

Systems Framework for Meeting Local Government Service Solvency Standards

Case Study of the City of Flint, Michigan

MSU Extension White Paper

By Mary Schulz, Associate Director

Shu Wang, Assistant Professor

Eric Scorsone, Director

Samantha Zinnes, Law Fellow

Center for Local Government Finance and Policy

Michigan State University Extension

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Table of Contents

I. Introduction	3
Background	3
Fiscal vs. Service Solvency	3
Flint Socioeconomic Background Brief	4
II. City of Flint Financial Condition	5
Flint Financial Background	7
Flint Cash Solvency	7
City of Flint Budget Solvency	8
City of Flint Long-Term Fiscal Solvency	9
Pension and Retiree Health Care Problems	9
Flint Legal Related Costs and Liabilities	10
III. Service Solvency Identification and Measurement	11
Stormwater Management and Service Solvency	11
Fixed Cost System	11
Service Solvency Legal Requirements	11
Cost to Comply with Service Standards	11
Wastewater Management and Service Solvency	12
Fixed Cost System	12
Service Solvency Legal Requirements	12
Costs to Comply with Service Standards	12
Revenue Gap Analysis	12
Drinking Water Management and Service Solvency	13
Fixed Cost System	13
Service Solvency Legal Requirements	13
Safe Drinking Water Act (Act 399 of 1976)	13
National Primary Drinking Water Regulations	13
Lead and Copper Rule (LCR)	14
Asset Management Plan Requirement	14
Non-Revenue Water	14
Deferred Maintenance and Upgrades	14
Federal and State Water Infrastructure Funding	15
Cost to Comply with Service Standards	15
Revenue-cost gap	16
Affordability	16
Public Safety and Service Solvency	17
Service Solvency Legal Requirements	17
Cost to Comply with Service Standards	17
Financial and Accounting Management and Service Solvency	18
IV. Summary and Conclusions	20

I. Introduction

This white paper is a review of the financial and service challenges, issues and conditions facing the city government of Flint, Michigan as of 2019. The staff of the Michigan State University Extension Center for Local Government Finance and Policy completed this work.

Background

With stakeholders from all levels of government and the private and nonprofit sectors making efforts to address the water crisis in Flint, the city's financial condition appears to improve. However, a sole focus on financial solvency, which is narrowly defined as the balance between revenue and expense, has the danger of masking unmet needs of citizens due to declining revenues and service cuts. This paper's purpose is to propose a systems framework for service solvency that examines the provision of public services beyond traditional financial condition analysis. It acknowledges and incorporates:

- › Economic and socio-economic conditions impact service delivery in addition to internal financial management.
- › Institutional constraints on local governments in Michigan that limit their autonomy and revenue-raising capacity.
- › Legal standards for services that ensure the health, safety and welfare of residents.
- › Residents as key stakeholders and not just captured debt servicers.

Michigan general purpose local units of government (county, city, township and village) cannot easily be altered, let alone dissolved. Should a local government find itself not generating enough revenues to cover expenses, Michigan requires local units to balance their budget yearly and requires local units to submit a deficit elimination plan to the state to show how it will increase revenues and/or reduce expenditures until the deficit is resolved. For some local units this has resulted in continued cuts to service operating expenses (personnel, capital improvements, etc.), regardless of these reductions' impact on service delivery, a "cut your way to solvency" mindset. This short-term perspective to municipal condition analysis can lead to very detrimental decisions, which put at risk resident's health, safety and wellbeing¹. Additionally, the State's "penny wise

¹ The community-based grassroots organization We The People Community Research Collective worked with the Detroit Health Department to use the data to illustrate the impact of water shut-offs on public health and participated in a collaborative research study with the Henry Ford Health System on water shut-offs and health. This work found that Henry Ford Hospital patients were 150% more likely to experience water-related illnesses if their water services had been shut off. In addition, those experiencing water shut-offs are more likely to undergo psychosocial distress. <https://www.wethepeopleofdetroit.com/water>
 "The mapping of water shut-offs and other hardships leading to residential displacement indicates that the destruction of our historic neighborhoods is not haphazard or arbitrary, but deliberate and

and pound foolish" approach to Flint's finances has resulted in hundreds of millions of dollars to be spent on Flint's drinking water distribution system that surely would not have been spent but for the state-made water crisis.

We argue that legal and ethical responsibilities and standards shouldered by the government should be the foundation for financial analysis related to service delivery. The financial analysis should also take into account the city's fiscal capacity and residents' affordability, namely, fiscal solvency and price solvency, respectively. Applying this framework to the city of Flint, this paper examines service solvency related to drinking water management, wastewater management, stormwater management, financial and accounting management, and public safety. For each service, we outline the service level desired and required based on legal standards and discuss the revenue and expense gap Flint faces in order to sustain services at that level, as well as affordability from the perspective of citizens. This framework could help inform new policy approaches to local government finances that foster fiscally healthy communities that people and businesses desire to live and work in.

Fiscal vs. Service Solvency

Much of the Center's work over this past decade has focused on fiscal solvency. Fiscal solvency is the concept that identifies and measures whether a local government will be able to pay its bills, short and long term, as they come due. This was a key concept coming out of the Great Recession as many local governments in Michigan faced a rapidly dropping tax base and declines in state revenue sharing. Michigan's answers to these problems, at least partially caused by the state balancing its books on the backs of local government, were to either increase debt load via emergency or fiscal deficit loans, or to impose some form of state intervention via consent agreements or emergency managers and, in one case, bankruptcy.

Fiscal insolvency, a situation where the local government cannot pay its bills, raises the question of which direction the government will take. One option is to cut expenses and costs. The obvious problem with this strategy is that it exposes the local government to a potential lack of key services that are needed to protect public health and welfare. The primary strategy deployed by emergency managers is cost cutting as they have few tools to address the revenue side of the equation. Another option is to increase revenues either locally or from external sources. The state provides Michigan local governments, compared to their peers nationally, fewer options and resources in financially tough times.

intentional." Gloria House, Ph.D. Mapping the Water Crisis: The Dismantling of African-American Neighborhoods in Detroit (2016) eBook. <https://www.wethepeopleofdetroit.com/product-page/mapping-the-water-crisis-ebook>.

Besides those options, there are several variations of hybrid options. One option is debt loading where a local government borrows money and uses the borrowed money to plug budget holes. A second hybrid would be where local governmental boundaries are adjusted, either expanded or contracted. Each of these hybrid options may impact the revenue and spending side of the ledger. A local government consolidation may involve revenue enhancements, debt restructuring and cost cutting as well. Debt loading is primarily going to allow spending to continue at some pace but later force either spending diversions or new revenue sources to pay off that debt service. These options have myriad policy considerations and local resident consequences that are not expanded upon in this paper.

The overview so far sets the stage for our later analysis on service solvency. Service solvency is defined as “the ability of the local government to provide and sustain a service level that its citizens and businesses require and desire” (Mallach and Scorsone, 2011). The complexity lies in how the level required and desired by citizens is determined. Some of the legal requirements and ramifications related to service level are introduced in this paper. We focus on the following service areas: drinking water, wastewater, stormwater, public safety and financial and accounting to illustrate how the concept of service solvency is applied in the context of Flint. Poverty and population loss reinforce local government fiscal insolvency. Service quality, public safety and residential quality of life worsen. The city’s continuing loss in revenues year after year has degraded city provided services to the point of service insolvency. The necessary tax revenue the remaining Flint residents would need to locally generate in order to invest in dilapidated infrastructure and suboptimal police services is not achievable. The residents who remain are older, poorer, less educated with fewer opportunities and less mobile. These residents are, in a word, stuck.

Service insolvency is essentially the idea that a local government is not meeting some minimum standards of service quantity and quality. Fiscal solvency is the concept that a local government can meet its short- and long-term bills. The two concepts are both in tension and at a point of meeting depending on the circumstances. A government may have plenty of financial resources to meet its service obligations (and perhaps substantial revenue capacity, allowing for the provision of discretionary or even luxury services) or the polar opposite where a government cannot pay its bills and is unable to provide even the legal minimum of services to protect its residents’ health, safety and welfare. Then, there are two scenarios where one or the other solvency is met. In one case, service solvency may be accomplished by the local government but at a cost that leads to financial insolvency. The other option is that financial solvency is accomplished at the cost of inadequate provision of critical public services.

Table 1. Fiscal and service solvency and insolvency

	Fiscal solvency	Fiscal insolvency
Service solvency	solvent/solvent (very stable and affordable)	solvent/insolvent
Service insolvency	insolvent/solvent (fiscally balanced at cost of service provision)	insolvent/insolvent

Flint Socioeconomic Background Brief

The city was built for a population of 200,000 with an industry base employing those residents. Beginning in the 1970s, jobs began to go away and so did Flint’s residents. Flint is a shrinking city with a population under 100,000 and dropping. The Genesee County Metropolitan Planning Commission estimates that Flint’s population in 2045 will be reduced to 78,538².

Property values have been cut in half over the past 15 years. In 2004, total taxable value was nearly \$1.6 billion and by 2018, taxable value had shrunk to just over \$730 million. The reduction in assessed taxable value also has reduced the city’s ability to take on debt for service upgrades. Vacant or abandoned structures are increasing within the city. The Genesee County Land Bank owns over 25% of the parcels in Flint.

Home ownership is associated with the strength of a community’s property values. In 2017, Flint’s owner-occupied housing was 57.39%. This rate is higher than several peer communities. However, the median value of owner-occupied housing was only \$28,200. The next closest in value is Lansing’s at \$77,100.

Tax collection rates have been worsening. In 2000, over 98% of taxes were collected. By 2013, only 86% of taxes were being collected. Fewer city taxpayers are generating less revenues to fund city provided services and maintain infrastructure and pay back debt.

Flint, with a 19.1 city property millage rate in 2017, is nearing its charter maximum millage rate of 20 mills. Grand Rapids, at the other extreme, levied 9.116 mills. Flint levied 50.1838 total property mills in 2017. This rate includes millages for schools. Flint does not levy the highest millage rate among its peers; the city of Lansing, with 72.1 mills, has the highest millage rate. However, Flint’s is above the average rate among its peers.

² <http://ourfuturegenesee.org/wp-content/uploads/2019/04/Final-socio-economic-projections-report.pdf>.

Table 2. Municipal Homeownership Facts in Michigan (2017)

	2017 Housing Vacancy Rate	2017 Owner Occupied Rate	2017 Median Value Owner-occupied housing
Grand Rapids	7.96	54.38	\$121,800
Warren	8.51	69.68	\$102,100
Sterling Heights	3.69	71.50	\$164,700
Ann Arbor	5.95	45.88	\$271,600
Lansing	11.73	50.28	\$77,100
Flint	26.17	57.39	\$28,200
Dearborn	9.64	66.13	\$124,200
Livonia	4.11	84.79	\$170,500
Troy	4.47	72.99	\$269,800
Westland	5.92	59.25	\$105,400
Farmington Hills	6.17	61.80	\$230,000
Kalamazoo	11.77	44.83	\$99,300
Wyoming	4.46	65.38	\$107,700
Rochester Hills	4.49	76.53	\$264,400
Southfield	8.80	47.99	\$124,300

Source: U.S. Census Bureau

Table 3. City Millage and Total Millage Rate (2017)

	2017 City Property Millage	2017 Total Property Millages*
Grand Rapids	9 .1166	34.9667
Warren	27.7703	**54.7973
Sterling Heights	16.1858	**40.1868
Ann Arbor	16.3030	46.0478
Lansing	19.0700	72.1000
Flint	19.1000	50.1838
Dearborn	26.4400	**56.3557
Livonia	NA	NA
Troy	10.4000	37.4200
Westland	NA	NA
Farmington Hills	14.6569	**36.1859
Kalamazoo	13.8000	47.3728
Wyoming	11.9073	39.0020
Rochester Hills	10.4605	**33.1619
Southfield	26.4230	63.0450

*Homestead (principal residence)

** Average of homestead school districts overlapping tax rates

Source: City CAFRs

Flint's unemployment rate for 2017 is the highest among its peers at 10.1%. The next highest jobless rate of 6.1% is in the city of Lansing. The city also has the highest poverty of its peers at 41.2% in 2017. The city of Flint's median household income in 2017 dollars was \$26,330. The average median household income of Flint's peers, including Flint, was \$56,532. Per capita income is also the lowest at \$15,622.

Table 4. Median Household (HH) Income and Poverty Rate for Select Cities (2017)

	Median HH Income (in 2017 dollars), 2013-2017	Per Capita Income in past 12 month (in 2017 dollars) 2013-2017	Poverty Rate 2017	Unemployment Rate 2017
Grand Rapids	\$44,369	\$23,225	22.5%	4.6%
Warren	\$45,611	\$23,696	19.4%	5.3%
Sterling Heights	\$62,344	\$29,116	12.0%	4.2%
Ann Arbor	\$61,247	\$39,253	22.1%	2.9%
Lansing	\$38,642	\$21,355	27.1%	6.1%
Flint	\$26,330	\$15,622	41.2%	10.1%
Dearborn	\$50,329	\$22,467	29.1%	NA
Livonia	\$74,882	\$35,605	5.4%	2.4%
Troy	\$93,017	\$43,640	5.1%	2.9%
Westland	\$46,230	\$26,765	14.6%	3.9%
Farmington Hills	\$76,637	\$43,545	7.5%	2.3%
Kalamazoo	\$37,438	\$22,146	31.0%	5.0%
Wyoming	\$50,971	\$24,115	15.5%	3.8%
Rochester Hills	\$87,457	\$43,854	5.3%	2.9%
Southfield	\$52,470	\$30,928	13.0%	5.1%

Source: U.S. Census Bureau, Census Quick Facts

II. City of Flint Financial Condition

This section will review the current cash, budget, long term and service solvency conditions of the city of Flint based on the FY 2019 recently completed audit and older audits going back to FY 2010-2011 as well as longer-term financial trends facing the city government.

Flint Financial Background

The city's financial fortunes have changed dramatically over time due to both changes in state and federal policy as well as changes in the local economy. The following table reveals the decade by decade changes in the city's own source revenue (local taxes), intergovernmental transfers from state and federal government, change in city budget spending and change in government inflation (as a measure in the cost of providing public services).

	City Budget (% Change)	State Aid (% Change)	Total City Revenues	Govt. Inflation (% Change)
2010s	-3.60%	1.50%	-3.40%	2.70%
2000s	1.20%	-2.60%	-2.40%	3.90%
1990s	-1.40%	3.40%	0.90%	2.90%
1980s	5.60%	6.70%	4.70%	5.60%
1970s	7.20%	12.30%	6.90%	7.70%
1960s	8.10%	10.60%	7.20%	4.20%
Average	2.90%	5.30%	2.30%	4.50%

Source: Flint CAFRs (1960-2019)

The city budget generally grew at a 5-8% level on average from the 1960s through the 1980s. This level matched the change in government inflation and allowed the city to keep pace with cost pressures. On top of this, state aid and city revenues matched those budget changes. Beginning in the 1990s, city revenues first fell dramatically and then went negative for the last two decades on average. City budgets also fell although not at the same pace as revenues and, in particular, the problem was acute in the 2000s. However, government inflation has still increased thus cutting the real purchasing power of the city budget. While certainly the city population has been falling since the 1970s, the land area of the city is fixed and much of its infrastructure is a fixed cost regardless of city population. Therefore, city costs have not fallen at the same pace as city revenues and this has led to the situation of service insolvency today.

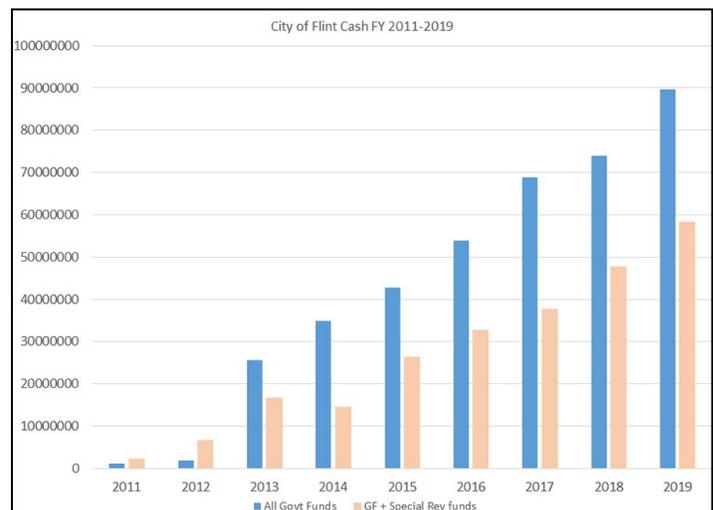
Flint Cash Solvency

The FY 2019 financial audit provides the most recent view of the city's finances and financial solvency condition. The first place to look is at cash solvency. As of June 30, 2019, the city of Flint had a governmental activity cash and investments balance of \$89 million. Many of these funds, about \$30 million, are tied up in restricted access such as state and federal grants and roads and can only be used for a specific purpose³. In the general fund, the city is reporting a fund balance of \$24 million and a cash position of nearly \$20 million, which is a broad measure of fiscal solvency.

Another \$30 million is tied up in the internal service funds, which include information technology, vehicle maintenance, employee fringe and unemployment insurance. These internal service funds may be crucial for tracking and keeping up with depreciation of vehicles and equipment and for saving money for potential legal settlements and unemployment or workers compensation claims. However, at the same time, questions can be raised about the ongoing holding of cash and short-term investments in these types of funds, which are typically thought of more in a break even fashion.

³ These are typically known as special revenue funds and contain restricted monies.

Chart 1. Flint cash solvency

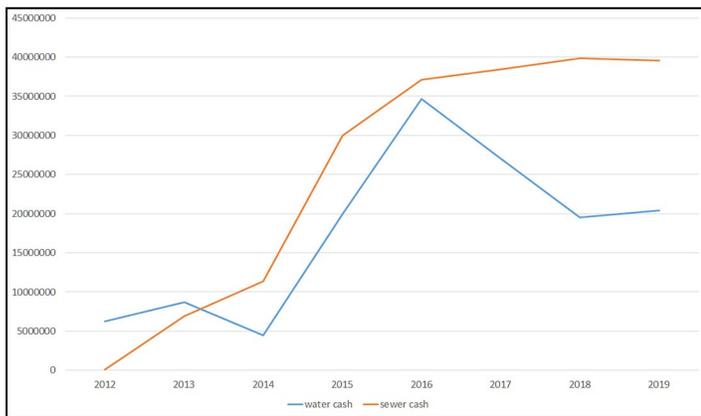


Source: Flint CAFR (2011-2019)

On the business side of the city, the sewer and water system also hold cash and investments. The sewer and water system currently hold about approximately \$40 million and \$20 million in cash and investments, respectively. For both the governmental and business activity areas, this is a substantial change from the period of 2011. In that time period, the city's total cash and investment holdings were only \$1.5 million in governmental activity and \$250,000 in the sewer and water system as of June

30, 2011. Local governments face a difficult balancing act in trying to determine how much cash and short-term investments to have on hand at any given time. Governments clearly want to have enough liquid assets to meet payroll and vendor obligations in any short time period. Additionally, it is necessary to have a cash cushion should a disruption occur to ongoing revenue streams as well as to meet ongoing capital maintenance projects and debt commitments. At the same time, governments do not wish to unnecessarily retain taxpayer or ratepayer monies.

Chart 2. Flint sewer and water system cash solvency



Source: Flint CAFR (2012-2019)

From an overall cash solvency perspective, the city of Flint may, at first glance, appear to be in a strong position. However, cash buildup may occur for good reasons or not-so-good reasons. One negative reason for cash buildup may be that a local government is not paying vendors or other financial commitments. At this time, the city of Flint is generally paying and should be able to pay its typical vendors for materials, supplies and services. However, the big missing financial commitment is Flint’s continued ability to pay the pension and Other Post-Employment Benefits (OPEB) costs and other debt, such as its portion of the Karegnondi Water Authority (KWA) bond repayment. It can also be argued that the city is not fulfilling its legal and social obligations by failing to provide necessary public services required by the residents of Flint. Therefore, the buildup of cash since 2011 may be due to less than ideal reasons. Further, it may be contributing to the lower standard of care the city is providing its residents and businesses. The challenge is determining the gap between the needed public service and ongoing financial commitments versus ongoing revenue sources. Cash and short-term investments are useful for one-time purchases but are not a recommended source for paying ongoing financial commitments.

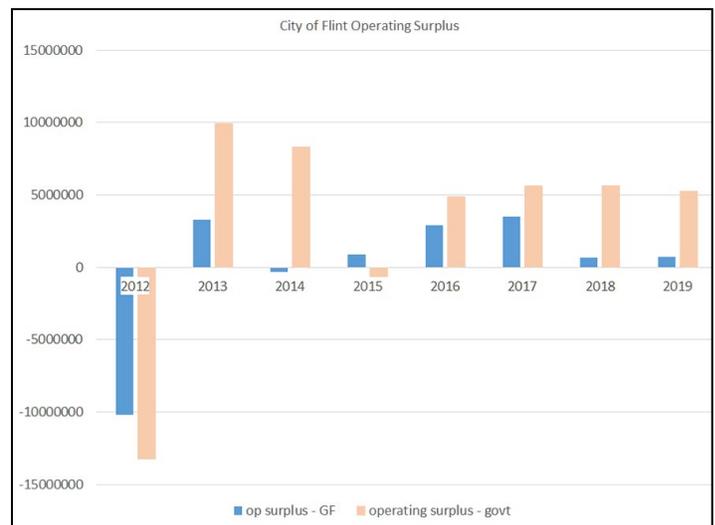
City of Flint Budget Solvency

Budget solvency is a more difficult concept to identify and measure for a local government. For FY 2019, the city of Flint generated a slight general fund operating surplus of \$700,000. After transfers, the change in fund balance was \$3.3 million due

to over \$3.0 million in transfers into the general fund. The grants fund basically broke even and the major streets fund increased fund balance by over \$3.5 million in FY 2019. The non-major governmental funds also slightly increased their fund balance by over \$1 million. Total fund balance for all government funds was about \$60 million for FY 2019, which was up from \$51 million in FY 2018. Again, we observe that the city of Flint is able to meet its budgetary financial commitments and actually generate an operating surplus. The question remains whether in fact the city is spending too little to meet its current costs for long-term financial commitments and its public service requirements.

The general fund is the most important source of budget issues to address in any municipal government. For the city of Flint, the general fund has operated with an ongoing surplus since FY 2012. Chart 3 shows the operating surplus for the city’s general fund.

Chart 3: General fund (GF) and special revenue operating surplus or deficit



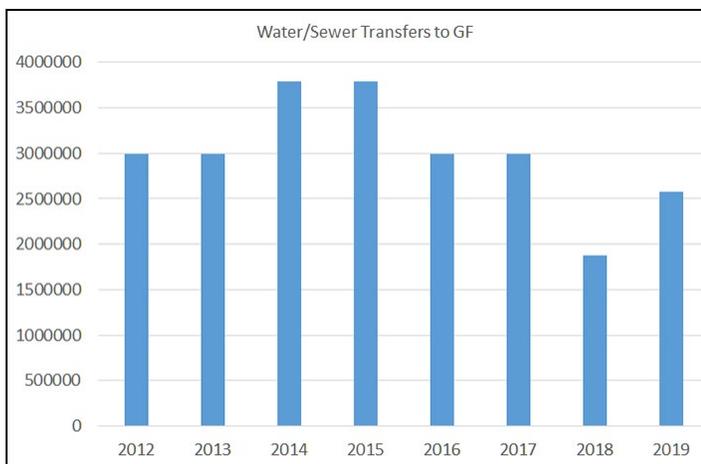
Source: Flint CAFR (2012-2019)

In every year except FY 2015, the city ran an operating surplus⁴. Partly, this surplus was needed to offset the large accumulated deficit in the general fund and special revenue funds that had emerged up to 2012. The general fund (depicted in dark blue in Chart 3) represents the general fund operating surplus. The second bar (depicted in light orange in Chart 3) represents the operating surplus in the special revenue funds. The special revenue funds have run much higher operating surpluses and thus have built up significant fund balances over this time period. However, budget solvency may have appeared to be better than it really was due to failure to meet all expected financial commitments. Further, budget operating surplus may have come at the expense of meeting service provision demands. And so, the story is thus very similar to the cash solvency picture where initial appearances may not tell the whole story that is emerging in terms of fiscal and service solvency over the longer term.

4 An operating surplus is revenue minus expenditures and does include other financing transactions or transfers.

The city's general fund has markedly improved its short-term budget solvency through transfers from the water and sewer fund. These transfers are prohibited under the city charter, "The transfer, encumbering or borrowing from funds specifically designated by millage, grants, borrowing, or from an enterprise fund, or similar, is prohibited and such funds shall be used for the specifically designated purpose. The unused portion of such funds shall be used as provided in State or Federal law, otherwise the funds shall be refunded to the taxpayers, unless the residue is de minimis." (City Charter 7-106). The following chart indicates these transfers over the past seven years. A major reason for the buildup of general fund cash has been these transfers since 2012.

Chart 4: Water and sewer fund transfers to city general fund



Source: Flint CAFR (2012-2019)

Again, the Flint's budget had, on its surface, been in a good position over the past five to seven years. However, there may be serious deficiencies in this approach. The current city budget is not adequate to meet all of the needs of service provision, which will be explored later. For a city of its geographical size and population along with socioeconomic needs, it can easily be argued that the city budget should be, at a minimum, 25% higher; this would translate into an additional ongoing flow of \$25 million in revenue.

City of Flint Long-Term Fiscal Solvency

These short-term financial gains belie a much more difficult medium and long-term picture. In some cases, the long term may become a very short, higher expense as changes from outside entities and forces occur. The city is challenged by its projected long-term obligations relative to projected future resources available. Unfortunately, Flint does not have the capacity to ensure long-term solvency. Flint is struggling with a deteriorating tax base, a generally low-income household population, large scale blight and vacant properties and the ongoing aftermath of the water crisis. Long-term solvency compares the city's long-term revenue flows with ongoing expenditure commitments.

The first place to examine is the city's government wide balance sheet. In the FY 2019 audit, the city had a negative net position of \$260 million. This number means that the city needs to generate a positive \$260 million in surplus or net assets, in financial terms, over the next 20 years to balance out. This problem arises from the following factors:

- > Pension and OPEB unfunded liabilities are \$450 million.
- > A state-designed local revenue system that severely restricts the city's ability to collect property taxes and reductions in state revenue sharing.
- > \$30 million in long-term general debt.
- > KWA bond obligates Flint's state revenue payments to satisfy its portion of the KWA security obligation.⁵

To address these issues, the generation of net assets could come from increased ongoing revenues relative to expenses, asset sales or reduction in expenses relative to ongoing revenues.

There is a second view of this issue from the water and sewer system as enterprises. These systems' balance sheets have a positive net value of \$57 million. However, it does not include the deferred and needed maintenance and capital investment especially in the sewer and water system. These figures add up to nearly \$400 million over the next 20 years. Thus, the true figure is probably a significant negative net value but government accounting does not, at this time, require this type of analysis.

Pension and Retiree Health Care Problems

Some of the city's biggest challenges, for both governmental and business activities, are its pension and retiree health care (OPEB) systems. Governmental activity owes \$281 million in pension unfunded liabilities and \$162 million in OPEB unfunded liabilities for a total of \$443 million. Business activity also owes in these categories including \$90 million in unfunded pension liability and \$90 million in OPEB unfunded liability for a total of \$180 million. Most of these long-term unfunded liabilities can be viewed as need to be paid over a 20- to 30-year period.

⁵ The Karegnondi Water Authority (KWA) water supply systems bonds contracts put Flint's future revenue sharing at risk. If Flint water customers fail to pay their water bills, these needed revenues earmarked to support Flint's portion (approximately \$184.5 million, Notes to Financial Statement KWA Agreeable Payment, CAFR FY 2019) of the KWA debt could put the city in default of its security obligation for the KWA bond. This in turn could jeopardize the city's revenue from state sales tax sharing. "...each local unit has pledged its limited tax full faith and credit for the payment of its contractual payments and is obligated, to the extent necessary, as a first budget obligation to levy ad valorem taxes on all taxable property within its boundaries for such purpose, subject to applicable constitutional, statutory and charter tax limitations. Each local unit is expected to make its contractual payments from revenues collected from charges imposed on the customers of its respective water supply system. The County of Genesee in the contract has pledged to make all payments that the city of Flint fails to make to the issuer under the contract." KWA Series 2014A page 1. Additionally, the Great Lakes Water Authority is obligated to make the bond debt payment under limited conditions.

Flint Legal Related Costs and Liabilities

Going to court is expensive. Lawsuits, generally, are expensive. Not only are there attorney fees but there are also a host of other legal fees and costs associated with bringing a lawsuit, regardless of whether it is actually litigated. For a local government in fiscal distress, like the city of Flint, the millions of dollars spent to defend itself increase an already high debt. Further, lawsuits tend not to begin and end in only one court in one small timeframe; for a variety of reasons, cases can last for years.

There are lawsuits regarding the Flint Water Crisis that are still on going. Just recently, for example, the United States Supreme Court denied the city of Flint's petition for a writ of certiorari to hear a case where city residents asked courts to rule on the issue of whether the government has "qualified immunity" regarding its actions during the Crisis or whether it can be sued. The 6th Circuit Court of Appeals ruled in favor of the plaintiff city residents. Because the Supreme Court denied cert, the 6th Circuit's ruling stands—Flint does not have "qualified immunity" such that the residents who brought the lawsuit cannot sue regarding the government's actions during the Flint Water Crisis. This case was first brought in 2016. It is only now, in 2020, that there is some resolution and, even then, this case was

not about determining whether Flint and other state actors were liable for their actions leading up to and during the crisis. This lawsuit was about asking the court if Flint and other state actors could be held liable and if city residents could sue without the government claiming blanket "qualified immunity." There is likely plenty more litigation on the horizon.

These lawsuits increase the amount of legal liability Flint might potentially have to take on. With the city's poor fiscal health, the increased legal liability will put even more pressure on Flint's strained monetary resources. There is also something of a social cost that comes with high profile litigation concerning high profile issues. Legal cases surrounding Flint and the Water Crisis are still heavily discussed by national media and these cases are followed closely. This kind of scrutiny carries an almost stigma, which, in turn, can impact who wants to move, visit or invest in the city. This can cost the city money in the long run, and considering Flint's already large debt, this may contribute to a decrease in the city's credit rating, making it even more difficult to satisfy liabilities and provide services to residents.

III. Service Solvency Identification and Measurement

Section two provided some insight into the city's financial condition. The next section highlights some key service areas in the city of Flint to demonstrate the severe problems the city faces in utilizing its current revenue streams to upgrade and maintain the services and infrastructure needed to protect public health, safety and welfare. Given the current state of these systems, there are significant long-term investments needed. Stormwater management, drinking water management, sewer management, public safety services, and financial and accounting management will all be reviewed.

Stormwater Management and Service Solvency Fixed Cost System

In the past, stormwater infrastructure has only been rehabilitated as part of an overall road reconstruction project. There are approximately 2,133,629 linear feet of stormwater main owned and operated by the city. The city of Flint's stormwater system consists of approximately 14,862 catch basins, 8,490 manholes, 404 miles of stormwater main and 345 outfalls.

There are several waterways that traverse through the city including Brent Run, Flint Park Lake, Case Drain, Flint River, Hartshorn Drain, Riskin Drain, Gilkey Creek, Calahan Drain, Kearsley Reservoir, Kearsley Creek, Carman Creek, Swartz Creek, Thread Creek and Thread Lake.

There are six dams that are owned and operated by the city: Fabri, Hamilton, Holloway, Kearsley, Thread and Utah. Some of these dams are in need of repair and removal. The city hopes to develop a city-wide Dam Inspection and Maintenance Plan to better address six failing and obsolete dam structures.

Service Solvency Legal Requirements

The city of Flint in 2003 was issued a Michigan Department of Environmental Quality (MDEQ) National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) permit for stormwater discharges. MS4 permits are issued every five years. The city last applied for MS4 permit coverage in March 2016 and is awaiting final issuance and approval from MDEQ, now known as the Michigan Department of Environment, Great Lakes, and Energy (EGLE).

Since 2001, the city of Flint has administered a NPDES Phase I permit (MI0053864) for the discharge of stormwater to surface waters from the city's MS4. MS4 permits are issued every five years. Since 2009, the city has been under an Administrative Consent Order (ACO) (Notice No. EN-0000091) for stormwater runoff issues relating to the city-owned composting facility. Due to several changes in personnel and leadership, including

emergency managers, this enforcement notice is in process and has not yet been remedied officially. However, EGLE staff have indicated that the issue of compost removal associated with the ACO has been done by the city. With the passage on Nov. 11, 2019, of the stormwater management ordinance for the use of storm sewers, the ACO has been terminated.⁶

To comply with the city's MS4 permit requirements, some of the outfalls will need to be reevaluated to better distinguish city-owned versus private ownership, specifically at the General Motors site and Buick City. The city of Flint has several areas in which the layout and extent of underground stormwater infrastructure remains unknown.

To the extent funding becomes available to the city, the Water Service Center will seek to minimize the infiltration of groundwater contaminated with sanitary sewage.

Cost to Comply with Service Standards

Investment and operating and maintenance (O&M) expenses needed for the most serious improvements to the city's stormwater system total approximately \$94 million through the year 2038. The bulk of these costs (\$84 million) will need to be paid through the city's general fund as the state's water revolving fund loans are not available for stormwater systems. Ten million dollars for dam operations and maintenance are expenses funded from the city's water fund and therefore water rate payers would be responsible for repaying any state revolving fund (SRF) loans for dam repairs, inspections and maintenance. Physical inspection of the approximately 2.1 million linear feet of stormwater mains could identify additional investment and O&M expenses in excess of the \$94 million⁷. Furthermore, additional expenditures could be necessary should emergencies and unexpected issues arise that threaten the health and safety of residents and the environment.⁸

⁶ With the passage on Nov. 11, 2019, of the stormwater management ordinance for the use of storm sewers, the ACO has been terminated. Communication with EGLE staff, Brian Zuber, Jan. 14, 2020

⁷ Due to the limited Stormwater Asset Management Plan (SWAMP) SAW grant No. 1384-01 budget, no stormwater main was physically inspected.

⁸ Stream, streambank and habitat restoration, as well as dam removal projects are often funded through state and federal programs such as: Great Lakes Restoration Initiative (GLRI), Sustain Our Great Lakes (SOGL), Michigan Department of Natural Resources (MDNR) Dam Restoration, and the Michigan Department of Environmental Quality (MDEQ) Non-Point Source Pollution. The city should continue to work with its consultants in applying for these funding opportunities.

Wastewater Management and Service Solvency Fixed Cost System

The city is responsible for the acquisition, construction, operation, maintenance and monitoring of the wastewater collection system infrastructure within the city limits. The city of Flint has a 50 million gallon per day (MGD) wastewater treatment plant referred to as the Water Pollution Control Facility (WPCF) located at G-4562 Beecher Rd. with a maximum daily flow capacity of 75 MGD. The city of Flint also accepts wastewater from the Beecher Metropolitan Sewer District (BMSD). The city's wastewater collection system consists of approximately 573 miles of 6-inch to 108-inch gravity mains, 7 miles of pressure mains, 12,846 manholes, approximately 47,600 service laterals and 11 pumping stations. Storage facilities include an 8.5 feet diameter deep tunnel (10MG of storage) and a 10 MG Retention Treatment Basin (RTB). Most of the sewer mains were constructed in the 1920s and 1950s and are made mostly of clay, concrete and PVC segments. The manholes are either block, brick or precast concrete.

The city's wastewater flow is transported through a series of interceptors to three main feeder pumping stations: East Pumping Station, Third Avenue Pumping Station and Northwest Pumping Station. These three main pumping stations pump flow to the WPCF for treatment and discharge into the Flint River. Both the East Pumping Station and the Northwest Pumping station are located adjacent to the WPCF. The Third Avenue Pumping Station is located southeast of the WPCF and requires 18,181 feet of force main to convey station flow to the WPCF.

The 8.5 feet diameter tunnel is upstream of the East Pumping Station and discharges to the pumping station. Even though the wastewater and stormwater systems are separated, wet weather can significantly increase flow into the wastewater collection system and, ultimately, the WPCF. The RTB provides skimming and disinfection if its capacity is exceeded prior to discharging any flow into the Flint River. From April 2008 to November 2018, the city experienced 39 partially treated discharges.

Service Solvency Legal Requirements

The city of Flint and EGLE are currently negotiating the city's NPDES permit.⁹ Non-compliance can result in the need for public notification or fines and consent orders to eliminate the problem. Should a sewer main fail that is near surface water, there are serious ramifications related to public health and negative environmental impacts. A sewer main further away from surface water is less critical because there is more time to contain the overflow before it reaches the water body.

Flint received a MDEQ Stormwater Asset Management and Wastewater Asset Management (SAW) Grant to conduct

9 Personal communication with Byron Lane, EGLE wastewater supervisor, January 2020. Once the NPDES permit process has worked out the outstanding issues with respect to Flint's NPDES permit, there will be an opportunity for public comment, perhaps sometime in 2020.

and implement an asset management plan for its wastewater system (WWAMP).¹⁰ The city's timeframe for the WWAMP is for planning years 2019-2038 and it outlines asset management planning guidance of the wastewater collection system. Hubbell, Roth & Clark prepared a project plan dated July 1, 2019, for Flint's wastewater system upgrades. The city submitted this plan to the state for consideration of SRF low interest loans, currently at 2% interest, to finance projects that are "long overdue and are needed to ensure the WPCF¹¹ can continue to meet the requirements set forth by their NPDES permit. In some cases, imminent failure is expected of existing equipment and immediate attention is needed." (pg. 1-1, HRCS 2019)

Costs to Comply with Service Standards

Investment and O&M expenses needed in the wastewater system through the year 2038 are estimated to cost \$161 million. Adding in total operating expenditures and bond payments over this 20-year period, the wastewater system will experience a revenue gap of approximately \$19.7 million. If the city plans on taking on additional debt for wastewater system upgrades, then the debt payments for the SRF loans will need to be added.

Water rates for Flint's drinking and wastewater system are among the most expensive in the nation.¹² It is unclear how much more water rates can be increased without causing more water shut-offs for non-payment and further eroding Flint residential customer's bill payment rates.

The wastewater collection system is affected by inflow and infiltration (I/I) due to defects in sewer main and property sewer lead connections, as well as illegal stormwater connections including roof and foundation drains. The combination of these conditions results in the city wastewater collection system conveying and paying for the treatment of more wastewater flow than necessary.

Revenue Gap Analysis

As required by the SAW Grant Implementation Project guidelines, a non-detailed wastewater collection system revenue/expense budget review was developed and submitted to the MDEQ prior to the April 2018 deadline. The review was conducted by financial consultant Umbaugh. Upon completion of the review, Umbaugh submitted a "Schedule of 2017/18 Budgeted Operating Expenses and Adjustments" to the MDEQ for review and approval. The required review indicated no wastewater collection system revenue gap and the city subsequently received a June 19, 2018, letter from MDEQ affirming the city had successfully fulfilled the significant progress requirement and that they were in compliance with Section 5204e(3)(a) of the Natural Resource and Environmental Protection Act.¹³

10 City of Flint Wastewater Asset Management Plan (WWAMP) SAW Grant No. 1384-01. November 2018.

11 Water Pollution Control Facility

12 "The State of Public Water in the United States," Food & Water Watch, pg. 10, February 2016.

13 Section 5204e(3)(a), Part 52, Clean Water Assistance, of the Natural Resource and Environmental Protection Act of 1994, PA 451, as amended.

It is important to mention that, “Annual O&M costs included in the report are annual maintenance activities that need to be performed. The list is not all inclusive and does not include other recurring annual expenses such as labor, retirement, insurance, administrative payments, power and other expenses in the general sewer fund budget.” (pg. 27, WWAMP SAW grant report). Adding in these annual recurring expenses, which can be found in the sewer fund cash flow analysis section of the WWAMP report, most years over the 20-year planning period show a revenue gap.

Drinking Water Management and Service Solvency Fixed Cost System

The city of Flint’s Water Treatment Plant (WTP) was constructed in 1917 and supplied drinking water to city customers. The Flint River was the water source for the Flint WTP. As the population and industrial needs of the city grew, the output capacity of the Flint WTP grew to meet these demands. However, by the mid-1960s, concerns about the adequacy of continued use of the Flint River led to the city of Flint to contract with the city of Detroit in 1967 for its water needs for drinking and industrial uses. From 1967 to April 2014, the Flint drinking water plant had only distributed drinking water purchased from Detroit.

Flint must bring its aged and deteriorated water distribution system up to code and meet required alternative water source requirements.

The city’s plan is to build a secondary backup supply line and transport treated water from Genesee County; the estimated cost of that project is \$9.1 million. The funding for this project could come from state funds provided to the city and would not need to be repaid.

Service Solvency Legal Requirements

The city has a legal duty under state law to provide a water system directly or by an exclusive franchise they regulate. The city also has a duty to authorize and regulate an electric utility to provide electric services to residents. If an electric utility gets into financial trouble, there is a legal process of transferring it to an overseer. A city can delegate ownership and operational responsibility to a county, authority, district or other public entity of any water supply within its district. Additionally, if the department of environmental quality “determines that ownership and operation of a type I public water supply by a local governmental agency is not practical for a particular public water supply, private ownership shall be allowed with adequate provisions to assure a continuous operation of the public water supply which meets the requirements of the act and these rules.”¹⁴

Different regulatory authorities impose various standards for Flint’s water management. Despite the different aspects these

standards govern, they all invariably show that Flint has failed to meet its residents’ basic need for safe and reliable water.

In 2008, the MDEQ Drinking Water and Radiological Protection Division performed a review of the city of Flint’s water distribution system and found it to be “deficient” based on needed distribution system, transmission system and pumping station improvements. Most of the storage and pumping facilities are “nearing their useful life and are in need of repair or replacement” (pg. 7, Rowe 2013). Most of the system’s 582 miles of water pipelines are over 70 years old and are in “serious need of replacement” (pg. 5, Rowe 2013). Based on International Organization for Standardization (ISO) and American Water Works Association (AWWA) guidelines, the Rowe¹⁵ 2013 study identified areas of the city where in the event of a residential or commercial/industrial fire, the water distribution system will be unable to meet fire flow and pressure goal standards and thus may be at higher risk to sustain loss of property or life due to a fire event.

Safe Drinking Water Act (Act 399 of 1976)

The Safe Drinking Water Act, PA 399 of 1976, establishes state-level quality drinking water standards setting limits for contaminant levels or establishing treatment techniques to meet standards necessary to protect the public health. Section 5 of the act gives Department of Environmental Quality (Michigan Department of Environment, Great Lakes, and Energy -EGLE) authority to promulgate rules and standards for public water supplies consistent with the state and federal safe drinking water acts for the purpose of protecting the public’s health.

These rules establish requirements for maintaining the reliability of public water supply systems to ensure a continuous supply of water for drinking and household purposes. Public water supply systems are required to identify alternate water sources available in a short-term situation as well as long-term duration. With respect to Flint’s public water system, it appears this requirement to provide drinking water on a continuous basis has been overlooked by EGLE. The department did not monitor and evaluate the adequacy of the Flint water treatment plant to produce finished drinkable water from the Flint River to ensure a continuous supply of potable water was available for Flint customers. To date, Flint water customers do not have access to a viable *alternate continuous* supply of water. This situation is not unique to Flint. Once the city has a secondary backup supply line to transport treated water from Genesee County built, it will be in compliance.

National Primary Drinking Water Regulations

The Environmental Protection Agency (EPA) sets mandatory water quality standards for drinking water contaminants and regulatory limits for the amounts of certain contaminants in water provided by public water systems. These contaminant standards are required by the Safe Drinking Water Act (SDWA). These are enforceable standards called “maximum contaminant

¹⁵ Rowe City of Flint Water Reliability Study, Distribution System, from December 2013.

¹⁴ Drinking Water Rules, R 325.11705.

levels” (MCLs), which are the maximum allowable amount of a contaminant in drinking water that is delivered to the consumer.

Flint continues to have difficulty hiring necessary, capable and qualified personnel to staff its public water system. The EPA brought this ongoing issue to the city’s attention in a recent June 2019 letter titled “Concerns with Staffing Issues at the Flint Public Water System and Compliance with EPA’s Emergency Order,” where the EPA highlighted the continued personnel deficiencies.¹⁶

Lead and Copper Rule (LCR)

MDEQ is responsible for enforcing this rule for Michigan water systems. The EPA Office of Inspector General (OIG) found the MDEQ (now called EGLE) did not ensure that the Flint water system under the MDEQ’s supervision, “adhere to two Lead and Copper Rule requirements: (1) develop and maintain an inventory of lead service lines needed for sampling, and (2) maintain corrosion control treatment after the water source switch in April 2014.” The Lead and Copper Rule (LCR) requires water utilities to minimize exposure to lead in drinking water. The OIG found that the MDEQ “advised Flint public water system staff to conduct additional tests and to delay corrosion control treatment installation. The decision to delay corrosion control treatment prolonged residents’ exposure to lead.”¹⁷

In an August 2010 report by EPA, “Program Review for the Michigan Department of Environmental Quality Water Bureau” found MDEQ Department of Water Quality made disinvestments from its oversight of public water systems within the state.¹⁸

In 2018, Michigan adopted the country’s most proactive LCR with a more protective lead action level of 12 parts per billion (ppb) by 2025. Water supplies with lead service lines must offer to replace all lead service lines at water supply expense. Lead service line replacement costs are spread across all water ratepayers and now protect people who cannot afford to pay the cost of the private side of the lead service line replacement. This rule reduces the risk of lead exposure from a partial lead service line replacement or water shut-off due to being out of compliance with the LCR regardless of one’s ability to pay to be protected from lead exposure.

Asset Management Plan Requirement

Beginning in 2016, drinking water rules¹⁹ require inventory of assets and an asset management plan (AMP) for publicly owned water systems. The consulting firm, Arcadis, was retained to develop an AMP for Flint’s drinking water distribution system.

16 https://www.epa.gov/sites/production/files/2019-07/documents/flint_public_water_system_staffing_concerns-20190626.pdf

17 Report No. 18-P-0221, July 19, 2018: https://www.epa.gov/sites/production/files/2018-07/documents/epa_oig_20180719-18-p-0221.pdf

18 https://www.epa.gov/sites/production/files/2015-11/documents/program-review-mdeq-water-bureau-20100830-76pp_0.pdf

19 R 325.11606

There is no state grant program available to community asset owners to comply with this requirement. Flint received a \$2 million grant to comply with wastewater and stormwater asset management plan requirements. It is not known who paid for the Flint drinking water distribution system AMP for Flint to be compliant.

Non-Revenue Water

The city of Flint purchases water from the Great Lakes Water Authority (GLWA). The difference between the quantity of water the city purchases from GLWA and the quantity sold to Flint system customers is called “unaccounted for water” or “non-revenue water.” Un-metered water occurs when water is used to fight fires or flush water mains, water loss due to leaks and breaks in water mains, broken or inaccurate water meters, illegal connections and un-metered municipal water use and each contribute to “unaccounted for water.”

The Flint water system averaged 63% efficiency from 2007-2011. That means 37% of the water Flint purchases from Detroit Water & Sewerage Department (DWSD) is not billed and therefore the water system “eats the cost” of the unbilled portion. The unaccounted-for water situation is getting worse. According to a May 13, 2016, study by Raftelis Financial Consultants commissioned by the Michigan Department of Treasury, in recent years, Flint bills 50-60% of the water it purchases from GLWA compared to 90% for Flint peer utilities (pg. 2, Raftelis 2016). That means Flint’s water system is losing 40-50% of its revenues annually.

Deferred Maintenance and Upgrades

The Rowe City of Flint Water Reliability Study, Distribution System, from December 2013, states that the 2009 Drinking Water Revolving Fund Project Plan for the city outlining several necessary capital improvement plan (CIP) projects was not done due to “economic conditions” faced by the city.²⁰ The Rowe 2013 report describes Flint’s water distribution system maintenance work as one that is done in a reactionary (emergency) repair basis and not one based on preventative maintenance and replacement.

On Dec. 17, 2018, the city of Flint and the Department of Environmental Quality (now called EGLE) entered into a voluntary agreement to work collaboratively to “ensure that the city’s water system achieves the goal of long-term self-reliance: a goal shared by both parties.” As per the agreement, the city provides the department the steps it plans to take to achieve this goal without raising customer rates. The self-reliance of the water system is unclear given that in FY 2019, revenues were down due to lower water sales. However, operating costs were lower than projected due to necessary positions going unfilled to save labor costs. There is a lot of hope that the new water meters will generate significant additional revenues for the water system, and these hopeful revenues are earmarked to be used to fund needed capital to update the system.

20 Pg. 14, Rowe 2013

Table 6. City of Flint Water System Efficiency 2007-2011

Year	DWSD Purchased Ccf	GCDC Billed Ccf	DWSD-GCDC Ccf	City of Flint Billed Ccf	City Only	Efficiency
2007	15,295,449.00	6,907,946.00	8,387,503.00	12,575,645.00	5,667,699.00	0.68
2008	13,934,327.00	6,418,120.00	7,516,207.00	11,204,322.00	4,786,202.00	0.64
2009	11,943,960.00	6,069,843.00	5,874,117.00	10,027,390.00	3,957,547.00	0.67
2010	13,108,730.00	6,263,618.00	6,845,112.00	10,140,121.00	3,876,503.00	0.57
2011	11,926,870.00	6,121,590.00	5,805,280.00	9,650,632.00	3,529,042.00	0.61
Totals	66,209,336.00	31,781,117.00	34,428,219.00	53,598,110.00	21,816,993.00	0.63

Source: City of Flint Water Reliability Study Distribution System. Rowe December 2013, pg. 19

As of December 2019, very little of the Water Infrastructure Improvements for the Nation (WIIN) and state funds (\$1.742 million) have been spent on earmarked capital improvement projects. This may be due in part to the fact that Flint has not had funds available for improvements for so long and now does not have the capacity to manage projects at this scale. Projects are behind schedule and timelines are being revised and moved later, perhaps due to Flint’s limited project management capacity. The city continues to focus on service line replacement. The majority of replacements occurred in 2018. In 2019, fewer than 200 of the total 4,667 replacements occurred as reported to the Drinking Water State Revolving Fund (DWSRF) fourth quarter report. As of Aug. 23, 2019 (the latest available infrastructure report), nearly 90% of the federal WIIN funds were not spent.

Federal and State Water Infrastructure Funding

In 2017, the EPA awarded Flint \$100 million in a WIIN grant. The state of Michigan awarded \$67.7 million in the DWSRF grant (0% interest rate and 100% principal forgiveness). These funds are for service line replacement work, as defined in the Concerned Pastors Settlement Agreement (Concerned Pastors v Khouri, Case No. 2:16-cv-10277-DML-SDD).

The state forgave \$20,770,336 in debt from four DWSRF loans originated between 1999-2003. The city of Flint has no other outstanding SRF loans.

Cost to Comply with Service Standards

Facing the dire need for fixing the drinking water system, the city’s hands are tied with insufficient funds. Chart 5 shows the revenue and cost gap based on estimations made by Raftelis (2016). Here, there are two bars for a given year, one showing the cost of improving and maintaining the system whereas the other showing the projected revenue. The chart shows that

starting in 2018, \$212 million is required to complete the capital improvement plan in the first five years. Additional funds are needed for horizontal and vertical assets for later years until 2037. Operating and maintenance expenses will also increase over the course of time to keep the system functional, ranging from \$28 million to \$60 million annually. However, the grant funding is limited, with the amount fluctuating between \$13 million and \$92 million and will only be available until 2021. Coupled with sluggish water collection, the gap is stark with the expected revenue (based on the assumption of 2.2% annual growth) covering merely half of the capital costs. The city has a policy to maintain an operating fund balance of 25% of annual

Table 7. USEPA Water Infrastructure Improvements for the Nation (WIIN) Award	
Project	Budget
Service Line Replacements	20,000,000
Secondary water source	9,163,300
Dort and Cedar storage/pumping	10,125,000
Chemical feed building	3,400,000
Northwest transmission main	12,296,900
Water main replacement	13,683,125
Meter replacement	18,460,000
Water quality monitoring	612,500
Local assistance/capacity building	2,259,175
Service Line Replacements contingency	10,000,000
Total Federal Funding	100,000,000
Source: WIIN grant	

O&M and debt service, and as a result will divert this portion of the fund away from drinking water and transfer to the general fund. As the costs for maintenance increase, the gap between costs and revenues widens. It is important to note that this cost does not include water treatment plants. If these associated costs were included, the gap would be wider.

Revenue-cost gap

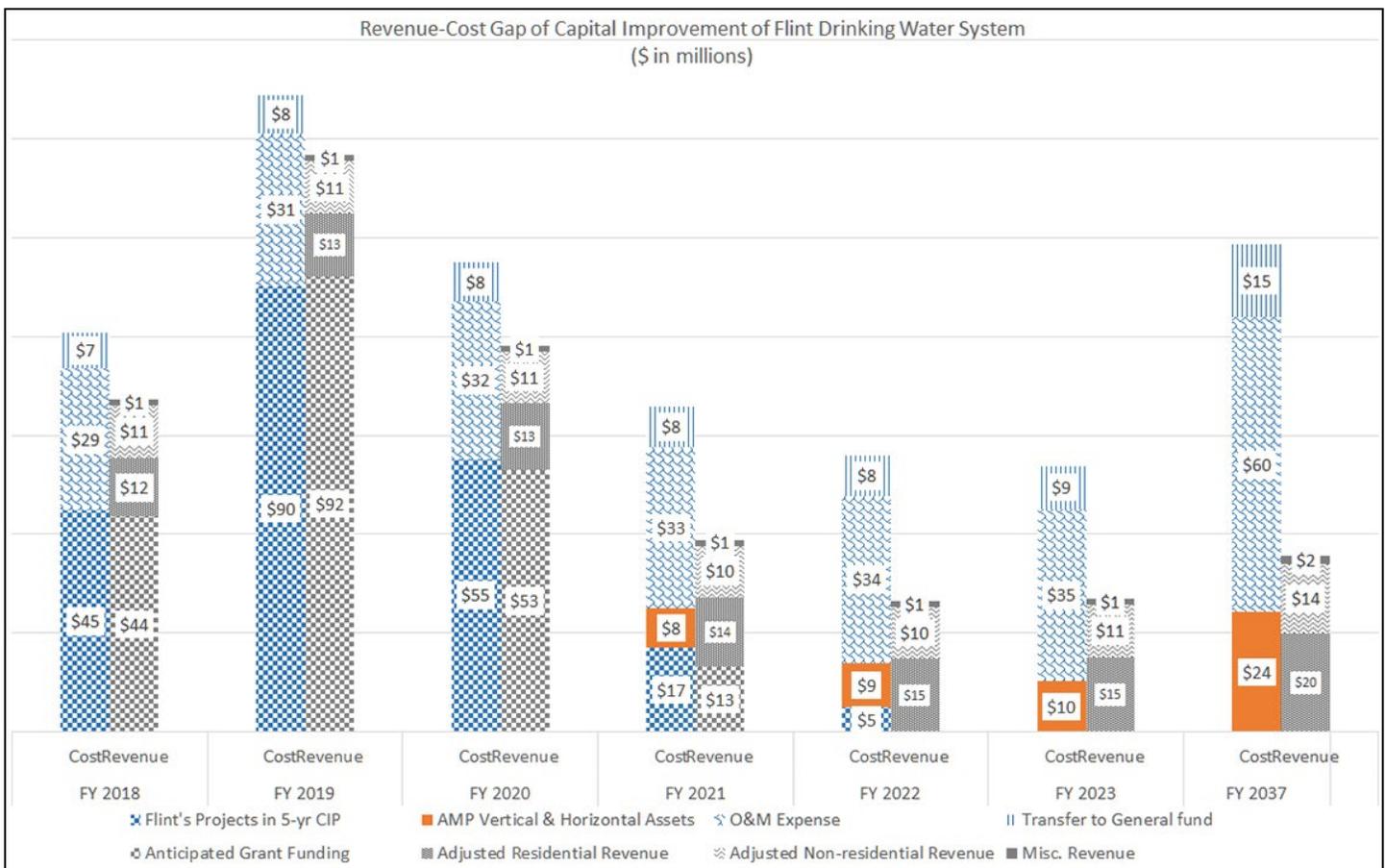
Investment and O&M expenses for the water distribution system estimated at \$1.34 billion through the year 2037 are necessary²¹. Adding in total operating expenditures and the city's policy of maintaining a 25% operating fund balance, the estimated revenue gap of the water distribution system is \$828 million over this 20-year period.

21 Arcadis 2017 Water System Asset Management Plan for Flint Drinking Water Distribution System Optimization, Jan. 31, 2018.

Affordability

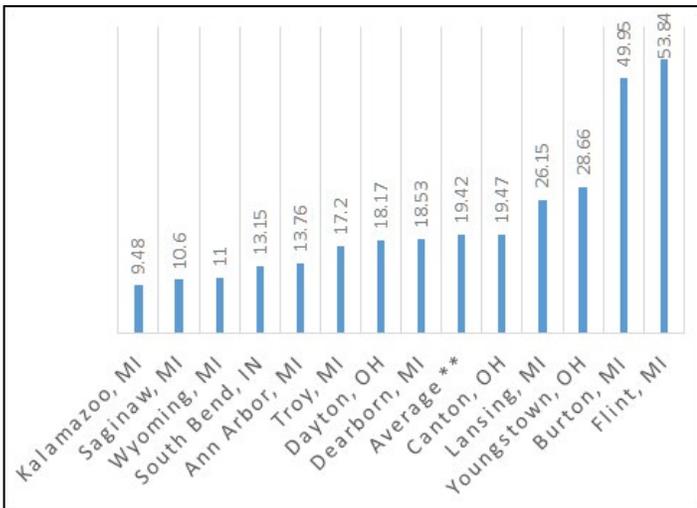
According to the analysis on Flint's water rates done by Raftelis in 2016, Flint's rates are high relative to its peer communities. One factor cited for this is the city's purchasing water from DWSD (now GLWA) and having the Flint water plant as its alternative continuous water supply. This issue is fraught with political and emotional thinking. However, over the decades the city purchased Detroit water and "maintained" a water treatment

Chart 5. Revenue-Cost Gap of Capital Improvement of Flint Drinking Water System (\$ in millions)



Source: Arcadis 2018 report on Flint water distributions system optimization

Chart 6: Typical* Flint Monthly Bill at Comparable Levels of Peer Utilities



*The typical customer uses 500 cubic feet (CCF), or 3,740 gallons of water per month.

Source: Raftelis, Flint Water Rate Analysis, May 13, 2016.

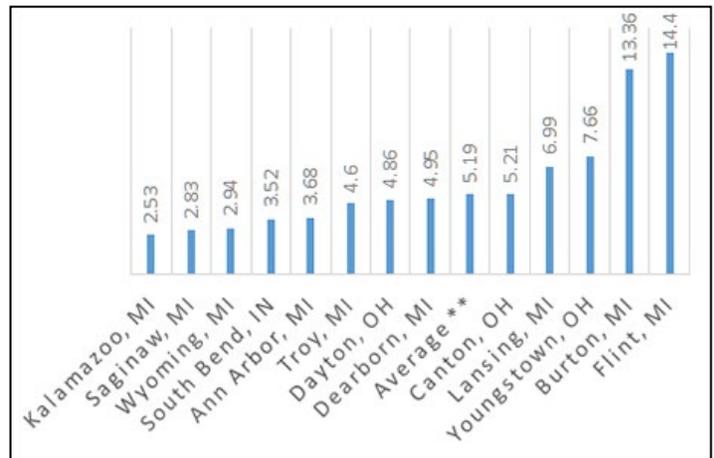
plant, it was not capable of producing drinkable water on a continuous basis for Flint customers.²²

The average rate is \$5.19 (average does not include Flint). Clearly, Charts 6 and 7 show that it would be unconscionable to ask Flint’s water system customers to pay any more for this service.

22 The Karegnondi Water Authority (KWA) water supply system bonds (series 2014A) painted a picture of the Flint water system that gives the impression that the Flint water treatment plant “currently provides treated water from the Flint River as a backup to the water provided by DWSD” (pg. 10). This statement implies that the water is treated and meets the necessary criteria to be drinkable. “In order to provide finished water to its customers, Flint expects to use an existing water treatment plant, which is currently operating in a backup role with a capacity of 36 mgd. Flint will be required to make an estimated \$8 million in improvements to convert the plant from stand-by to fully operational.” (Jones & Henry Engineers, Ltd.) The Jones & Henry report does not say what specific improvements and their associated costs the \$8 million is to be used for. It suggests “approximately \$20 million to upgrade the WTP and approximately \$17 million to upgrade the distribution system. Much of the WPT capital improvements are required to enable the city to treat Flint River raw water and KWA raw water on a continuous basis” (pg. 12). [Note in appendix C-5 J&H state that \$8 million is needed to upgrade the WTP to provide potable water on a continuous basis.]

The KWA bond, without giving cost estimates acknowledges that “other components of the WTP are in poor condition and in need of maintenance and/or replacement, including various mechanical and electrical equipment; security improvements; building additions and renovations; Heating, Ventilating, and Cooling (HVAC) systems; concrete and asphalt; and roofs.” (pg. 11) The bond obfuscates the fact that the \$48 million investment completed in 2006 “to meet state regulatory requirements” did not make the Flint WTP ready to provide drinkable water from the Flint River on a continuous basis. The bond did not reference the Rowe/LAN July 2011 study, Analysis of the Flint River as a Permanent Water Supply for the City of Flint in its sources/footnotes. Given this omission of information, it would be almost impossible for a bond purchaser to fully research and weigh the risk of whether to purchase the bond.

Chart 7: Effective Typical* Customer Rates (\$ per 1,000 Gallons)



*The typical customer uses 500 cubic feet (CCF), or 3,740 gallons of water per month.

Source: Raftelis, Flint Water Rate Analysis, May 13, 2016.

Flint’s financial obligation under the KWA bond sets up the situation that, should Flint water customers not pay their water bills, thus reducing water fund revenues, a portion of which are obligated to paying KWA bond debt, Flint water rates must be raised so as to generate necessary revenues. As Charts 6 and 7 show, it is indefensible to imagine a reality where raising Flint’s residential water rates any further would be acceptable.

Public Safety and Service Solvency Service Solvency Legal Requirements

Local governments have the duty to provide public safety. However, compared to cities of comparable size in Michigan, Flint’s violent crime per 10,000 is 32% higher than its closest peer community, Grand Rapids, and homicides are 300% greater than Lansing and 540% greater than Grand Rapids (See Table 8, next page).

As of Dec. 2, 2019, there were 42 homicides in the city, up 40% from last year on that date with a total of 30 homicides. Total violent crime and property crime numbers are down 6.7% from last year to date.

Cost to Comply with Service Standards

The lack of capacity in Flint is astounding compared to its peers. The number of sworn police officers has shrunk by half, reducing from 249 to 112 from 2005 to 2019, respectively. Flint Police Department (FPD) has to rely on unpaid volunteer reserve officers to artificially maintain the current size of the department. Full-time police officer positions adopted in the FY 2019 budget were 111 and nine part-time officers. Part-time civilians were 51; these would include unpaid volunteer reserve officer positions. The number of patrol units (marked and

Table 8. 2018 Part 1 Crimes by City

City	Violent	Homicides	Property	Total	Population	Violent Crimes per 10,000	Homicide Crimes per 10,000
Ann Arbor	270	2	1,932	2,204	122,571	27	0.2
Dearborn	314	1	1,871	2,186	94,022	31.4	0.1
Farmington Hills	69	1	681	751	81,239	6.9	0.1
Flint	1,739	32	2,584	4,355	95,677	173.9	3.2
Grand Rapids	1,313	5	3,830	5,148	200,428	131.3	0.5
Kalamazoo	1,008	7	3,825	4,840	76,020	100.8	0.7
Lansing	1,301	8	3,557	4,866	117,380	130.1	0.8
Livonia	138	0	1,313	1,451	93,740	13.8	0
Rochester Hills	53	1	442	496	74,669	5.3	0.1
Southfield	204	2	1,509	1,715	73,418	20.4	0.2
Sterling Heights	240	2	1,334	1,576	133,055	24	0.2
Troy	52	1	1,157	1,210	84,221	5.2	0.1
Warren	688	4	2,808	3,500	135,160	68.8	0.4
Westland	316	0	1,234	1,550	81,438	31.6	0
Wyoming	350	3	1,477	1,830	76,498	35	0.3

Source: FBI

unmarked police vehicles) decreased over 39% from 2009 to 2018. Volunteer reserve officers are required to be paired with a sworn officer. Reserve officers are authorized to carry a gun purchased by the volunteer; however, volunteer reserve officers cannot man a patrol unit alone. Volunteer reserve officers are trained by sworn officers who train police officer recruits. The city does not provide funds for reserve officer training. This training is provided by volunteer police officers.

The practice of using non-sworn reserve officers to fill the sworn office deficit has led to significant concerns about the FPD sworn officer understaffing that impacts operations, morale, retention, and officer and community safety. The department is most likely limited in its ability to engage the community, work on problem-solving projects and develop strategic initiatives to respond to violent crime.

Michigan State Police continue to serve in Flint to plug the hole of insufficient number of Flint sworn officers. Their presence has contributed to continued low morale of Flint sworn officers.

According to FBI statistics, Michigan has 1.7 police officers per 1,000 persons. Flint has 1.0 police officers per 1,000. Flint's deputy chief has shared that among peer Michigan communities, Flint has 0.83 officers per 10,000 people compared to 2.3 officers. The city of Lansing has nearly 100 more sworn officers than Flint with roughly the same population.

The service situation for Flint firefighters is similar to that of police. According to the National Fire Protection Association, in 2017, the median rate of career firefighters per 1,000 persons in the Midwest for protected populations within the 50,000 to 99,999 range was 1.23.²³ Flint, with 90 firefighters and

²³ This is a reported rate and does not reflect recommended rates or some defined fire protection standard.

approximately 94,000 residents, has 1.0 per 1,000 persons. For the same range of population protected, the national median is 1.33 firefighters and the high is 3.32 firefighters.²⁴

Financial and Accounting Management and Service Solvency

The Comprehensive Annual Financial Report (CAFR) for the city of Flint for the fiscal year ending on June 30, 2019, was released on time in December 2019. This is noteworthy because there were real concerns that the deadline would not be met. These concerns stemmed from the fact that Flint does not have the necessary finance and accounting personnel on staff and must supplement this capacity deficiency with non-Flint staff for this work. If Flint was not able to meet the legal deadline for submission of its CAFR to Michigan Treasury, it would be in violation of the Uniform Budget and Accounting Act

The FY 2019 CAFR found deficiencies in internal controls and management oversights, which have negative consequences on the financial and accounting duties of the city. The city of Flint is a multi-million dollar endeavor. In FY 2019, the city billed \$198.2 million in taxes, fees and grants for governmental and business-type activities and spent \$141 million to provide city services. It is the responsibility of the finance and accounting personnel to authorize and record these transactions.

There were 12 findings highlighted in the FY 2019 CAFR, some continuing from prior years. The city continues to have a lack of management oversight and internal controls over financial

²⁴ The rates of a particular size of community may vary widely because departments face great variation in their specific circumstances and policies including length of work week, unusual structural conditions, types of service provided to the community, geographical dispersion of the community and other factors.

reporting and therefore accounting records were misstated and these problems were not detected and adjusted. A few of the findings are summarized below.

The city lacks a sufficient number of staff with the duty to oversee the authorizing and recording of financial transactions. Without proper personnel responsible for these duties, the city is more exposed to potential acts of fraud and abuse of funds.

The city continues to not follow its own policy regarding the use of purchasing cards. Specifically, the city had approximately \$11.5 million in expenditures that did not have an associated purchase order. Most of the largest items are for construction contractors. As a result of this condition, the city is exposed to an increased risk that misstatements or misappropriations might occur and not be detected by management in a timely manner.

Additionally, there were instances found where the city's competitive bid requirements for purchases exceeding \$10,000 were not able to be substantiated with proper documentation. There were also instances where vendors began work prior to purchase order approval and contracts with vendors being fully executed. Again, this condition exposes the city to increased risk of misappropriations of funds.

Within the utility billing department, there are not proper segregation of duties. Specifically, the billing supervisor can approve credits and then also approve the final billings before they are sent to customers. This lack of segregation of duties and oversight creates a situation where it is not possible to determine whether someone is eligible for billing credits. In addition, utility service charges for water did not follow approved rates.

IV. Summary and Conclusions

The city of Flint continues to face financial and service challenges following over two and a half decades of state disinvestment and economic shocks, as well as the infamous water crisis. In the past five years, the city has managed to stabilize its finances but at the cost of failing to deliver on the city's constitutional, statutory and charter driven mandates for critical public service provisions to citizens. These deficiencies show up in public safety, finance and accounting, drinking water, stormwater and sewers, among other areas. On the other side of the ledger, if Flint were asked to begin spending the needed amounts to meet these mandated requirements across the board, it would be unable to muster the necessary resources to do so given the limits of the local tax capacity debt limits and intergovernmental transfers.

Currently, the city spends \$96 million in governmental activity. A rough estimate is that Flint would need to spend \$140 million to adequately fund both pension and retiree health care commitments and be able to meet those expense obligations and meet service obligations and meet service solvency. An additional

\$20 million annually is needed to meet pension obligations and an additional \$20 million is needed to meet service requirements for public safety, general government and financial management. This does not include the financial and service obligations in the sewer and water systems.

In the water and sewer enterprise systems and the general fund-based stormwater system, there are close to \$500 million in needed infrastructure improvements to maintain the systems. Thus, over time, Flint will need to raise close to \$25 million for 25 years. This will only likely be possible through sewer and water rate hikes and improvements in non-revenue water issues.

Over time, there are significant fiscal challenges to meet and even maintain service solvency and service responsibilities. Given this reality, the Flint city government will struggle to meet both fiscal and service solvency and this will lead to some form of voluntary or forced restructuring. The real question is what Flint will look like after this restructuring.