



Gainesville Regional Utilities

2019 Cash Balance Study

PFM Financial Advisors LLC
11605 North Community House Road
Suite 500
Charlotte, NC 28277



EXECUTIVE SUMMARY

The Cash Balance Study 2019

This is the inaugural Cash Balance Study (“CBS”) for Gainesville Regional Utilities (“GRU”). The purpose of this study is to identify prudent cash levels required to accommodate various sources of cash flow variability as well as manage risk. While this study will conclude that there is a “preferred” level of cash for GRU, another important conclusion is that the CBS should be periodically reviewed to reassess the reserves levels, in view of changing micro and macro-economic conditions as well as changes in GRU’s risk profile.

The fundamental reason for developing the CBS is to maintain sufficient cash to absorb short-term financial variability resulting from unexpected economic and operating results. This facilitates a utility’s ability to establish rates that reflect long-term costs, without necessarily imposing the full impact of short-term volatilities. An underlying assumption in a Cash Balance policy is that all parties involved prefer stable prices and reliable service. In order to address the strong customer preference for predictability and consistency, each stakeholder in the process of working with GRU should play a role in meeting these stability objectives. GRU, as much as reasonably possible, should contribute to price stability in the interest of helping its ratepayers with cost certainty as well as reliability of the services provided.

The goal of promoting long-term rate stability can compete with the desire to deliver services at the lowest possible cost in the short term. Funding adequate Cash Balances, like insurance and hedging decisions, imposes higher initial costs in hopes of reducing and stabilizing future costs. Balancing this tension between the competing goals of lower costs versus stable rates is an integral component of the CBS. PFM recognizes that these goals, of lower costs versus stable rates, can also be perceived differently within different areas of GRU and its ratepaying base.

Methodology

This 2019 CBS applies a methodology which identifies and then quantifies the impacts of potentially adverse income statement and other events. PFM evaluates an array of outcomes for these events, utilizing a “Low – Middle – High” (actually “Less Conservative, Moderate and More Conservative”) approach in developing a range of potential cash flow impacts from any individual event. GRU currently has a Cash Balance target developed through varying methodologies. This CBS incorporates some elements of these prior target methodologies but does differ from prior guidelines due to the systematic review of revenue and expenses risks faced by GRU. In many ways, this CBS is a means to “re-baseline” the prior targets by providing a thorough look at GRU’s operating risk as well as market conditions.

Given the statistical improbability of all the adverse volatility events occurring within the same general time period, it would not be appropriate to simply total the figures for a given range and use that total as a reserve target. Therefore, from the “Low – Middle – High” figures, PFM then selected one of the three amounts for either a Minimum and Preferred aggregate funding level for overall reserves. The recommendation includes a general Working Capital line item that most utilities utilize for the normal imbalances between revenue and expense realization. The “Low – Middle – High” Working Capital figures are based on 45, 60, and 75 days of daily cash flow run rate.

PFM does note that in the prior cash target methodologies, some level of cash was reserved to account for risk with capital projects. Capital Reserves have been excluded from this CBS Report. After discussion with staff, these were excluded for a few reasons. Foremost, GRU is not facing a large capital plan in the coming years. Secondly, the type of projects in the capital plan can be categorized as more “routine” efforts required for the systematic repair and expansion of the system. Finally, GRU has proven expertise



in this area, with minimal cost overruns and delays in completion that could put cash at risk. GRU may want to re-evaluate this assumption in future updates to this report.

Changing Utility Environment

Reserve levels should be developed in the context of the operating environment and risks faced by an individual utility. Some of these key areas of recent change are:

- The Florida market and GRU management are working to transform the region through the economic, prioritized dispatch of generation assets in the state. Given the low cost of natural gas, these units drive the market, typically at the expense of operating formerly base-load units such as Deerhaven 2. The implications are large and impact how GRU manages its power supply portfolio. PFM recognizes that the agreement with JEA for joint dispatch has been beneficial and believes this is a model for Deerhaven Renewable (“DHR”). As the demand for “green” energy becomes stronger in the region, similar agreements for DHR’s green energy could be a welcome source of off-system sales for GRU.
- Conservation efforts have been successful. There are few industries across the U.S. economy that tout the success of programs that effectively reduce the demand for that organization’s products – but this is something common in the utility space. GRU has seen tepid demand changes in the electric system while water and wastewater (on a thousand gallon basis) appear to have a slight negative growth rate since 2010. For the gas system, demand for this appears to be driven by weather. The implications of these changes in consumption and consumer behavior is that GRU’s fixed costs will need to be recovered on likely lower quantities of services delivered (kWh for electric, therms for gas and then kgals for water and wastewater).
- The State of Florida is one of the few states that does not have a renewable energy standard or goal. However, this does not preclude future action by the state legislature. More significantly, the Gainesville City Commission has taken a very progressive and proactive approach in recent years than the elected officials in Tallahassee. The recent resolution passed by the City Commission, stating the goal of providing 100% of the City’s energy from renewable resources by 2045 provides clear intent and would make Gainesville a leader in Florida in the renewable energy transition. Two other initiatives also indicate the progressive nature of the City - the desire by the City Commission to voluntarily achieve the emission reduction standards established by the Kyoto Protocols as well as the ban on GRU’s purchase of coal mined through mountain top removal (subject to certain savings parameters). PFM does note that GRU currently has a significant renewable portfolio due to DHR.
- Natural gas development and penetration of the Florida market has exceeded development and penetration in other regions across the U.S. Based on data from the Energy Information Administration (“EIA”), Florida is a major producer of gas-fired electricity with more than two-thirds of the state’s net generation coming from natural gas in 2017. Although not a unified market, natural gas prices will continue to drive the overall Florida market for energy pricing and less volatility has been seen in natural gas prices in recent years. Additionally, pipeline expansion, such as the \$3.2 billion Sabal Trail project, will continue to shift the state’s primary fuel more in favor of natural gas. While it appears that the demand for gas is robust, in terms of future outlook, EIA forecasts that natural gas prices will remain in a relatively tight band through 2050.



- Over the past decade, the economy was exiting the “Great Recession” with some fits and starts. Utilities were still seeing impacts of reduced energy, water and wastewater sales, generally from the uncertainty in the strength of the economic recovery that prevented large-scale investment and expansion. In 2018, economic indicators, such as unemployment rates, continued to show improvement and, as evidenced by recent Federal Reserve rate increases, the return to “full employment”.
- GRU’s resources have changed substantially over the last five years. The 2017 bond transaction, effectively terminated the power purchase agreement (“PPA”) for the biomass plant (previously “GREC,” now DHR) and effectively provided GRU with greater control of that facility. This change yielded significant savings when comparing debt service from the 2017 bonds to the PPA payments. Additionally, this transaction also shifted the GREC costs from Fuel to the Base Rates.
- Given the Trump Administration’s desire to revitalize the coal industry, regulation of greenhouse gases appears to be a very low priority for the next few years. However, these are the policies of the current administration and there is a presidential election in two years which could lead to a new administration that seeks to revert back to the prior policies, plans and goals.
- Inflation will increase the general level of costs over the next few years if the economy continues its expansion. While the Federal Reserve has indicated their intent to raise the Federal Funds rate as a means to temper inflation, it is likely that the inflation rate will return to a more normal level, seen before the recession. This means that GRU and staff should expect about a 3% level of inflation which will erode the value of one day’s cash over time. In this analysis, we have assumed 3% inflation and a mid-point in time of 2020 to account for inflationary impacts on costs. PFM does note that, *all other things being equal*, rates should move in lockstep with inflation to provide the same level of service and reliability across all systems.
- As the economy has left the “Great Recession” and entered into a period of sustained growth, the financial footing of many peer utilities has improved. In general, municipal utilities across the U.S. have increased the level of cash retained in the business while also paying off debt or financing more projects through internally generated funds. While each utility has a different situation, the rating agencies will also look at how GRU compares to similarly rated utilities for these and other metrics.
- Resiliency and climate change are becoming more of an issue. While the hurricane seasons of 2017 and 2018 were not as bad as some prior years (notably 2005 when five named storms struck the state), the region was hit with damage from multiple storms. Fortunately, the Federal Emergency Management Agency does provide some relief of these costs. However, reimbursement takes time (historically about two years from event to reimbursement). Outside the region, the California wildfires of 2018 are a good example of the potential liability that a utility may face in the event of negligence (in this case, a failed power line) that was likely the cause of over 80 deaths and destruction of over 18,000 structures. Clearly, this utility, PG&E, was not responsible for the dry conditions, but will likely be responsible financially for some of these losses. Both investors and rating agencies are continuing to ask more pointed questions about a utility’s ability to be resilient as well as responsive to the secondary effects of climate change.



Recommended Cash Balances

The recommended (preferred) funding level for the 2019 Cash Balance Study is **\$72.7 million** and is shown in **Figure I.1** below.

Figure I.1 – Summary of Recommended Cash Balances
Gainesville Regional Utilities

Cash Balance (\$ in Millions)	Minimum Level	Preferred Level	Estimated Cash Available		Sources of Current Funding
			2019	2022	
Cash Balance	\$ 40.8 million	\$ 72.7 million	\$ 82.4 million	\$ 60.6 million	Operating Cash, Rate Stabilization Fund, UPIF for Reserves

It is recommended that GRU currently adopt a bandwidth for Cash Balances. By providing a range of +/- 15 days of cash, GRU’s staff will have the operational flexibility to meet a 30 days’ band around the targeted level of cash for FY19.

- **Lower bandwidth (2019): \$63.1 million**
- **Upper bandwidth (2019): \$82.3 million**

Additionally, the following table details the recommended cash balance, by System for GRU:

Figure I.2 – Summary of Reserve Levels by System
Gainesville Regional Utilities

Cash Balance Targets: By System (\$ in Millions)	2019	2020	2021	2022
	Electric	55.7	57.3	59.1
Gas	4.4	4.5	4.7	4.8
Water	4.8	5.0	5.1	5.3
Wastewater	5.9	6.1	6.3	6.5
GRUCom	1.9	2.0	2.0	2.1
Total	72.7	74.9	77.2	79.5

One important assumption underlying this analysis is that the rate change recommendations that are incorporated into GRU’s corporate model are approved and implemented. Changes in the proposed rate adjustments will likely, all else held constant, result in lower available cash balances. The following table details the expected future rate changes associated with this analysis:



Figure I.3 – Future Expected Rate Changes, By System
Gainesville Regional Utilities

	2020	2021	2022	2023	2024
Electric	4.0%	2.7%	2.3%	3.0%	2.0%
Gas	0.0%	0.0%	0.0%	0.0%	0.0%
Water	1.0%	1.0%	1.0%	1.0%	1.0%
Wastewater	4.8%	4.0%	3.0%	2.0%	2.0%

Summary of 2019 Cash Balance Study Recommendations

The 2019 Cash Balance Study takes a systematic review of the categories of revenues and expense and identifies the risk in each account. Additionally, there are other areas examined beyond the income statement. Through discussions with staff and management, other areas may emerge as a point of risk (or future risk) that need to be addressed either in this study or in future revisions to this study.

The following table details the areas reviewed and the levels of cash recommended (in green) for these exposures.



Figure I.3 – Summary of Cash Balance Study*
Gainesville Regional Utilities

\$ Million	Less Conservative Level	Moderate Level	More Conservative Level	
Revenue Risk				
General Sales Decrease	\$3.5	\$10.4	\$17.3	Reflects recession
Large Customer Exposure	\$.9	\$1.7	\$6.9	Generally stable economic base
Sales for Resale / UF Water	\$.0	\$.1	\$.2	Immaterial Revenue
Other Revenue Exposure	\$.0	\$.1	\$.5	Immaterial Revenue
Expense Risk				
Replacement Power Exposure	\$2.6	\$10.0	\$22.1	Low probability but represents resiliency
Gas / Purchased Power Exposure	\$.3	\$2.4	\$6.1	Market risk for unhedged position
Renewable Performance Exposure	Not Applicable			Limited renewable exposure
Insurance	\$.1	\$.1	\$.2	
Resiliency and Climate Exposure	\$2.0	\$4.0	\$8.0	FEMA lag versus response time
Cyber Exposure	Not Applicable			Insurance coverage
Construction / CIP Exposure	Not Applicable			GRU's experience with projects
Operational Risk / Working Capital				
Working Capital	\$31.5	\$42.0	\$52.5	Use of RSF and general payment lag

* Numbers may not total due to rounding

Preferred Level	\$72.7
15 Day Buffer	\$9.6
Lower Bound	\$63.1
Upper Bound	\$82.3

Based on GRU's current corporate model as well as the expected proceeds from the 2019 transaction, GRU has adequate cash available to address the lower bound of the targeted range for the next two years. It is assumed that the cash comes from the following accounts: Operating Cash, Rate Stabilization, UPIF for Reserves and UPIF Reimbursement from the 2019 Bond Transaction. Starting in 2021, there is a shortfall that will need to be addressed (we do note that this assumes that 2020-2022 rate increases as presented in GRU's corporate model are approved):



Figure I.4 – Summary of Recommended Cash Balances Versus Cash Available
Gainesville Regional Utilities

Cash Balance Study (\$ million)		2019	2020	2021	2022
Proposed Cash Targets		72.7	74.9	77.2	79.5
Lower Bound		63.1	65.0	67.0	69.0
Upper Bound		82.3	84.8	87.4	90.0
<i>Cash Available</i>	Operating cash	4.4	4.4	4.4	4.4
	Rate stabilization	50.0	37.0	26.8	19.9
	UPIF for Reserves	5.0	28.0	33.2	36.3
	UPIF Reimbursement from 2019 Transaction	23.0	-	-	-
	Total Cash Reserves	82.4	69.4	64.4	60.6
In Cash Balance Study Bandwidth		Yes	Yes	No	No
Over (Under) Lower Target		19.3	4.4	(2.6)	(8.4)



CASH BALANCE STUDY AND GENERAL OPERATING RESERVES

Introduction

Many of the risks that have an ongoing potential impact on GRU's cost structure are best addressed by utilizing a cash balance sufficient to address the operating and financial risks facing the utility. This cash balance is intended to address exposures related to sales/consumption variances, the impacts of other revenue received by GRU not related to sales of their base-business product, the impact of power resources being unavailable to meet system needs, and commodity costs. The Cash Balance Study discussion is organized into the following sections:

- **Areas of Risk.** This section includes a discussion of categories of risk exposure for GRU, and generally reviews the major items on GRU's income statement.
- **Impact on Reserves.** This section quantifies exposure estimates for GRU for various risks with several different assumptions and outlines a potential range of cash levels given the identified risks.
- **Recommended Cash Level.** This section provides the Preferred level.

Areas of Risk

GRU, and its utility systems, are subject to an array of operating variables. These variables range from small temporary business disruptions, to substantial events with significant adverse financial consequences. The CBS does not catalog or address every element of risk that might impact a utility. Instead, it identifies and addresses elements that are not likely to be addressed by either insurance or other management responses. Listed below are potential sources of cash flow variability that PFM feels are appropriately managed through a holistic cash balance policy.

- **General Consumption/Sales Decrease.** Reductions in overall customer demand that may require GRU to spread its fixed costs over a smaller base of customers. While this study has a rather narrow scope of time horizon, this could be a reality as our economic cycle continues – as we are on the “boom” after the recessionary “bust” from 2007-2010. However, as history has taught us, all boom cycles eventually come to an end.
- **Large Customer Exposure.** Reflects changes in GRU's systems' load from actions of large customers. This exposure also addresses potential macroeconomic and microeconomic factors that may impact the underlying financial condition of GRU's classes of customers.
- **Sales for Resale.** Both the electric and water systems have some reliance on other revenue. For electric, this is the form of sales for re-sale and interchange sales. For the water system, this reflects sales to the University of Florida.
- **Other Revenues.** Impact of interest and investment income that can be used to cover some costs of the utility systems.
- **Replacement Power.** Cost exposure if GRU's resources (primarily located at Deerhaven) do not operate as planned (i.e. due to unplanned outages). GRU does face some concentration risk since the majority of GRU power generation assets are at the Deerhaven location. The water and wastewater systems meet industry best practices for redundancy and reliability. However, consistent with the industry, there are limitations on redundancy to meet all catastrophic events.
- **Fuel/Purchased Power.** Potential financial impact of differences between budgeted and actual fuel costs.
- **Renewables Dispatch and Performance.** One of the major changes observed with other utilities is the increased penetration and the cost of renewable energy. Much of the energy will come from sources where the electric off taker cannot control the key variables (speed of wind, strength of solar and time of day) that affect cost and



availability. When these resources, which are currently more expensive than conventional resources, provide more energy than planned, they can also have an impact on GRU's bottom line. PFM does note that the DHR transaction from 2017 eliminated the majority of this risk.

- **Cyber Exposure.** Potential higher costs due to cyber intrusion and ransomware that could prevent normal dispatch of units while requiring additional market purchases. After discussions with GRU, there is a general consensus that the cyber security prevention efforts, for both corporate and system control, currently in place provides adequate coverage for this circumstance. PFM recommends observing market trends and potential impacts to utilities that have been unfortunate victims of ransomware or denial-of-use attacks to determine if additional reserves are required for this additional, emerging risk. While cyber tends to focus on the operational control of the utility and its assets, the other area of concern is if there is a breach of confidential customer information. Based on discussions, it appears that GRU constantly monitors its firewall the infrastructure which supports and transports customer data to maintain the integrity of GRU's systems. Recent headlines have detailed the intrusion of supposedly "secure systems" by hackers with an intent to disrupt the operations of the utility. Indeed, PFM has a client that experienced this, where hackers locked employees out of their day-to-day systems and held the utility for ransom. This "ransomware" attack was eventually ended by paying the ransom, in return for reinstated access and control of the software programs back to the utility. More interestingly, there have been some indications that "bad actors" have also attempted to take control of the physical assets of some selected utilities. GRU appears to have sufficient controls and will continue to look towards improving its defenses to address this threat. However, PFM does recommend frequently reviewing this exposure as a potential liability could quickly arise and need to be addressed with cash.
- **General Operational Exposures.** Includes the financial impact of other events and circumstances which can affect a utility's operating budget or annual cashflow. Events might include a timing mismatch between revenue receipts and expense payments, unforeseen maintenance costs, regulatory compliance costs, and other unexpected increases in the operating budget.

Impact on Cash Balances

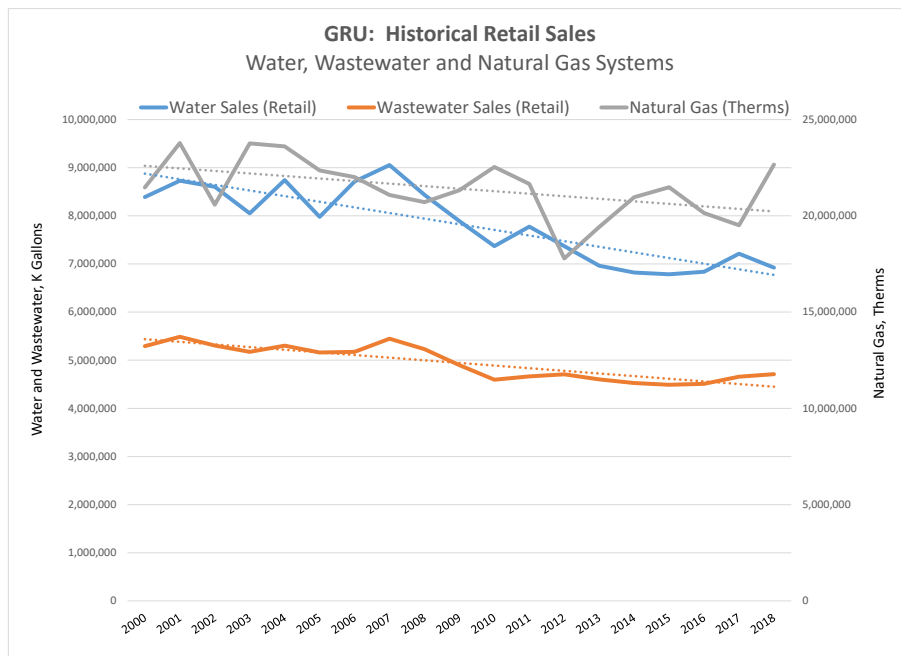
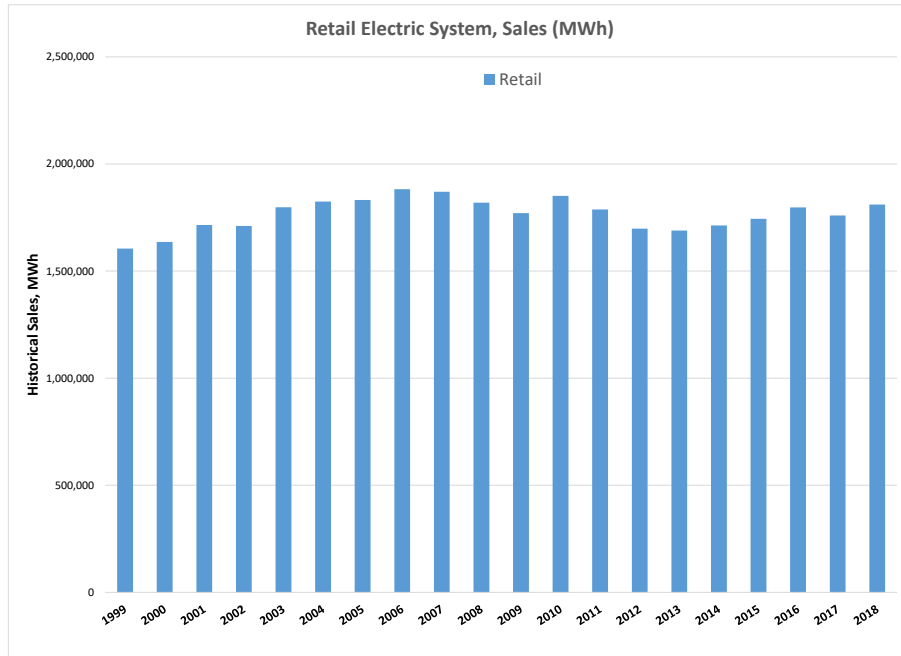
Revenue Risks and Fixed Cost Exposure

A key issue in evaluating revenue risk is assessing GRU's fixed costs. These are costs that will not diminish significantly (at least in the short run) even if demand (and revenues) fall short of the budget. The level of fixed cost exposure is also important in maintaining future rate stability as fixed costs do not change in the face of declining demand and sales. PFM worked with GRU to allocate GRU's significant budget line items into their fixed and variable components. This is basically a two-step process – examining the demand for services over time and then a review of GRU's costs in light of fluctuating demand.

In general, the following figures illustrate that the overall level of demand on GRU's utility systems has remained relatively stable over time, even when incorporating the Great Recession. On these charts, the dotted line is the regression line of retail sales for that particular system. We do note that, while GRU does have some wholesale sales, these are a relatively minor percentage of overall sales and, generally, do not have a significant "margin" – the difference between the revenue received and the cost to provide. Therefore, these figures uses Retail Sales over time rather than all sales:



**Figure II.1 – Historical Retail Sales
Gainesville Regional Utilities**

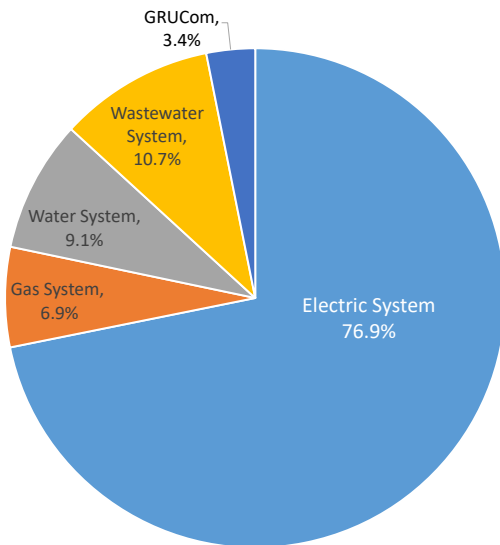


Additionally, when looking at GRU’s composition of revenues and expenses, the Electric System is responsible for 72% of overall operating revenues and 79% of operating costs (based on historical averages since 2010). Therefore, the primary emphasis of this report will be to address the Electric System. The following chart illustrates the breakdown of GRU’s revenues and expenses by system:

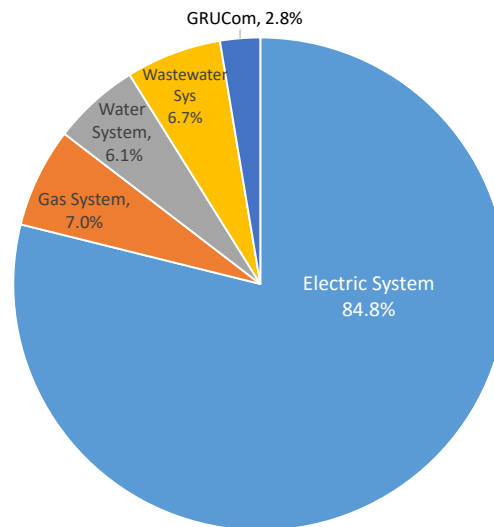


**Figure II.2 – Operating Revenues and Expenses
Gainesville Regional Utilities**

**GRU: Historical System Operating Revenues
(2010-2018)**



**GRU: Historical System Operating Expenses
(2010-2018)**



For step two of this process, PFM worked with GRU’s staff to perform this allocation based on historical as well as FY18 preliminary audit results. The focus of this analysis was on the costs associated with providing GRU’s essential services as well as debt service. The General Fund Transfer (“GFT”) was not considered in this calculation – if it were considered, then this would serve to increase the fixed component of GRU’s expenses. Generally, the following assumptions were made across systems:

- 80% of fuel for the electric and gas system was considered fixed
- 90% of the Operations and Maintenance (“O&M”) expense was considered fixed for all systems
- 90% of the Administrative & General (“A&G”) expenses were considered fixed

The majority of GRU’s revenue requirements go toward fixed expenses to include debt service and the necessary margin for that debt service. In total, GRU has ~\$320 million in operating expenses, debt service and debt service margin. Of this amount, ~90% of the expenses are generally fixed. **Figure II.3** below shows the allocation of fixed and variable costs:



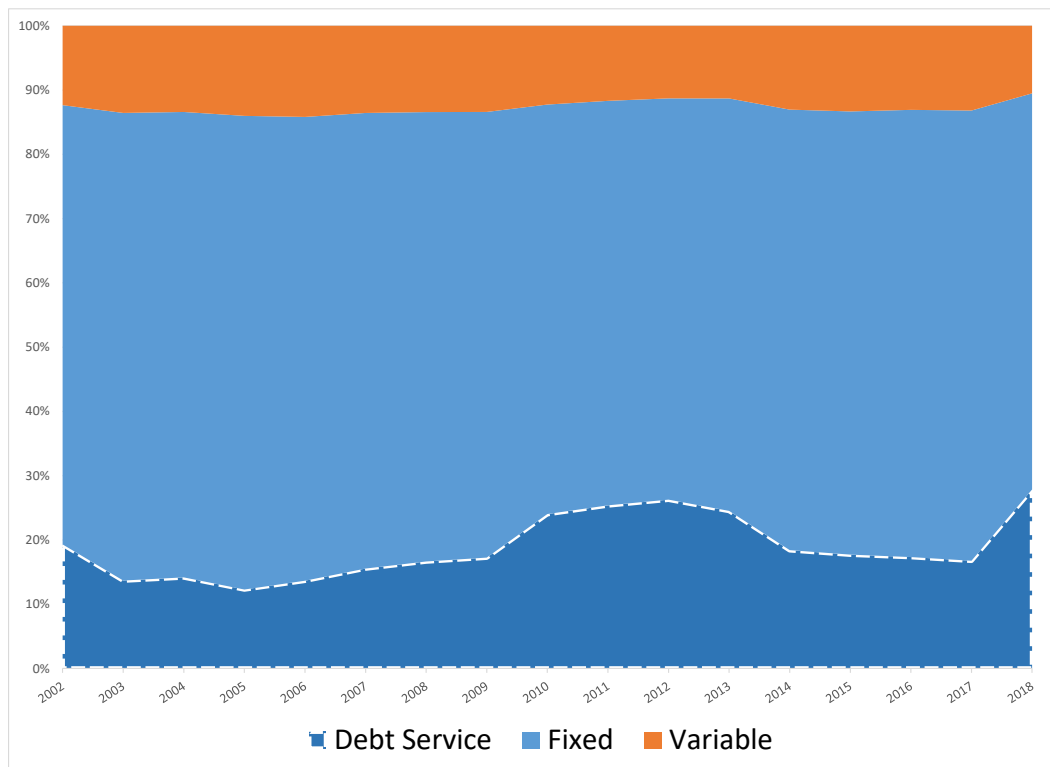
Figure II.3 – Estimated Fixed and Variable Cost Exposure
Gainesville Regional Utilities

Fiscal Year 2018 (Unaudited)			
Operating Expenses (\$ Million)			
Electric System			
	Total	Fixed	Variable
Fuel	\$99.3	\$79.4	\$19.9
O&M	\$66.0	\$59.4	\$6.6
A&G	\$12.4	\$11.2	\$1.2
	System Total	\$150.0	\$27.7
Gas System			
Fuel	\$7.8	\$6.3	\$1.6
O&M	\$3.1	\$2.8	\$0.3
A&G	\$2.1	\$1.9	\$0.2
	System Total	\$10.9	\$2.1
Water System			
O&M	\$11.6	\$10.46	\$1.2
A&G	\$4.7	\$4.2	\$0.5
	System Total	\$14.7	\$1.6
Wastewater System			
O&M	\$15.7	\$14.1	\$1.6
A&G	\$4.7	\$4.2	\$0.5
	System Total	\$18.3	\$2.0
GRUCom System			
O&M	\$5.7	\$5.10	\$0.6
A&G	\$0.9	\$0.8	\$0.1
	System Total	\$5.9	\$0.7
Consolidated Operating Expenses	\$233.9	\$199.8	\$34.1
Debt Service Requirements			
Debt Service Requirements, Including CP	\$90.4	\$90.4	\$0.0
Coverage	\$27.1	\$27.1	\$0.0
Total Debt Related Requirements	\$117.57	\$117.57	\$0.0
Consolidated Operating Expenses and Debt Service	\$351.5	\$317.4	\$34.1



Overall since 2002, the fixed costs as a ratio of total costs have averaged around 70% of GRU’s overall expenses with debt service comprising 18% and variable costs hovering around 12%. PFM does note that the magnitude of the 2017 transaction, which shifted costs of DHR from “Fuel” to “Debt Service” has impacted the recent percentages.

Figure II.4 – Fixed and Variable Cost Summary
Gainesville Regional Utilities



Economic Conditions

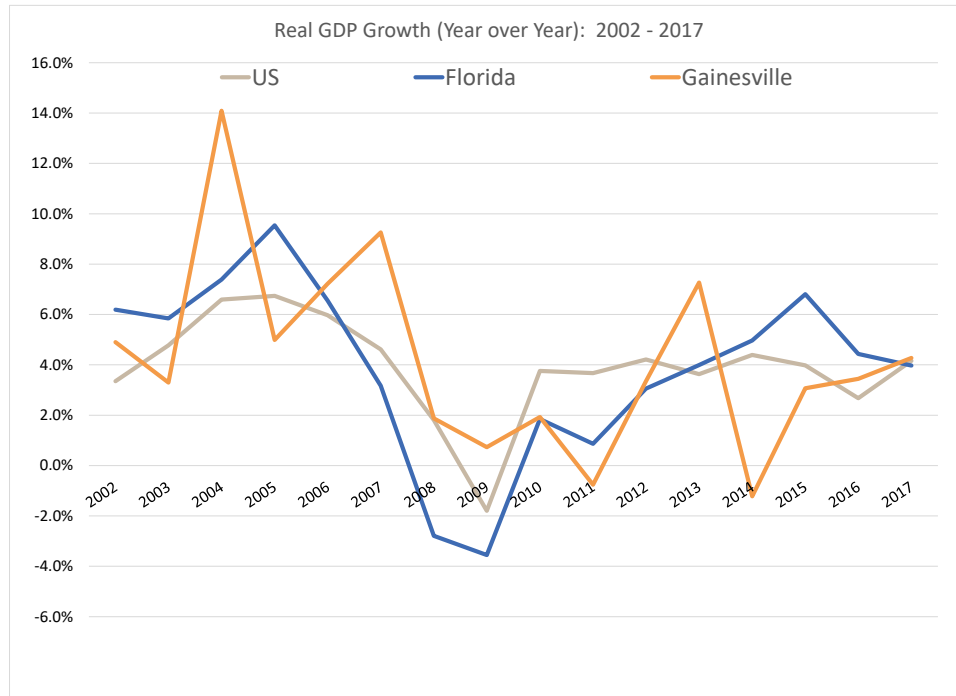
The economic environment, as seen with the “Great Recession,” will impact a number of risks and financial planning assumptions. For many utilities, it has taken almost a decade to return to a level of sales similar to that experienced prior to the Great Recession. These impacts are felt, to a large extent, through changes in utility sales, the need for new resources, commodity pricing and volatility.

The overall performance of the U.S., Florida and local economy influence the growth in GRU’s service territory. Simply, as the economy grows, the demand for GRU’s services increase as current customers’ economic circumstances improve. Additionally, economic growth generally means expansion – the city grows and new businesses open. This study examines several economic variables and how GRU’s economy has performed relative to the U.S. and the State of Florida.

Gross Domestic Product (GDP) is an important indicator as it measures the dollar value of all goods and services produced in a geographic area and is proxy for both economic growth and household wealth. The following chart compares the City of Gainesville to Florida and the U.S. in terms of annual changes in GDP:



**Figure II.5 – Gross Domestic Product
Gainesville Regional Utilities**

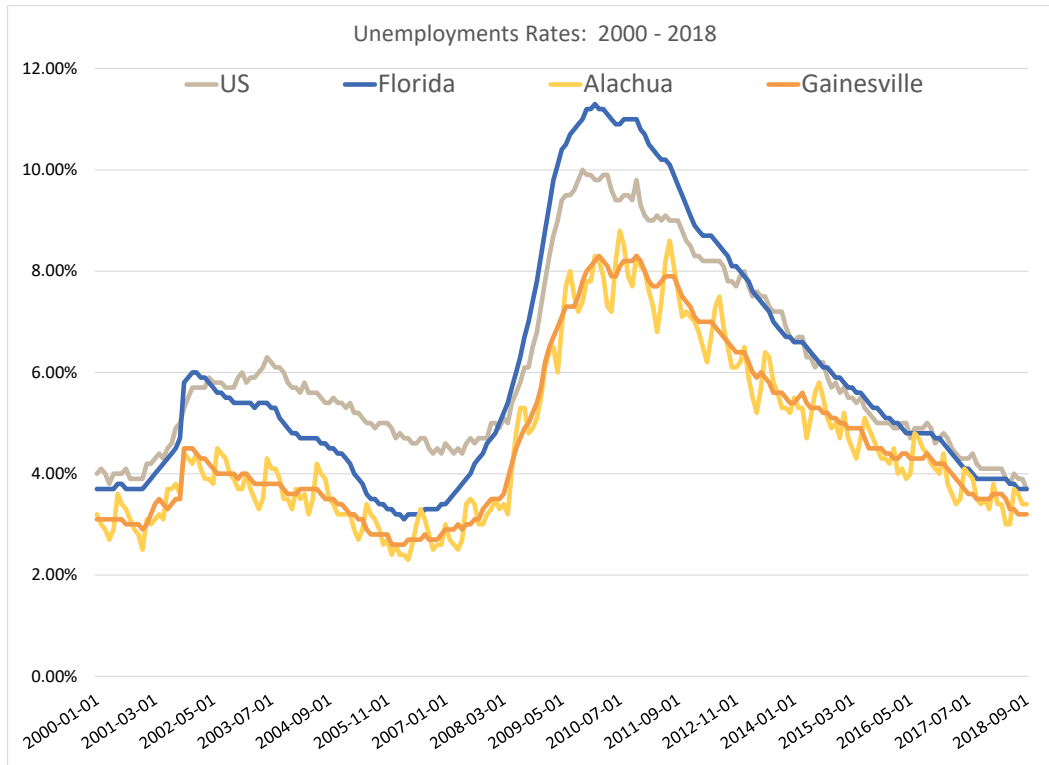


By this measure, Gainesville’s economy often outperforms the State as well as the U.S. While there are very large changes in Gainesville’s GDP compared to the U.S., this volatility is not a welcome factor, as it can exacerbate a boom-bust cycle. Simply, with periods of inflated growth, there is a higher demand for GRU’s services, which can quickly reverse.

Another metric examined was unemployment rates, seen in the following chart. Prolonged periods of high unemployment are a significant issue as these could contribute to delinquent accounts and, if long-lived, spur movement out of the service territory in search of jobs.



**Figure II.6 – Unemployment Rates
Gainesville Regional Utilities**



Fortunately, GRU appears to have a stable economic base in terms of workforce employment. GRU’s unemployment rate has less variability than the County, State and Nation. Gainesville appears to be a good place to work and live which bodes well for GRU.

Historical Variation in Sales

Another factor for consideration is variance in retail sales (by volume) for GRU’s systems. Sales variances are caused by a combination of factors, including milder or more severe weather, general customer growth levels, overall economic conditions, changes in the mix of customers, and other customer characteristics. **Figure II.7** shows the yearly change, of sales (as a percent) across GRU’s major systems from 2010 through 2018 (excluding GRUCom given the immaterial nature of GRUCom revenues).

**Figure II.7 – Historical Variation in Sales
Gainesville Regional Utilities**

% Change, Prior Year	2010	2011	2012	2013	2014	2015	2016	2017	2018
Electric	4.5%	-3.4%	-5.0%	-0.6%	1.4%	1.8%	3.0%	-2.1%	2.9%
Gas	5.7%	-3.9%	-17.9%	9.2%	7.9%	2.5%	-6.2%	-3.2%	16.1%
Water	-6.6%	5.5%	-5.2%	-5.5%	-2.0%	-0.5%	0.8%	5.5%	-4.0%
Wastewater	-6.2%	1.5%	0.9%	-2.2%	-1.6%	-0.8%	0.4%	3.3%	1.1%

Represents retail sales volumes, percent change from prior year. Historical GRU data



These sales figures were also reviewed on a monthly basis and compared to weather trends. Heating degree days and cooling degree days are a frequently used proxy for general weather trends. Heating Degree Days (“HDDs”) represent the number of degrees that a day’s average temperature is below 65 degrees, generally seen as the threshold for when a building needs heat. Cooling Degree Days (“CDDs”), are the converse. They represent days when the temperature is above 65 degrees. These charts illustrate that the Electric and Gas Systems are driven more by weather than the Water and Wastewater Systems.

**Figure II.8 – Heating and Cooling Degree Days
Gainesville Regional Utilities**



Revenue Impacts of General Consumption/Sales Decreases

Generally, this category of risk addresses macro-economic factors in the overall U.S. and Florida economy as well as systematic demographic trends in consumer preferences. For this category, we start with a fixed cost estimate of \$318 million from **Figure II.3**. We further projected this amount to grow by ~\$30 million through 2020 due to a moderate estimate for inflation (3.0%, similar to GRU’s budget forecasts), which brings estimated fixed costs to \$347 million. This fixed cost base is then used to develop the exposure for each level, based on the assumed variance (percent decrease) and the period of time that the reserve is intended to address. **Figure II.9** below summarizes our estimates of exposure levels for the revenue risk associated with a decrease in consumption/sales. PFM notes that the assumed variance sensitivities for the More Conservative case align with the highest variance in GRU’s sales experienced in the Electric System:



Figure II.9 – General Sales Decrease Exposure
Gainesville Regional Utilities

<i>(\$ in Millions)</i>	Less Conservative Level	Moderate Level	More Conservative Level
Assumed Fixed Base	\$347	\$347	\$347
Assumed variance	1.0%	3.0%	5.0%
Months of coverage	12	12	12
Exposure	\$3.5	\$10.4	\$17.4

- *Less Conservative Level.* Any decreases or changes in overall GRU sales are already around the moderate rate of inflation in any given year. GRU would likely have sufficient lead-time to address operating performance in subsequent budgets given the annual budget process and ability of GRU to implement off-cycle rate adjustments (as was done after the DHR transaction).
- *Moderate Level. Recommended:* This is calculated as the estimated fixed cost exposure assuming the reserve would cover a 3% decrease in sales for a year.
- *More Conservative Level.* This is calculated as the estimated fixed cost exposure assuming the reserve would cover a 5% decrease in load for 12 months (as GRU experienced previously). This would represent a significant economic shock to the local and U.S. economy that would have lasting impacts and an expected long recovery time.

Large Customer Exposure

GRU, through its utility systems, also has exposure to the consumption changes of large customers, which contribute significantly to the recovery of fixed costs. This risk category covers specific events relating to individual customers. One or more large customers could face unforeseen, substantial events that may affect their power and other utility usage. Impacts can arise from temporary or permanent cutbacks in operations, facility closures, or, for the electric system, self-generation. While the U.S. and local economy have been particularly resilient in recent years, this does remain an area of concern given that GRU should be sensitive to large customers as well as any concentration of customers within a particular industry. The following tables detail the 10 largest customers for GRU, by system:



Figure II.10 – Top Customers by System
Gainesville Regional Utilities

Top 10 Customers: Electric System		
#	Name	% of Expected System Revenue
1	GRU	2.9%
2	ALACHUA COUNTY PUBLIC SCHOOLS	2.2%
3	SHANDS	2.0%
4	NORTH FL REGIONAL MEDICAL CTR	1.7%
5	PUBLIX SUPER MARKETS INC	1.7%
6	VA MEDICAL CENTER	1.7%
7	UNIVERSITY OF FLORIDA	1.5%
8	ALACHUA COUNTY BOARD OF COMM	0.9%
9	SANTA FE COLLEGE	0.7%
10	CITY OF GAINESVILLE	0.7%
Total, Top 10 System Customers		16.1%

Top 10 Customers: Gas System		
#	Name	% of Expected System Revenue
1	UNIVERSITY OF FLORIDA	4.4%
2	LOGY BIOSERVICES INC	1.4%
3	ALACHUA COUNTY BOARD OF COMM	1.3%
4	SHANDS	1.1%
5	ALACHUA COUNTY PUBLIC SCHOOLS	1.0%
6	NORTH FL REGIONAL MEDICAL CTR	0.8%
7	RTI BIOLOGICS INC	0.7%
8	ST OF FL DEPT OF CH & FAM SVC	0.6%
9	SANTA FE COLLEGE	0.5%
10	ANDERSON COLUMBIA CO INC	0.4%
Total, Top 10 System Customers		12.3%

Top 10 Customers: Water System		
#	Name	% of Expected System Revenue
1	UNIVERSITY OF FLORIDA	5.2%
2	GRU	1.4%
3	NORTH FL REGIONAL MEDICAL CTR	0.8%
4	ALACHUA COUNTY PUBLIC SCHOOLS	0.7%
5	VA MEDICAL CENTER	0.6%
6	CITY OF GAINESVILLE	0.6%
7	SHANDS	0.6%
8	CELEBRATION POINTE HOLDINGS LLC	0.6%
9	ALACHUA COUNTY BOARD OF COMM	0.5%
10	SIVANCE LLC	0.4%
Total, Top 10 System Customers		11.4%

Top 10 Customers: Wastewater System		
#	Name	% of Expected System Revenue
1	UNIVERSITY OF FLORIDA	1.1%
2	ST OF FL DEPT OF CH & FAM SVC	0.8%
3	ALACHUA COUNTY PUBLIC SCHOOLS	0.7%
4	NORTH FL REGIONAL MEDICAL CTR	0.6%
5	SIVANCE LLC	0.6%
6	SHANDS	0.6%
7	CITY OF GAINESVILLE	0.6%
8	CABOT CARBON OPER JUMPSTART	0.5%
9	VA MEDICAL CENTER	0.5%
10	ALACHUA COUNTY BOARD OF COMM	0.5%
Total, Top 10 System Customers		6.6%

Top 10 Customers: GRUCom		
#	Name	% of Expected System Revenue
1	GRU	12.2%
2	ALACHUA COUNTY BOARD OF COMM	9.0%
3	VERIZON WIRELESS PERSONAL COMM L	7.3%
4	ALACHUA COUNTY PUBLIC SCHOOLS	6.0%
5	C OF G	5.8%
6	AT&T WIRELESS	4.2%
7	INTERSTATE FIBERNET INC	4.0%
8	T-MOBILE USA INC	3.7%
9	FLORIDA PHONE SYSTEMS	3.2%
10	SHANDS	2.3%
Total, Top 10 System Customers		57.8%

We do note that, across systems, there is a stable base of customers. The industries are diverse and many customers also have the likely stability of being governmental entities or medical/educational enterprises.

In developing our range of exposure levels, we have utilized a similar analysis employed to calculate exposure estimates for General Consumption/Sales Decrease. Levels of exposure were generally based on historical exposure to large customers or GRU’s overall financial performance. **Figure II.11** below summarizes our calculation of exposure levels:

Figure II.11 – Large Customer Exposure
Gainesville Regional Utilities

(\$ in Millions)	Less Conservative	Moderate Level	More Conservative
	Level		Level
Assumed Fixed Base	\$347	\$347	\$347
Assumed variance	1%	1%	2%
Months of coverage	3	6	12
Exposure	\$0.9	\$1.7	\$6.9

- Less Conservative Level. Recommended:** The rationale here is that any decreases or changes in large customer demand would, through active communication and community awareness, likely have sufficient lead-time to be addressed in subsequent budgets or would be offset by subsequent years’ growth for the systems in the aggregate. If this were the case, then there would be ample lead time to address. The Less Conservative reserve level was considered adequate given the general stability of GRU’s largest customers.
- Moderate Level.** This is calculated as the estimated fixed cost exposure assuming the reserve would cover a 1% decrease in sales for a period of six months with six months deemed sufficient time to then incorporate the change into the budget cycle.



- More Conservative Level.** This is calculated as the estimated fixed cost exposure assuming the reserve would cover a 2% decrease in load for 12 months. This level of exposure assumes that the customer or customers' effect cannot be addressed immediately in the budget and absorbed by other budget adjustments.

Other Revenue: System Sales Exposure

One of the exposures for GRU is the failure to achieve budgeted levels of net off-system sales revenues. For the purposes of this analysis, this includes Sales for Resale and Off-System Sales in Electric System and sales to the University of Florida for the Water System. For many utilities across the U.S., these system sales are an important means to subsidize the services provided to organic ratepayers. **Figure II.12** below shows GRU's audited financial data as it relates to Off-System Sales activity. For the period since 2010, GRU's Off-System Sales revenues were under 1% of the combined revenue of the Electric and Water Systems.

Figure II.12 – Other Revenue: System Sales
Gainesville Regional Utilities

Other Revenue: System Sales	2010	2011	2012	2013	2014	2015	2016	2017	2018
Electric and Water System Sales (\$ Million) ¹	304.1	295.3	275.4	272.5	314.2	331.1	338.8	336.7	305.0
Electric: Sales for Resale	0.2	0.2	0.2	0.1	0.1	0.2	0.2	0.2	0.2
Electric: Off-System Sales	0.1	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.1
Water: Univ of Florida	1.7	1.4	1.8	1.8	1.9	2.0	1.9	2.1	1.9
Total	2.0	1.7	2.0	1.9	2.1	2.3	2.1	2.3	2.2
Change from Prior Year		-17.5%	20.3%	-3.8%	6.8%	10.4%	-6.7%	10.4%	-6.3%
Relative % of Sales	0.1%	0.1%	0.1%	0.0%	0.0%	0.1%	0.1%	0.1%	0.1%

¹ Represents Electric Sales and Other Electric Revenue, Water Sales and Other Water Revenue

PFM notes that GRU's need to reserve for net power marketing revenues exposure is minimal since GRU continues to budget very conservatively for Off-System Sales.

Figure II.13 – Power Marketing Revenue Exposure
Gainesville Regional Utilities

(\$ in Millions)	Less Conservative Level	Moderate Level	More Conservative Level
Expected Off-System sales	\$2.0	\$2.0	\$2.0
Assumed variance	0.00%	5.00%	10.00%
Months of coverage	3	6	12
Exposure	\$0.00	\$0.05	\$0.20

Given these circumstances, and, as long as the conditions remain the same, **PFM recommends that no cash be allocated to address this risk.** We also note that Off-System Sales can change over time, based on economic conditions as well as a future need for Green Energy (DHR).

Other Revenue: Interest Income

GRU has several other revenue sources that augment system revenues. For GRU, this is primarily Interest Income. GRU has significant invested balances of cash and investments, which earn a return for GRU and its ratepayers. This return helps offset the revenue requirement and can temper needed rate increases. GRU's investment income will be impacted by the interest rate environment, with the potential to mitigate volatility through asset-liability matching with variable rate debt. Short-term investments will fluctuate within the fiscal year, but GRU typically invests a portion of its funds,



such as reserve funds in longer maturities. The following figure illustrates Interest Income as a percent of operating revenue (system sales):

**Figure II.14 – Change in Interest Income
Gainesville Regional Utilities**

<i>Other Revenue: System Sales</i>	2010	2011	2012	2013	2014	2015	2016	2017	2018
System Sales (\$ Million)	\$346.3	\$339.3	\$316.8	\$315.5	\$357.0	\$379.7	\$379.4	\$390.0	\$361.5
Interest Income (\$ Million)	\$2.6	\$2.1	\$1.9	\$1.5	\$1.5	\$1.5	\$1.8	\$2.8	\$2.9
Relative % of system sales	0.7%	0.6%	0.6%	0.5%	0.4%	0.4%	0.5%	0.7%	0.8%

¹ Represents Electric Sales and Other Electric Revenue, Water Sales and Other Water Revenue

While sometimes imprecise, there is a general consensus of expected economic expansion in the U.S. over the coming few years. The Federal Reserve has indicated they will raise the Federal Funds rate over the next few years in response to inflationary pressure as well as reduce the potential for a larger economic shock caused by lower rates that promote speculative decisions. The exposure to this area is detailed below:

**Figure II.15 – Interest Income Exposure
Gainesville Regional Utilities**

<i>(\$ in Millions)</i>	Less Conservative Level	Moderate Level	More Conservative Level
Expected Interest Income	\$2.2	\$2.2	\$2.2
Assumed variance	0.00%	12.50%	25.00%
Months of coverage	3	6	12
Exposure	\$0.00	\$0.13	\$0.54

Given these circumstances, and, as long as the conditions remain the same, **PFM recommends that no cash be allocated to address this risk.** GRU is not overly reliant on this revenue source as a means to augment the financial performance of the utility systems.

Power Supply Risks

Power supply costs, escalating or unexplained, continue to be a primary area of risk for GRU as well as other utilities. As some of these issues impact multiple areas of power supply, this initial overview discussion will address those areas.

Changing Power Supply Mix

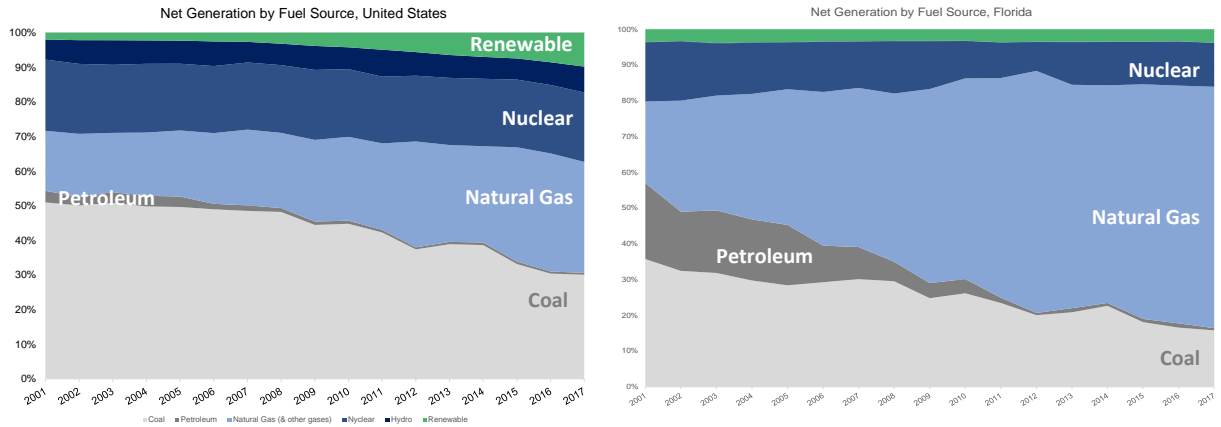
While the State of Florida does not have a Renewable Energy Standard (“RES”), GRU has moved decidedly into generation resources with a cleaner carbon footprint. Recently, the Gainesville City Commission passed a resolution defining the goal of providing 100% of the City’s energy from renewable resources by 2045. Additionally, two other initiatives also indicate the progressive nature of the City - the desire by the City Commission to voluntarily achieve the emission reduction standards established by the Kyoto Protocols as well as the ban on GRU’s purchase of coal mined through mountain top removal (subject to certain savings parameters). Combined, these efforts clearly indicate that GRU will likely be a leader in Florida in the transition to cleaner energy.

In terms of fuel sources for energy, the region looks markedly different than the rest of the United States. The region has shifted dramatically away from coal-fired generation. However, while some regions have replaced coal with renewables,



Florida has shifted to natural gas. The following chart illustrates the transition away from coal and compares Florida to the U.S.:

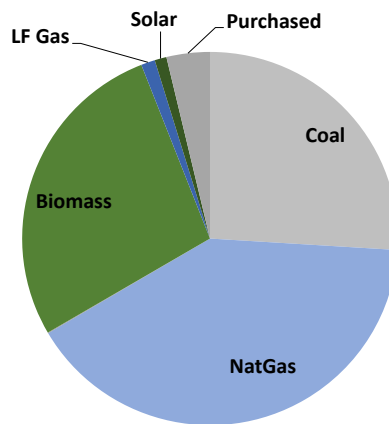
Figure II.16 – U.S. and Florida Energy Mix
Gainesville Regional Utilities



Looking specifically at GRU’s energy mix, almost 30% of energy comes from renewable resources, primarily DHR, and this is well in excess of the State (3.8%), Southeast Region (6.6%) or Nation (17.3%):

Figure II.17 – GRU Fuel Mix
Gainesville Regional Utilities

GRU Sources of Energy - FY2018
Renewable = 29.7% of Total





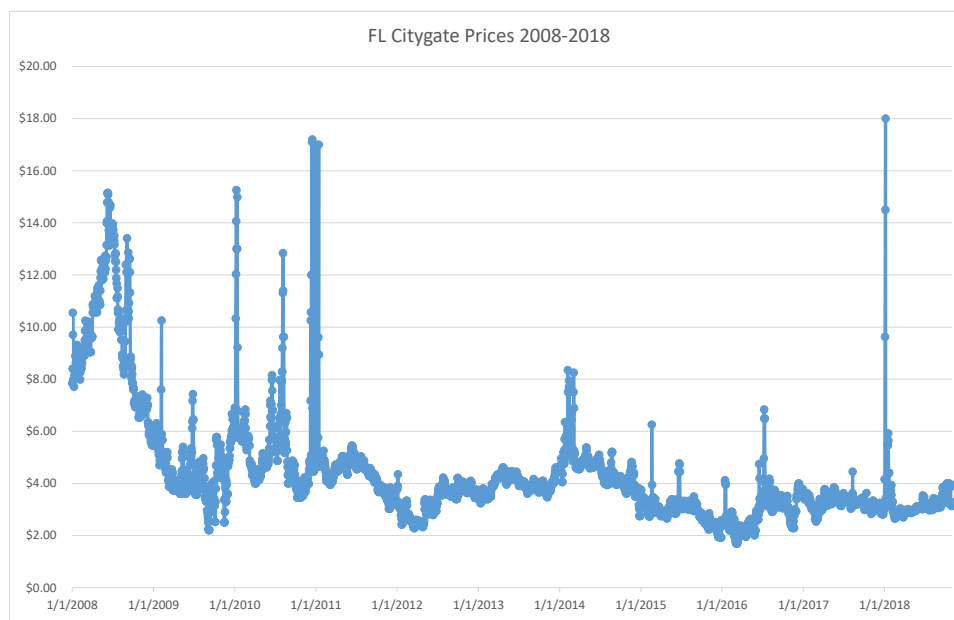
Volatility of Natural Gas Prices

The cost and volatility of the price of natural gas remains an important issue. Utilities that are more gas dependent have seen both substantial increases as well as decreases in their fuel costs, as well as their rates. Those utilities that are not as dependent on natural gas as a primary resource are still impacted due to several factors:

- As the energy markets changed and developed over the past decade, spot market power purchases have closely tracked natural gas prices.
- Most peaking and intermediate resources continue to be natural gas-fueled units.
- Most new base load additions are also being fueled by natural gas. As GRU is aware, there has been a near impossibility in siting and permitting coal fired plants. Additionally, the “Nuclear Renaissance” expected in the southeastern U.S. sparked by the construction of plants Vogtle and Summer, appears to have not materialized given the recent financial issues with the primary contractor for the facilities. This development likely means the end of nuclear development for decades to come, further shifting the focus to natural gas.
- The construction of several pipelines, such as Sabal Trail, is expected to bring further natural gas into the market.

Figure II.18 below shows the Florida Citygate cost of natural gas, an important benchmark rate for natural gas prices. As can be seen from the graph, the volatility in natural gas prices is lower now compared to the period between 2008 and 2011. However, while volatility has been reduced, there are still periods when unexpected spikes do occur, which can unexpectedly impact fuel costs:

**Figure II.18 – U.S. Natural Gas Citygate Price (\$/MMBtu)
Gainesville Regional Utilities**

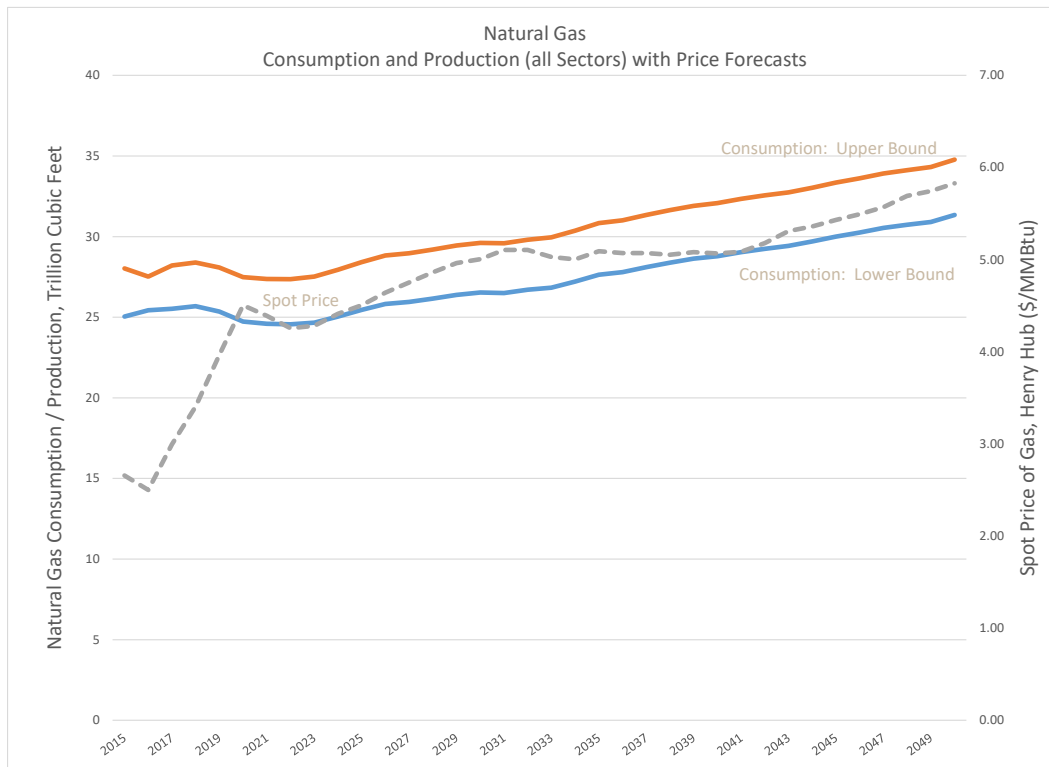


Given the trend for utilities to shift to natural gas-fired generation to replace coal-fired generation, one question pertains to the price of natural gas moving forward. Given the law of supply and demand, it might be assumed that, the demand for natural gas will outpace the supply, creating an upward price shock in the natural gas market. To answer this question,



PFM reviewed data from the EIA to see what the expectation is for future natural gas development and exploration. The conclusion reached is that the pace of development will outpace the expected demand. The expectation from EIA is that natural gas prices will remain at a steady level for the foreseeable future. **Figure II.19** illustrates the expectations of the supply and demand for natural gas as well as the projected impact on price over the next 30 years:

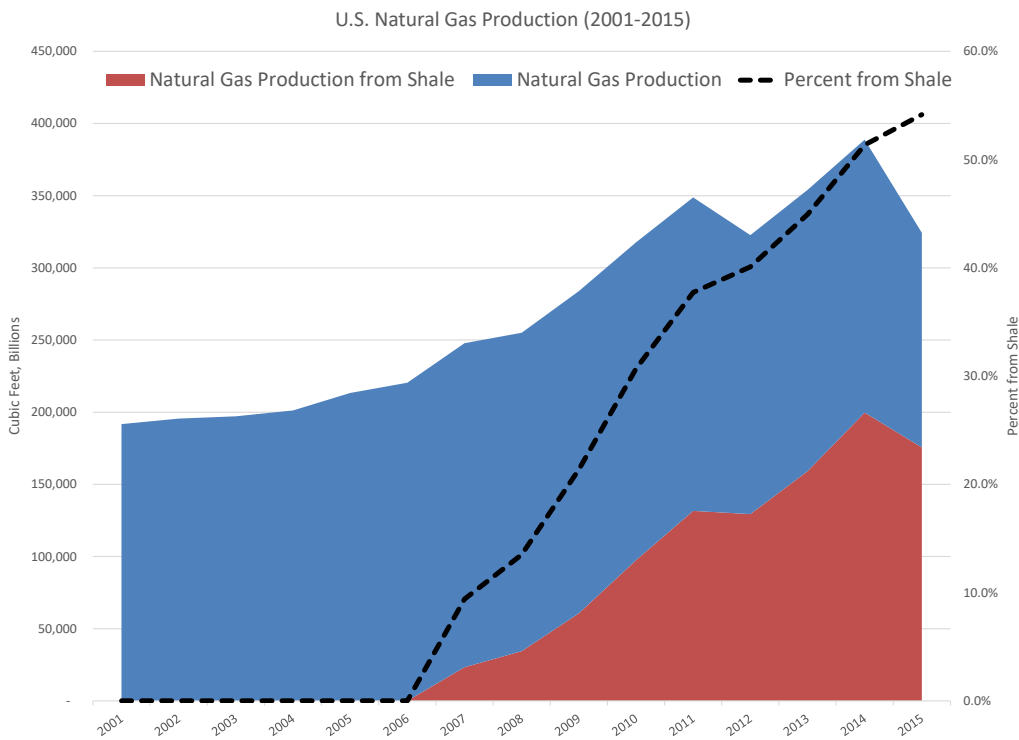
Figure II.19 – U.S. Natural Gas Supply and Demand and the Impact on Price
Gainesville Regional Utilities





It is expected that the U.S. will continue to use technology to extract natural gas and, over time, become a net-exporter of this resource. **Figure II.20** illustrates the proven natural gas reserves for the U.S. to include the recent boom in shale gas production:

Figure II.20 – U.S. Natural Gas Proven Reserves
Gainesville Regional Utilities



Market Prices for Electric (LMPs)

One question of importance for the Cash Balance Study pertains to the cost of replacement power. GRU has the resources to fully support its load with an adequate cushion as a buffer. However, GRU does have geographic concentration. Specifically, the Deerhaven site is the home for over 80% of GRU’s available capacity. While it is unlikely that all of the generating stations on Deerhaven will experience an outage at the same time, there might be some event that would prevent that one site from dispatching power to the grid. An external example of this was the recent closure of the Brunswick nuclear plant in North Carolina which was inaccessible due to flooding from Hurricane Florence.

In the event that Deerhaven is inaccessible, GRU would likely need to purchase power to meet the demand of ratepayers. This represents market risk to GRU and its ratepayers.

For this analysis, PFM looked at the cost of power in the region to identify the cost of “market power.” Florida is different than the majority of U.S. regions, which have a transparent Regional Transmission Organization (“RTO”). So, while RTOs generally publish the Locational Marginal Price (“LMP”) for power, this information generally does not exist for the Florida



market. PFM did have discussions with the Energy Information Administration and, based on that discussion and assessment, the conclusion reached was that Indiana most closely correlated with the Florida market since they are both based on bilateral trades. The following information was provided by EIA to help determine a proxy for LMPs for Florida:

**Figure II.21 – LMP Pricing
Gainesville Regional Utilities**

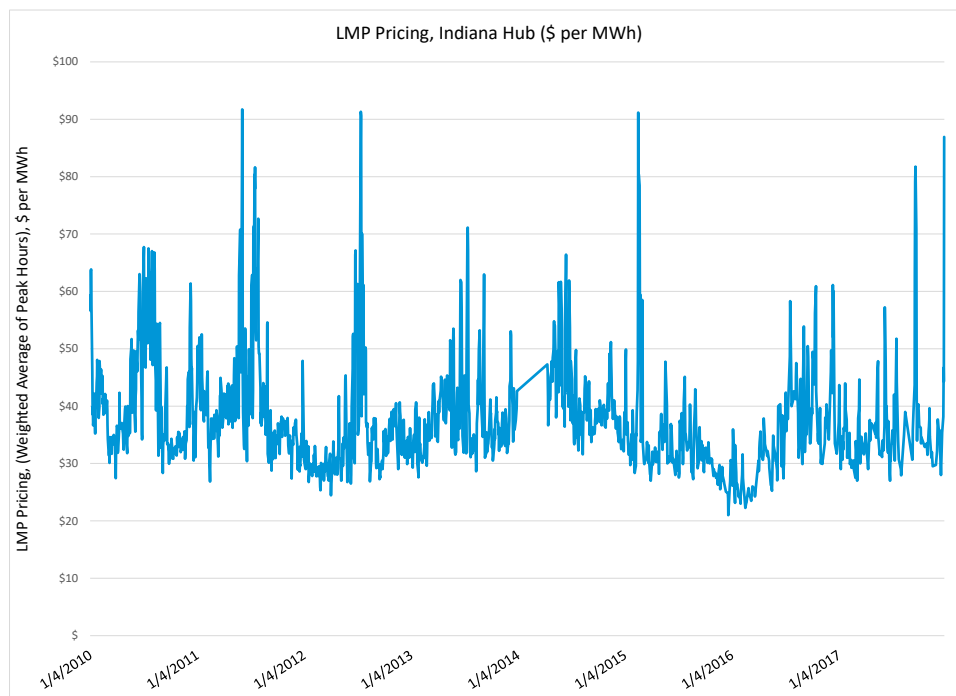


Figure II.22 on the following page provides a statistical summary of LMP information for the past few years with summary statistics of this market in yellow:



Figure II.22 – LMP Pricing
Gainesville Regional Utilities

LMP Pricing: Indiana Hub Peak Pricing, 2010-2017 (\$ per MWh)					
Time Period	Average	Min	Max	Range	Standard Deviation
2010	41.32	27.43	67.74	40.31	9.75
2011	40.32	26.84	91.72	64.88	9.65
2012	34.56	24.44	91.31	66.87	9.23
2013	38.11	27.58	71.11	43.53	7.31
2014	41.36	31.58	66.40	34.82	6.49
2015	34.40	21.00	91.17	70.17	9.22
2016	34.94	22.25	61.11	38.86	8.25
2017	36.74	27.00	86.93	59.93	9.35
2010-2017	37.91	21.00	91.72	70.72	9.25

Replacement Power Exposure

All generation utilities are exposed to the possibility that generation plants do not operate as planned or that transmission limitations affect the ability to receive power from other than local resources. These unforeseen events can impact financial margins through the need to purchase replacement power. In some cases, GRU may have the option to run its own facilities or purchase power from the market. In determining the level of risk related to replacement power, GRU should consider several factors, including: the plant or plants that may be unavailable, the length and timing of the outage, and the potential cost of replacing the power.

Examining the Deerhaven facility, this has on its physical footprint, over 80% of GRU's assets. If Deerhaven 2 were unavailable, GRU would likely be able to use other GRU owned resources to make up the shortfall. However, if there were problems with Deerhaven access, GRU would need to purchase market power to meet demand.

To examine this exposure, the budgeted cost of GRU's power should be examined. The following table details the weighted average cost per megawatt hour for GRU's own generation at both minimum and then peak load (PFM does note that the average cost for system power in the FY19-20 budget book is ~\$39 per MWh):

Figure II.23 – GRU Budgeted Cost of Power
Gainesville Regional Utilities

	Estimating the Average Incremental Cost of power per MWh							
	Min Load	Average Costs	Total Cost*	Weighted Average	Max Load	Average Costs	Total Cost*	Weighted Average
CC1	86.0 MWs	18.88 / MWh	14,223,437	3.47	108.0 MWs	17.92 / MWh	16,953,754	2.03
DH2	51.0 MWs	45.83 / MWh	20,475,011	12.12	232.0 MWs	31.95 / MWh	64,932,624	13.85
DH1	22.0 MWs	32.37 / MWh	6,238,346	2.61	75.0 MWs	26.18 / MWh	17,200,260	3.01
CT3	49.0 MWs	29.28 / MWh	12,568,147	4.75	71.0 MWs	25.28 / MWh	15,723,149	2.65
GREC/DHR	70.0 MWs	39.00 / MWh	23,914,800	12.05	102.5 MWs	39.00 / MWh	35,018,100	9.12
			77,419,741	35.00			149,827,886	30.65

* Assumes that each facility operates at either min or max load

Source: GRU presentation, "Economic Dispatch". June 2016

For this analysis, PFM assumed that the Deerhaven facility would be inaccessible. The study also looked at peak load to determine the shortfall amount of energy that would need to be addressed. The following table details this information:



Figure II.24 below illustrates the shortfall in peak energy for GRU if there is no ability to use the Deerhaven facilities, meaning the only operational facility is the J.R. Kelly facility:

Figure II.24 – Shortfall if Deerhaven Inaccessible
Gainesville Regional Utilities

GRU: Assumed Loss of Deerhaven (511.5 MWs)				
Net Summer				
Fiscal Year	System Capability (MW)	Peak Load (MW)	J.R. Kelly	Potential Shortfall
2012	662 MWs	415 MWs	108 MWs	307 MWs
2013	650 MWs	416 MWs	108 MWs	308 MWs
2014	639 MWs	409 MWs	108 MWs	301 MWs
2015	639 MWs	421 MWs	108 MWs	313 MWs
2016	631 MWs	428 MWs	108 MWs	320 MWs
2017	627 MWs	437 MWs	108 MWs	329 MWs
2018	627 MWs	444 MWs	108 MWs	336 MWs
2019	627 MWs	438 MWs	108 MWs	330 MWs
2020	627 MWs	441 MWs	108 MWs	333 MWs
2021	627 MWs	445 MWs	108 MWs	337 MWs

Assuming this disruption occurs during a period of peak demand, GRU would be required to purchase an average of 330 MWs of market power at LMP prices for a period of time until the Deerhaven issue could be addressed. This risk is quantified below:

Figure II.25 – Replacement Power
Gainesville Regional Utilities

(\$ in Millions)	Less Conservative Level	Moderate Level	More Conservative Level
Assumed shortfall	330 MWs	330 MWs	330 MWs
Length of Outage	30 days	60 days	90 days
MWh Shortfall	237,600 MWhs	475,200 MWhs	712,800 MWhs
Spot Purchase Cost*	50.00 / MWh	60.00 / MWh	70.00 / MWh
Budgeted MWh Cost**	39.00 / MWh	39.00 / MWh	39.00 / MWh
Net Replacement	11.00 / MWh	21.00 / MWh	31.00 / MWh
Exposure	\$2.6	\$10.0	\$22.1

* Represents Indiana Hub, Peak weighted average LMP pricing + 1, 2 and then 3 standard deviations

** Source: Fuels and Purchased Power Expense Budget Book, 2019-2020 (\$39.03 for all assets)

- **Less Conservative Level. Recommended:** Assumes the problem can be addressed in one month and that the cost of market power is equivalent to historical LMP pricing plus one standard deviation (standard deviation is approximately \$10/MWh). This is the recommended level given the relatively low probability that Deerhaven would be entirely inaccessible for a protracted period of time.
- **Moderate Level.** Outage increases to 60 days and the market price of replacement power is two standard deviations from the historical average, or ~\$60 per MWh.



- *More Conservative Level.* Outage increases to 90 days and the market price of replacement power is three standard deviations from the historical average, or ~\$70 per MWh.

The Cash Balance Study also concludes that GRU *does* have concentration risk with the Water and Wastewater Systems. For example, for the Murphree Plant, in the event of a catastrophic failure, there is slightly less than one day’s supply of treated water in storage and the use of auxiliary power to support the service area. Likewise for the Wastewater System, while there are two treatment facilities and they are connected, if one plant has a catastrophic failure, the other plant would not be able to treat all of the average daily flows directed for treatment. It is unclear what would happen with the excess flows in the event this happens but it would likely result in a release into the local watershed. These are problems that cannot be solved overnight – the permitting process for redundant capabilities takes decades. However, GRU is continuously addressing redundancy in the System through capital investment, diligent maintenance, operational optimization and other industry best practices. PFM does believe this is an area to monitor for GRU in the future.

Gas Exposure

As detailed in the prior section, much of the Florida market is driven by natural gas prices. These are not only the price for the necessary commodity for the Gas System but also the fuel that drives replacement power costs. The areas that have the most potential to create fuel volatility for GRU *within a fiscal year* include: 1) local generation fuel supply (assumed to be unhedged); 2) market purchases (which could be replaced by use of local or other generation if more economical) and 3) Gas System purchases.

While GRU does have a Risk Oversight Committee that manages fuel risks and reviews GRU’s hedge position, GRU currently does not hedge a significant portion of its need given the low level of gas prices observed in the market. While relatively stable from a historical perspective, sudden market dislocations can prove problematic. Over the past decade, the Florida Citygate price for natural gas has averaged \$4.40 per MMBtu with a maximum price of \$18, a 400% increase from the average. Given GRU has an average daily volume of over 26,000 MMBtus, this can be a large, unexpected expense.

Given the hedge position, GRU must be able to withstand these price shocks. The following table illustrates the three cases associated with natural gas risk, assuming GRU hedges 50% of its need with a budgeted per MMBtu cost of \$3.64. The Citygate price assumes the decade-long average and also applies one, two and then three standard deviations (which are well below the max price of \$18 experienced this year):

Figure II.26 – Natural Gas Exposure
Gainesville Regional Utilities

<i>(\$ in Millions)</i>	Less Conservative Level	Moderate Level	More Conservative Level
Daily Gas Volumes	26,500 MMBtu	26,500 MMBtu	26,500 MMBtu
Hedged Percentage	50.00%	50.00%	50.00%
Daily Market Exposure	13,250 MMBtu	13,250 MMBtu	13,250 MMBtu
Citygate Price	\$4.40 per MMBtu	\$6.60 per MMBtu	\$8.79 per MMBtu
GRU Budget*	\$3.64 per MMBtu	\$3.64 per MMBtu	\$3.64 per MMBtu
Net Exposure	\$.76 per MMBtu	\$2.96 per MMBtu	\$5.15 per MMBtu
Days Exposure	30 days	60 days	90 days
Exposure	\$0.3	\$2.4	\$6.1

* Data source: Fuels and Purchased Power Expense Budget Book, 2019-2020



- *Less Conservative Level.* Assumes GRU hedges 50% of the natural gas position and the problem can be addressed in one month through the fuel adjustment charge approved by the City Commission. For pricing, this case assumes the historical Citygate pricing adjusted to add one standard deviation to the expected cost. The cash set aside for this risk accounts for the budgeted cost of natural gas, \$3.64 per MMBtu.
- *Moderate Level. Recommended:* Price dislocation increases to 60 days and the market price of replacement power is two standard deviations from the historical average. Given fluctuations in the gas market, from natural gas production, to pipeline construction, to legislative action, to “Presidential Tweets” that impact price, this is likely the prudent level.
- *More Conservative Level.* Price dislocation increases to 90 days and the market price of replacement power is three standard deviations from the historical average.

Renewable Resource Performance

For many utilities, there is a state Renewable Energy Standard. There are two primary sources of risk associated with a state-level RES: (1) “overproduction” of a relatively expensive generating asset and (2) Purchase Power Agreements for new renewable assets that require the off taker to not only purchase the renewable energy, but to address times when the LMP might be negative, meaning a significant cost increase relative to the PPA “stated price.”

Interestingly, GRU’s recent transaction, which bought out the PPA associated with the biomass plant eliminated this risk. Therefore, GRU, unlike most other utilities, does not face this exposure. **PFM recommends that no cash be allocated to address this risk.**

Other renewable energy concerns exist that have not been accounted for in this study. Particularly, rooftop solar and the threat of distributed generation. Given Florida is the “Sunshine State,” this could be a relatively large concern. Additionally, as technologies improve, GRU should monitor the situation and determine if additional action is required. PFM, for example, has observed other utilities implementing a significant rate re-design in order to address the growth of distributed generation.

Insurance Exposure

GRU and the City of Gainesville have many insurance policies that address some of the risks associated with managing a utility. For some utilities across the U.S., there is a deliberate decision to self-insure, where the utility elects to not have insurance but sets aside an estimated amount for claims each year. The risk with this strategy is that the claims will exceed the amount set-aside.

For GRU, the risk with this area is that there are a myriad of deductibles that must be covered before the specific insurance policy pays off. Additionally, there is a potential risk that the amount of the loss will exceed the coverage level.

After some discussion with staff and the City Attorney, the general conclusion reached is that GRU’s insurance is robust and the deductibles relatively small. Additionally, GRU has the ability to declare “sovereign immunity” against some claims. This basically means that GRU cannot be sued without its consent, amounting to a self-insurance policy.

Based on this review and discussion, the conclusion reached was that GRU should reserve for a less conservative level that basically addresses a small amount for claims deductibles, as shown in **Figure II.27:**



Figure II.27 – Insurance Exposure
Gainesville Regional Utilities

(\$ in Millions)	Less Conservative Level	Moderate Level	More Conservative Level
Average Deductible	\$25,000	\$25,000	\$25,000
Number of claims	2	4	6
Exposure	\$0.05	\$0.10	\$0.15

- *Less Conservative Level. Recommended:* Assumes GRU has two claims that need to be addressed. Given the relatively small amount of dollar deductibles that need to be addressed, this was deemed to be a small risk.
- *Moderate Level.* Assumes GRU has four claims that need to be addressed.
- *More Conservative Level.* Assumes GRU has six claims that need to be addressed.

Resiliency and Climate Exposure

The intent of this Cash Balance Study is not to debate climate change. However, the intent is to identify financial risks associated with the frequency of storms that have passed through the Gainesville area, namely hurricanes. While the path and frequency of storms is a “relatively random” event, the costs associated with the necessary recovery are very real. Historically, GRU has expended approximately \$1 million per named storm. Fortunately, most of this cost is recovered from the Federal Emergency Management Agency (FEMA). Unfortunately, the time period from when the expenses are incurred to the FEMA reimbursement can be as long as two years. This can be a significant stress on GRU’s cash position.

The following figure illustrates the associated levels of cash that GRU should reserve for this risk:

Figure II.28 – Resiliency and Climate Exposure
Gainesville Regional Utilities

(\$ in Millions)	Less Conservative Level	Moderate Level	More Conservative Level
Average Storm Cost	\$1.0	\$1.0	\$1.0
Expected Number of Storms	2	4	8
Exposure	\$2.0	\$4.0	\$8.0

- *Less Conservative Level.* Assumes the Gainesville area experiences two storms annually with an average storm cost of \$1 million.
- *Moderate reserve level. Recommended:* Assumes the Gainesville area experiences four storms annually with an average storm cost of \$1 million. Given recent experiences during hurricane season in 2017 and 2018, this was considered to be an appropriate level of risk mitigation.
- *More conservative reserve level.* Assumes the Gainesville area experiences eight storms annually with an average storm cost of \$1 million.



Cyber Exposure

Recent headlines have detailed the intrusion of supposedly “secure systems” by hackers with an intent to disrupt the operations of the utility. Indeed, PFM has a client that experienced this, where hackers locked employees out of their day-to-day systems and held the utility for ransom. This “ransomware” attack was eventually ended by paying the ransom, in return for reinstated access and control of the software programs back to the utility. More interestingly, there have been some indications that “bad actors” have also attempted to take control of the physical assets of the utility.

GRU appears to have sufficient controls to address this threat at this point and time. **PFM recommends that no cash be allocated to address this risk.**

However, PFM does recommend **frequently reviewing** this exposure as a potential liability could quickly arise and need to be addressed with cash.

Construction / CIP Exposure

After review and discussion of the current CIP, the conclusion reached is that the vast majority of these projects are characterized as “routine” rather than “ground breaking and difficult.”

GRU has the requisite experience, expertise and knowledge to manage the CIP and the associated risks. Given the long-lead time of these projects and the relative ability to move projects from year-to-year, **it appears prudent that no additional cash balances should currently be reserved for this risk.**

Operational Risks and Operating Reserves

In addition to the various revenue and power supply exposures discussed above, there are other potential financial impacts on a utility’s operating budget. These are less defined, but can include needs for additional and ongoing operating expenses, working capital for bill/payment timing differences, and other general needs of the utility. For issues such as these, GRU should maintain cash to address such events in the form of a reserve to address working capital exposure.

The following table details the trends in Days Cash calculation for each of GRU’s utility systems:

Figure II.29 –Days Cash on Hand
Gainesville Regional Utilities

<i>Fuel, O&M, A&G (\$ Million)</i>	2010	2011	2012	2013	2014	2015	2016	2017	2018
Electric System	\$184.2	\$172.6	\$160.6	\$167.6	\$203.5	\$217.1	\$225.3	\$235.5	\$177.7
Gas System	\$19.7	\$18.8	\$15.3	\$14.8	\$16.7	\$15.3	\$14.6	\$12.9	\$13.0
Water System	\$12.5	\$12.4	\$12.6	\$13.1	\$13.3	\$13.6	\$14.8	\$15.5	\$16.2
Wastewater System	\$12.7	\$13.6	\$12.7	\$13.6	\$14.0	\$14.3	\$17.4	\$19.1	\$20.2
GRUCom	\$5.4	\$5.3	\$5.9	\$5.4	\$6.5	\$8.5	\$7.4	\$7.1	\$6.5
Total	\$234.4	\$222.6	\$207.1	\$214.5	\$254.0	\$268.8	\$279.5	\$290.1	\$233.6
Days Cash (Fuel, O&M, A&G)	\$.642	\$.610	\$.567	\$.588	\$.696	\$.736	\$.766	\$.795	\$.640
Change from Prior Year		-5.0%	-7.0%	3.5%	18.4%	5.8%	4.0%	3.8%	-19.4%

* Totals may not add due to rounding



System Comparables

Our recommendation is that a certain amount of funds should be available for unforeseen events and timing differences in addition to the risks and exposures discussed above. In making this recommendation, we understand that all of the reserves in some sense can be used to offset unexpected financial performance regardless of the cause. While the major risk categories highlighted previously might be a significant factor in decreased financial performance, it is still appropriate to set targets against other unforeseen events to ensure greater rate stability, and to address general cash flow needs. Such a methodology would be consistent with industry, financial market and credit rating agency standards. At issue will be how much should be maintained for general working capital and/or reserved against other unquantifiable events. Our recommendation is that GRU should base its ultimate decision on a combination of:

- Comparable utility practices
- Broader recommendations from the rating agencies based on larger peer studies
- Use of the Rate Stabilization Account and UPIF for reserves as well as the narrowing net operating margins

As a guideline for determining our target level for operating reserves, we have based initial levels on industry benchmark averages for other public power utilities. **Figure II.30** below provides the average days cash on hand for comparable utilities, the Fitch Public Power Peer Average for “AA” rated public power utilities, and the most recent Moody’s Median and Moody’s liquidity targets in its most recent Methodology. “Days Cash” On Hand is often used by ratings analysts as a measure of internal liquidity to meet operating expenses. Fitch’s formula is calculated as the sum of current unreserved cash and investments divided by operating expenses less depreciation, all multiplied by 365.

As **Figure II.30** indicates, Days Cash for these agencies ranges from 79 days to over 400 days. There are some challenges in utilizing comparables for public power utilities as there are other factors involved in determining cash balances (rate affordability, future capital needs, future debt issuance, power generation [portfolio, environmental mandates], and the speed in which rate increases are passed on to customers, etc.). GRU’s Days Cash is also shown excluding funds that are otherwise restricted. The following table illustrates similar issuers and their relative cash levels:

Figure II.30 – Comparable Credit Ratings and Days Cash on Hand
Gainesville Regional Utilities

Comparable Utilities Issuer	Ratings			Summary Metrics ¹			
	Moody's	S&P	Fitch	Retail Customers	Days Cash on Hand	2016 Days Cash on Hand	2015 Days Cash on Hand
Gainesville Regional Utilities	Aa3	AA-	AA-	96,272	178	228	219
Colorado Springs Utilities	Aa2	AA	AA	229,909	138	145	136
Fort Pierce	-	A	A+	28,287	124	122	140
Jacksonville Beach Combined Utility	Aa3	AA	AA	34,738	437	476	425
JEA	A2	A+	AA	459,853	262	309	252
Kissimmee	-	-	AA-	71,770	236	260	257
Lakeland	Aa3	AA	A+	128,535	193	247	181
Leesburg	Aa3	A	A+	25,758	181	237	223
Lincoln Electric System	-	AA	AA	138,482	174	183	266
Orlando Utilities Commission	Aa2	AA	AA	200,497	316	380	339
Springfield Public Utility, MO (City Utilities)	-	AA	AA	114,093	266	288	292
Tallahassee	Aa2	AA	AA-	89,070	429	374	345
Vero Beach	A1	-	A+	35,610	79	108	102
Winter Park	A1	AA-	A+	15,061	—	9	—
Fitch Public Power Peer Group					206	216	227
Moody's Criteria Requirement for "AA" for this Metric					150 - 250		

¹Fitch Ratings "Public Power - Fitch Analytical Comparative Tool (FACT) - 2018"

²Actual Moody's metric is "Adjusted days liquidity on hand (3-year avg)", From "US Public Power Electric Utilities With Generation Ownership Exposure," 12/29/2015

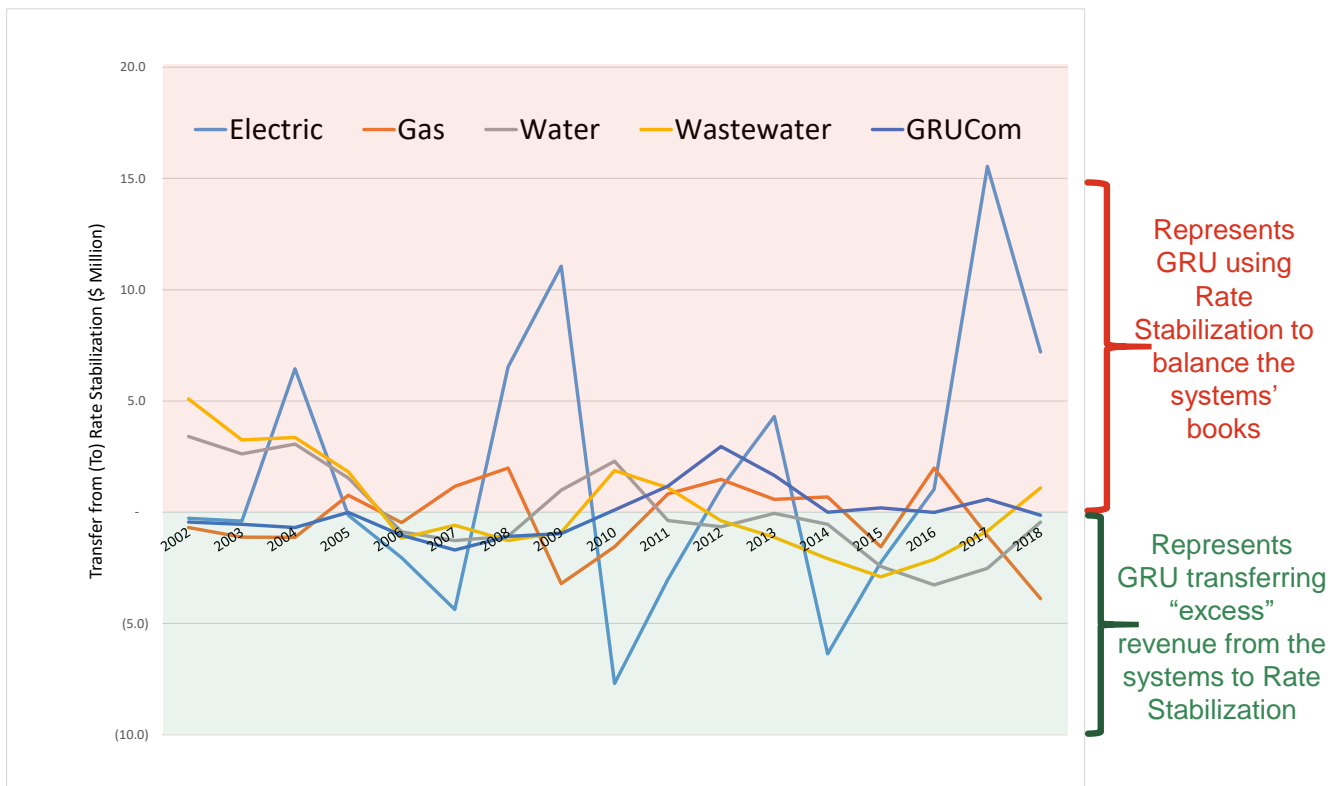


We also note that Days Cash, while pertinent, is only one measure that impacts credit ratings. We see this as an indicator of strong financial management practices as well as improved economic conditions. Additionally, there is significant variation in the amount of cash and liquidity of various utilities within a so-called peer group. The number of participants in any group can impact the average. By Fitch’s own analysis, the average Days Cash of some “AA”-rated utilities is sometimes *lower* than “A”-rated utilities. More than anything else, this seeming discrepancy helps to highlight the fact that many factors underlie credit ratings. The CBS is not intended to imply that a standard must be met to achieve a certain rating; instead, it is to note that the rating agencies look at certain metrics as one factor that impacts a rating, and cash/liquidity is one such measure. A utility should be able to articulate its cash and liquidity strategies to the financial community and this ability is a significant factor in why the three rating agencies will appreciate the thoughts and effort GRU places on the CBS process.

Impact of the Use of Rate Stabilization on Working Capital

One of the cash reserve accounts GRU currently uses is the Rate Stabilization Account. The intent of this account is to “manage” minor fluctuations in the cost of delivering utility services rather than subjecting ratepayers to the “whipsaw” of cost changes in between budget cycles and within that particular budget cycle. While many utilities have a rate stabilization account, GRU, to generalize, aggressively uses this account to manage the difference between revenues and expenses to ensure adequate coverage of debt service obligations. **Figure II.31** below shows the aggressive use of the rate stabilization account across systems:

Figure II.31 – Use of Rate Stabilization
Gainesville Regional Utilities



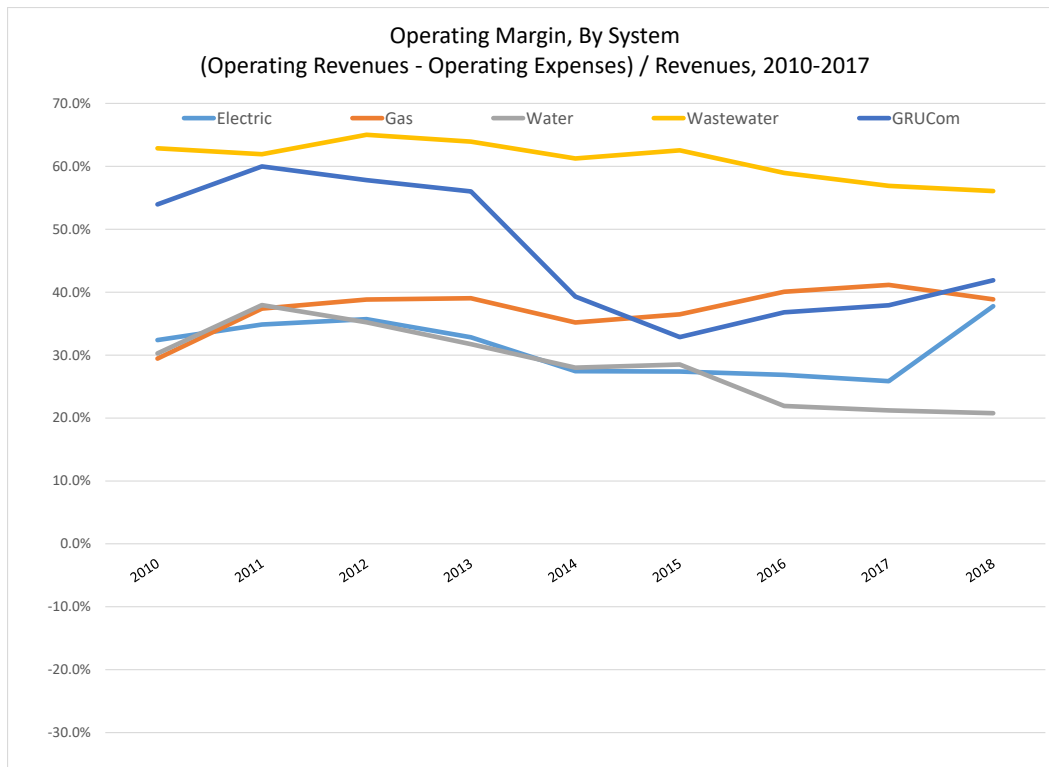


There is tremendous variability in the use of rate stabilization across systems and across time, and the recent tendency has been to use rate stabilization (lowering the balance of the rate stabilization account). The indication is that GRU should reserve *more* for working capital to address this historical fact.

Impact of Net Margins on Working Capital

PFM examined the operating margins associated with each system. Quite simply, this would be the Operating Revenue associated with that delivery of service (exclusive of rate stabilization, interest income, and subsidies received from the Federal Government through the Build America Bonds program) less the operating expenses associated with providing these necessary services. The following chart illustrates the operating margins by system:

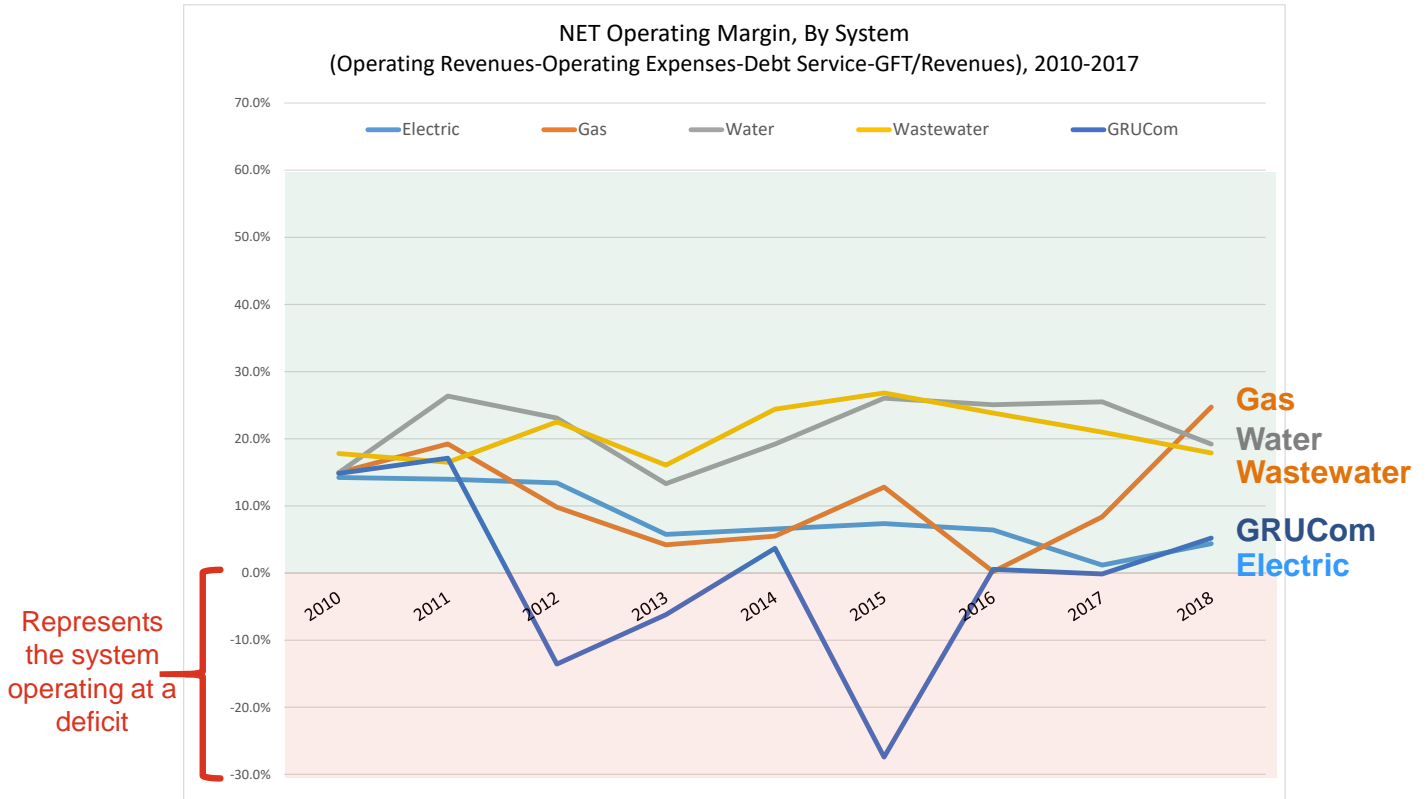
**Figure II.32 – Operating Margin by System
Gainesville Regional Utilities**



On the surface, this appears to be a positive perspective. However, when including the non-operating expenses for each system (debt service and that particular system’s share of the General Fund Transfer), the picture is not quite as glowing:



**Figure II.33 – Net Operating Margin
Gainesville Regional Utilities**



As illustrated in the chart, some of GRU’s systems often operate at a deficit (GRUCom) and others have net margins that are approaching zero, namely the Electric System, which is GRU’s largest system. The conclusion reached was that GRU should reserve *more* for working capital to address this historical fact.

Based on this assessment, the conclusion reached was that GRU should reserve for the **Most Conservative case** when it comes to working capital:

**Figure II.34 – Working Capital Exposure
Gainesville Regional Utilities**

(\$ in Millions)	Less Conservative Level	Moderate Level	More Conservative Level
Days Cash	\$.70	\$.70	\$.70
Number of days	45	60	75
Exposure	\$31.5	\$42.0	\$52.5



Summary of Exposure Estimates

Figure II.35 below provides a matrix of the various risk areas discussed in the Cash Balance Study. For this effort, PFM believes it is more prudent to establish a “range” in which to operate. In this instance, we have applied a +/- 15 days buffer around the target:

**Figure II.35 – Summary of Reserve Levels
Gainesville Regional Utilities**

\$ Million	Less Conservative Level	Moderate Level	More Conservative Level	
Revenue Risk				
General Sales Decrease	\$3.5	\$10.4	\$17.3	Reflects recession
Large Customer Exposure	\$.9	\$1.7	\$6.9	Generally stable economic base
Sales for Resale / UF Water	\$.0	\$.1	\$.2	Immaterial Revenue
Other Revenue Exposure	\$.0	\$.1	\$.5	Immaterial Revenue
Expense Risk				
Replacement Power Exposure	\$2.6	\$10.0	\$22.1	Low probability but represents resiliency
Gas / Purchased Power Exposure	\$.3	\$2.4	\$6.1	Market risk for unhedged position
Renewable Performance Exposure	Not Applicable			Limited renewable exposure
Insurance	\$.1	\$.1	\$.2	
Resiliency and Climate Exposure	\$2.0	\$4.0	\$8.0	FEMA lag versus response time
Cyber Exposure	Not Applicable			Insurance coverage
Construction / CIP Exposure	Not Applicable			GRU's experience with projects
Operational Risk / Working Capital				
Working Capital	\$31.5	\$42.0	\$52.5	Use of RSF and general payment lag

* Numbers may not total due to rounding

Preferred Level	\$72.7
15 Day Buffer	\$9.6
Lower Bound	\$63.1
Upper Bound	\$82.3



By System, the allocation is as follows:

Figure II.36 – Summary of Recommended Cash Balances by System
Gainesville Regional Utilities

Cash Balance Targets: By System				
(\$ in Millions)	2019	2020	2021	2022
Electric	55.7	57.3	59.1	60.8
Gas	4.4	4.5	4.7	4.8
Water	4.8	5.0	5.1	5.3
Wastewater	5.9	6.1	6.3	6.5
GRUCom	1.9	2.0	2.0	2.1
Total	72.7	74.9	77.2	79.5

While **Figure 11.35** on the previous page provides the three funding levels for each event, it is not intended to suggest using the *total* of the respective category (less conservative, moderate, or more conservative levels) for purposes of setting reserve targets. Likewise, we do not believe that GRU needs to choose only from one of the levels in order to set a reserve target. The appropriate reserve will be best determined by looking at individual categories and making an assessment as to the risks that GRU wants to reserve for, the potential probability, the period of coverage, and similar factors. The Cash Balance Study recognizes that all of these risks are unlikely to occur simultaneously. GRU can choose the appropriate levels within an individual category to create an aggregate set of events that seems possible, even if unlikely, and that warrant mitigation. GRU can then assess whether or not the aggregate result meets GRU’s broader objective of protecting its ratepayers by ensuring stable rates.

We expect these recommendations will be the start of a policy discussion among the Utility Advisory Board, City Commission and interested constituents. These levels cannot guarantee rate stability over the long term, and do not preclude other unforeseen events that may impact rates. They are not a substitute for conservative and realistic budgeting practices. Reserves can provide a level of stability for price spikes or unplanned outages, but they are not a long term solution for overall price increases. As we have stated, there is not a single answer or approach to the “right” level of reserves. The “right” level should embody risks, willingness and ability to quickly address consequences and plans for “next steps” along with GRU’s financial plan.



Funding Strategies

The preceding sections set forth reserve purposes, and suggest potential funding levels to be considered for each area. In developing recommended reserve levels, we note that the ultimate funding levels will reflect policies that must measure GRU’s desire for rate stability and predictability, versus the willingness of the ratepayers to accept rates that are higher in some periods than they might otherwise be. GRU must determine the proper balance between the need to maintain competitive rates and the need to fund reserves that enhance the long-term fiscal stability of the utility. The development of appropriate reserves and funding strategies will need to take into account these competing objectives.

Additionally, the rating agencies have some very specific criteria as it pertains to cash and liquidity. In the most recent ratings reports, GRU scored very high in this category across all three agencies. Specifically, GRU’s cash and liquidity (available lines of credit and commercial paper) was slightly above 250 days, a level generally considered the highest, “AAA”. While not the only criteria examined by the rating agencies, GRU’s days cash and liquidity is considered a credit positive that plays a critical role in maintaining GRU’s ratings at the “AA-” and “Aa2” level.

Available Funds

Based on GRU’s current corporate model, GRU had approximately \$80 million in cash and investments, from identified sources (Operating Cash, Rate Stabilization, UPIF for Reserves and UPIF Reimbursement from the 2019 Transaction):

Figure II.37 – Summary of Reserve Levels and Expected Cash
Gainesville Regional Utilities

Cash Balance (\$ in Millions)	Minimum Level	Preferred Level	Estimated Cash Available		Sources of Current Funding
			2019	2022	
Cash Balance	\$ 40.8 million	\$ 72.7 million	\$ 82.4 million	\$ 60.6 million	Operating Cash, Rate Stabilization Fund, UPIF for Reserves
	15 Day Buffer	\$ 9.6 million			
	Lower Bound	\$ 63.1 million			
	Upper Bound	\$ 82.3 million			

Based on this recommendation, GRU may need to fund, or in the future, replenish cash levels and additional sources of funding may be needed. Sources include:

- *Future budgeted net margins*, if cash has been drawn upon and needs to be replenished.
- *Additional non-recurring sources of funds*, such as excess off-system sales, might also be applied to the replenishment of reserves or to the debt management program.

In addition to a determination of the preferred levels, there are some other considerations for GRU in its determination of these cash levels. These include:

- Aggressive use of the Rate Stabilization Funds.
- Periodic use of UPIF for debt service.



- Compressing net operating margins expected over the next several years with the Electric System moving to single digit margins since 2010.
- While GRU does have a commercial paper program, the reality is that the process to issue commercial paper takes approximately 90 days. This process includes requisite approvals from the UAB and City Commission as well as updating disclosure of GRU's financial and operational profile.
- Additional non-recurring sources of funds, such as the settlement for Crystal River 3, have previously been applied to cash available as an unexpected injection of cash but likely will not regularly occur in future years.

Additional Recommendations

In addition to the recommended cash levels, the CBS would also recommend the following:

- Update the GRU financial model so that it is more adaptable to stress testing.
- Monitor and evaluate the credit strength of the largest customers of each system to be appraised of their financial condition.
- Monitor large customer financial and other performance.
- Transition from use of Debt Service Coverage to Fixed Charge Coverage ratio as a critical metric since the rating agencies are using this metric for determining ratings.
- Monitor cyber activities and re-evaluate this risk on a periodic basis.
- Recognize the physical concentration risk of the Deerhaven Facility as well as limitations of the Water and Wastewater Systems. In the event the Murphree Plant is inoperable, GRU has slightly less than one day's quantity of treated water and auxiliary power to provide potable water to the service territory.
- Recognize that, as costs increase over time, or with market changes, the requirement for one day's cash increases. For this analysis, 3% was used as an inflation factor, consistent with historical observation.