volumes of both sanitary and total flow
 - *Metered flows for the System in total and the Master Metered Customers*
 - *Use studies undertaken in the last 12 months along with historical D+ studies to split the remainder into D+ and “Common” based on simplified assumptions*
5. Use longer term averaging of historical annual flow balance data for Units of Service
 - *10-year average (start with 7 years to match current flow balance protocols)**
 - *Recognize service area / operational / demographic adjustments where appropriate*
6. The recently completed FY 2019 Flow Balance should be the final year used in historical averages for the FY 2022 SHAREs
 - *Imprudent to attempt to incorporate fully vetted FY 2020 data*
 - *The FY 2019 results include “outliers” that need to be fully vetted and settled prior to utilization*
7. Consider cost pool assignments for the proposed conceptual projects that have recently emerged from the wastewater Master Plan Project
 - *Consider use of the 83/17 CSO Cost Pool*
 - *Consider cost pools needed for projects which benefit the region differently than a strict CSO or non-CSO benefit (wet and dry weather benefits)*

* An illustration of interpretation of recent flow balances is available in the appendix.

- *Consider cost allocations of projects which make use of local systems for the regional benefit*
 - *Consider other Regional System operational complexities and the need to address them in a holistic manner*
8. Consider possibility of incorporating an additional peak flow component into recommended methodology
 - *Aligns with Raftelis study recommendation*
 - *May result in modified Cost Pools with a peak flow Unit of Service measure rather than the 83/17 CSO Cost Pool*
 9. Use the FY 2020 Cost of Service Study[†] to establish guidance for populating Cost Pools, then simplify the application with policy driven assignments of weightings to Units of Service measures
 - *Results in **simplified** method to explain and understand*
 - *Promotes long-term **stability***
 - *Embraces notion that future focus areas are designed to serve overall mission of Wastewater Master Plan*
 10. Establish periodic review of policy weightings developed in (9) to ensure adherence to general “cost causative” factors

[†] With updates as appropriate from the FY 2021 Cost of Service Study

