



FY18 Rate Study

for

**Water, Wastewater & Electric
Enterprise Funds**

Town of Culpeper, Virginia

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Acknowledgement: State Averages for water and wastewater rates and fees was taken from *The 29th Annual Virginia Water and Wastewater Rate Report 2017* prepared by Draper Aden Associates.

1.0 WATER ENTERPRISE FUND

1.1 BACKGROUND

The Water Enterprise Fund remains in good condition with a cash fund balance of \$14,375,751 as of June 30, 2017. In FY18, due to capital expense associated with the Lake Pelham and Mountain Run Lake dam rehabilitation projects, operating expenditures exceeded operating revenues by approximately \$170,536 based on 6 months of actual data. Additionally, in FY19, annual expenses will be reduced by approximately \$257,000 due to retirement of debt.

1.2 FUTURE VARIABLES IMPACTING FUND

1.2.1. Residential Growth and Tap Sales

Culpeper residential growth is reliant on infill development within existing neighborhoods in the Town and County environs. In FY2017, the Town benefited from strong residential tap sales of 128 equivalent water and 126 wastewater taps, respectively. Sales for the first half of FY2018 continued at a similar pace with 57 water taps being sold. Although discussions with Town and County planning staff indicate a limited supply of buildable residential lots over the next 2 to 5 years currently exist, developer interest in “green field” residential development sites has increased significantly during the past year.

1.2.2 Capacity

Historically, the most significant variable that could impact the Water Enterprise Fund is the cost associated with meeting future supply needs. The 2011 Regional Water Supply Plan predicted that the system will need approximately 6.4 MGD of supply over the next 40 year period. Currently the safe yield of Lake Pelham and Mt. Run Lake, as reported in the 2004 Water Supply Plan, is 5.1 MGD. Although the reported safe yield is 5.1 MGD, the effective safe yield is believed to be 4.0 MGD due to treatability issues and reservoir performance during the 2007 drought. Based on this information, an additional 3.0 – 3.5 MGD of capacity was recommended to be developed and approved by Council. Since the Town relied on Lake Pelham as its sole source of water, it was further recommended that a secondary source be developed. In FY15, three wells were connected to the system with a combined possible safe yield of 600,000 – 900,000 gallons per day (Emergency Peak Rate 1.2 MGD). The Town secured an additional five wells with a combined possible safe yield of 1.0 – 1.5 MGD (Emergency Peak Rate 2.0 MGD) was completed in FY15. Of these five wells, construction began in FY17 to connect three of them into the system with the other two removed for consideration due to potential cost of connection and the potential impact from contamination sources. The new three water production wells are expected to be connected to the distribution system and ready for operation in early 2018. In total, the combination of the six wells are anticipated to provide a combined possible safe yield of 1.6 – 2.4 MGD and an emergency peak rate of 3.2 MGD, meeting approximately 100% of the Town’s current demand. Once operational, these wells will be monitored to determine their actual safe yield.

1.2.3 Regulatory Impact

Although it is difficult to predict when new regulations will surface, currently, there are two regulatory concerns: THM/HAA’s and dam safety. The current regulatory limit for THM’s and HAA’s was reduced to a site specific annual running average in October 2013. Staff has implemented treatment concepts to maximize TOC reduction thereby minimizing the formation of THM’s and HAA’s. In addition, tank mixing was introduced into the system in FY15 to provide better control of water detention time in the

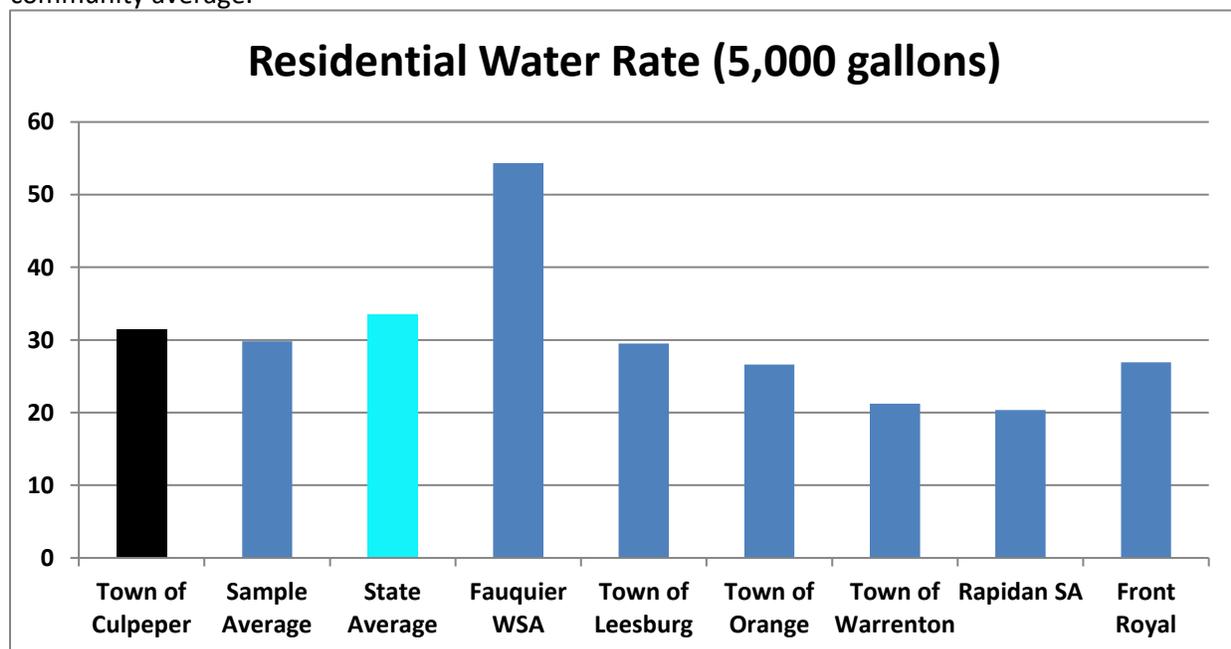
distribution system. Additionally, the development and blending of groundwater with the existing surface water supply has provided additional reduction of THM's and HAA's to a point below the new limits. Therefore, minimal expenditures associated with meeting these new water quality regulations has been experienced.

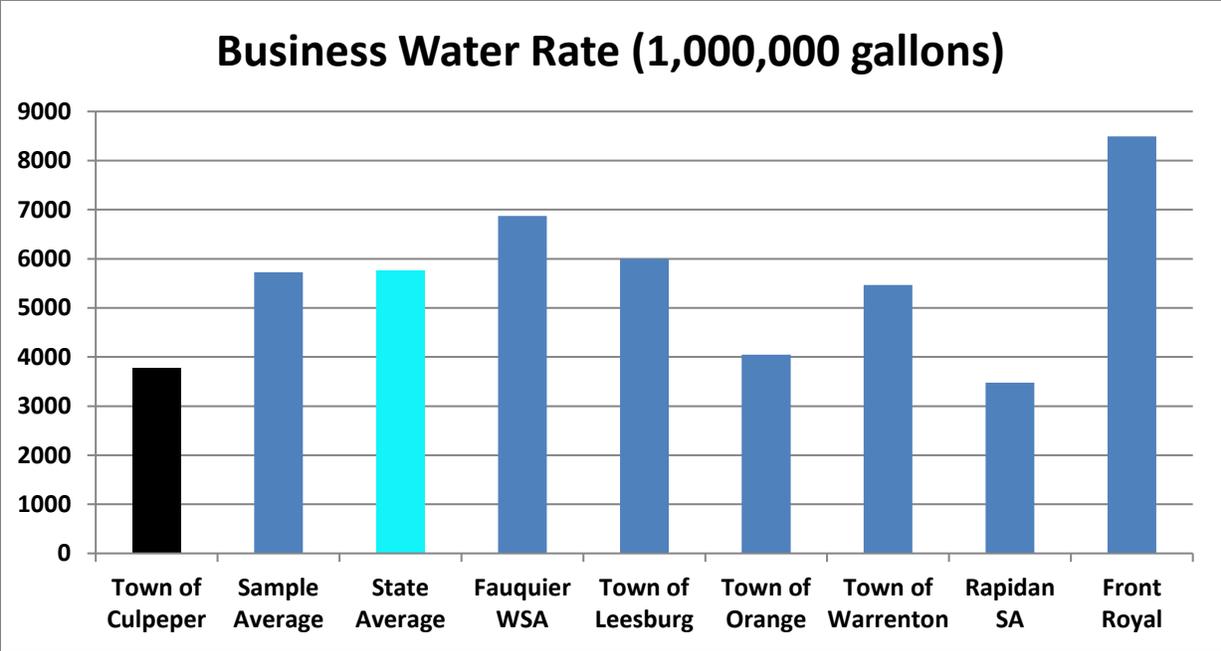
Dam safety is a more significant financial concern with both Lake Pelham and Mountain Run Dams not being able to pass the 0.9 probable maximum precipitation (PMP) storm event as required by new Virginia dam safety regulations. Both dams require extensive repairs in accordance with the Conditional O&M Certificate issued by Virginia DCR. Hazen and Sawyer prepared a preliminary engineering report for both dams that quantifies the repairs at \$16.1 million. The Town then contracted with Schnabel Engineering who has identified an alternate design involving the retrofit of a reinforced concrete labyrinth weir spillway as a feasible option with the estimated construction cost for both dams in the \$16 million budget range. The Town applied for and received a federal 65% NRCS grant in the amount of \$10.6 million for both dams in addition to the previously awarded planning grant of \$890,000 to complete the preliminary evaluation of the dams. Additionally, in 2016 the General Assembly approved State matching funds for matching the local share of the expected project cost in the amount of \$2.9 million, allowing the dam rehabilitation project to proceed in FY2018. Through competitive bidding, Kiewit was awarded the construction contract for the rehabilitation of both earthen dams in the amount of \$14.3 million. Kiewit commenced construction of the projects in July 2017 and is scheduled to complete the rehabilitation of both dams by December 2018.

1.3 ANALYSIS OF RATES AND FEES

1.3.1 Rates

An analysis of the Town rates indicates that the current monthly water rate for a typical 5,000 gallon per month customer is 6% lower than the state average. When compared to surrounding communities the Town rate is 5% higher, see Residential Water Rate (5,000 gallons) graph. Town rates for a 1,000,000 gallon per month customer are 34% below the state average and 34% below the surrounding community average.





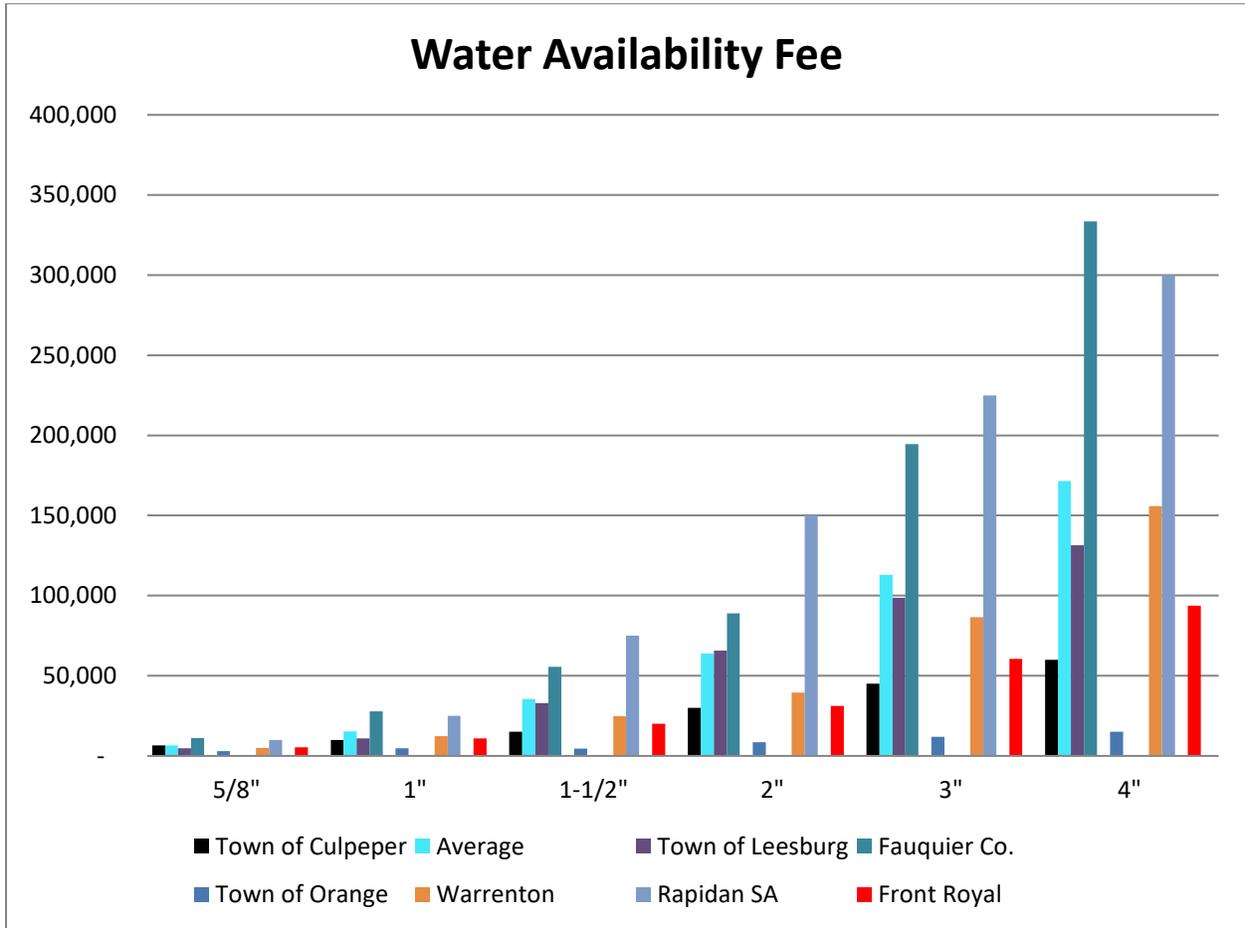
1.3.2 Tap Fees

The Town’s current tap fee structure is a declining rate structure where the unit cost of water is reduced as usage increases for all sizes below 1½ -inch. Meter sizes 1½ -inch and above have a flat unit cost of \$0.20/gallon per month. Following is a table showing the tap fees and corresponding unit cost:

WATER TAP PRIVILEGE ASSESSMENT FEES

	MAXIMUM		
	ALLOWABLE	FEE	RATE
METER SIZE	GALLONS	(\$)	(\$/gal per month)
FIVE-EIGHTHS (5/8")	10,000	6,500	0.65
ONE INCH (1")	25,000	9,906	0.40
ONE & ONE HALF (1½")	75,000	15,000	0.20
TWO INCH (2")	150,000	30,000	0.20
THREE INCH (3")	225,000	45,000	0.20
FOUR INCH (4")	300,000	60,000	0.20

Following is a comparison of the Town tap fees as compared to the average for surrounding communities:



Meter Size Difference (positive indicates higher Town tap fee)

5/8"	0%
1"	-35%
1-1/2"	-58%
2"	-53%
3"	-60%
4"	-65%

This rate and fee structure may depress residential and attract growth in the large water user categories.

1.4 REVIEW OF FUND STABILITY

To evaluate the stability of the fund, a model was developed to project anticipated revenues and expenses over a 10 year period to determine the impact on the fund cash balance. Variables included in the model were growth projections, rate increases, tap fee increases, increases in expenses related to current capital projects and system growth in the County water and sewer service area. The model is dynamic in nature, developed with the intent of being easily updated and recalibrated on an annual basis.

Since water and wastewater operations are closely related with most customers having water and wastewater service, an additional model was developed to evaluate the combined impact of changes made on individual water and wastewater customers. This model provides a more detailed evaluation of the impact of changes on the water and wastewater customers.

Based on current anticipated revenue and expenditures, the Water Enterprise Fund requires a rate increase to offset current capital expenditures associated with the dam rehabilitation and water storage tank projects.

For this report and corresponding graphs, the following variables were used:

Increase in Tap Sales – 0%

5/8" Tap Fee Increase – 0%

O&M Expense Increase – 3%

PILOT (% of Revenue) – 3%

Administrative Fee Increase – 2%

	FY19	FY20	FY21	FY22	FY23	FY24	FY25
Annual Rate Increase –	2%	2%	2%	2%	2%	2%	2%

Note: Although annual rate increases are shown in FY20-FY25, those additional rate increases are for planning purposes only and will be reviewed and updated annually as appropriate to address inflation, capital, regulatory and other factors that affect the financial viability of each fund.

1.5 RECOMMENDATION

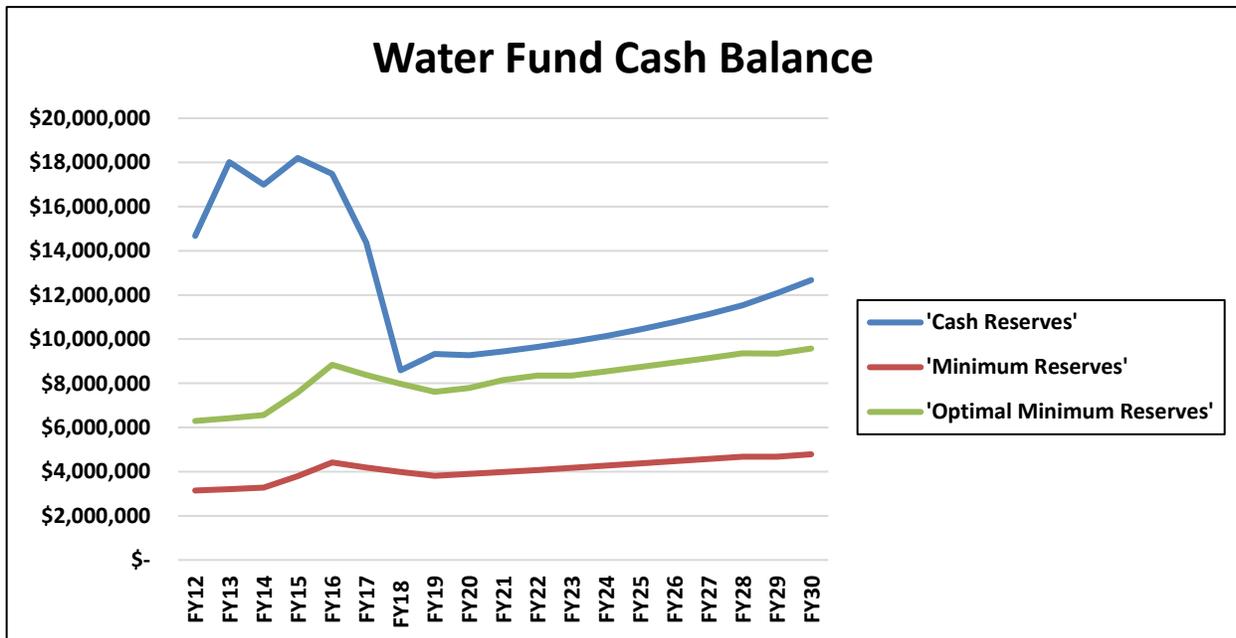
1.5.1. Changes to Tap Fees

Although tap fees for meters larger than 5/8" are currently significantly lower than the surrounding communities, minimal taps are sold in the larger meter categories. It is currently recommended to maintain the tap fees at the present value as an incentive for growth in the larger user categories.

1.5.2 Changes in Rates

Due to current capital construction expenditures and a comparison of the current rate as compared to other communities within the state, combined with increased costs associated with inflation, a rate increase for FY19 of 2% is recommended.

Based on the variables provided above, the Water Fund cash balance is projected based on the following graph:



2.0 WASTEWATER ENTERPRISE FUND

2.1 BACKGROUND

The Wastewater Enterprise Fund is currently marginal with a cash fund balance of \$4,317,062 as of June 30, 2016. In FY18, operating expenses exceeded operating revenue by approximately \$111,111 based on 6 months of actual data.

2.2 FUTURE VARIABLES IMPACTING FUND

2.2.1. Residential Growth and Tap Sales

In recent years, Culpeper residential growth is reliant on infill development within existing neighborhoods in the Town and County environs. In FY2017, the Town benefited from strong residential tap sales of 128 equivalent water and 126 wastewater taps, respectively. Sales for the first half of FY2018 continues at a similar pace with 57 wastewater taps being sold. Although discussions with Town and County planning staff indicate a limited supply of buildable residential lots over the next 2 to 5 years currently exist, developer interest in “green field” residential development sites has increased significantly during the past year.

2.2.2 Capacity

Since the Water Pollution Control Facility (WPCF) was upgraded to 6.0 MGD in 2010, the plant is not anticipated to require an upgrade for the near future. Significant progress on reducing inflow and infiltration (I&I) continues to be achieved to comply with DEQ standards and alleviate hydraulic loading of the WPCF during wet weather events. Additionally, I & I reductions accomplished to date help preclude the need for future WPCF expansion due solely to increased wastewater flow.

2.2.3 Regulatory Impact

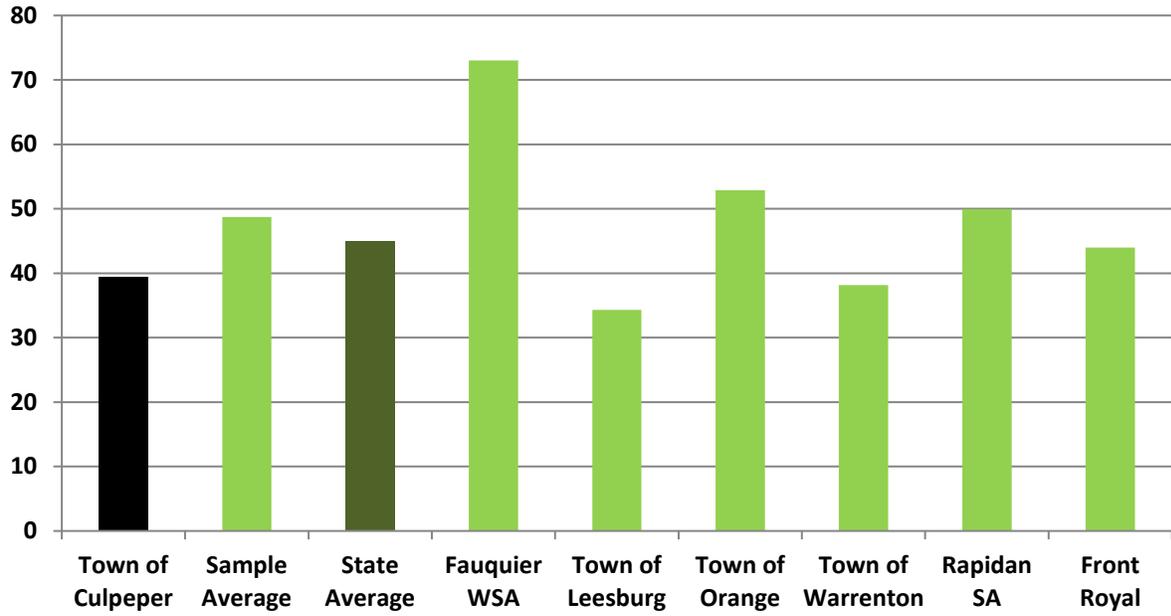
Although it is difficult to predict when new regulations will surface, minimal regulatory activity is anticipated during the next 5-10 years due to the significant upgrades that were required associated with the Chesapeake Bay Act and the current plant performance being significantly better than design. However, DEQ has initiated draft standards for further regulating N ammonia discharges in effluent. Staff continues to work with VAMWA in monitoring the potential impact of this future rulemaking.

2.3 ANALYSIS OF RATES AND FEES

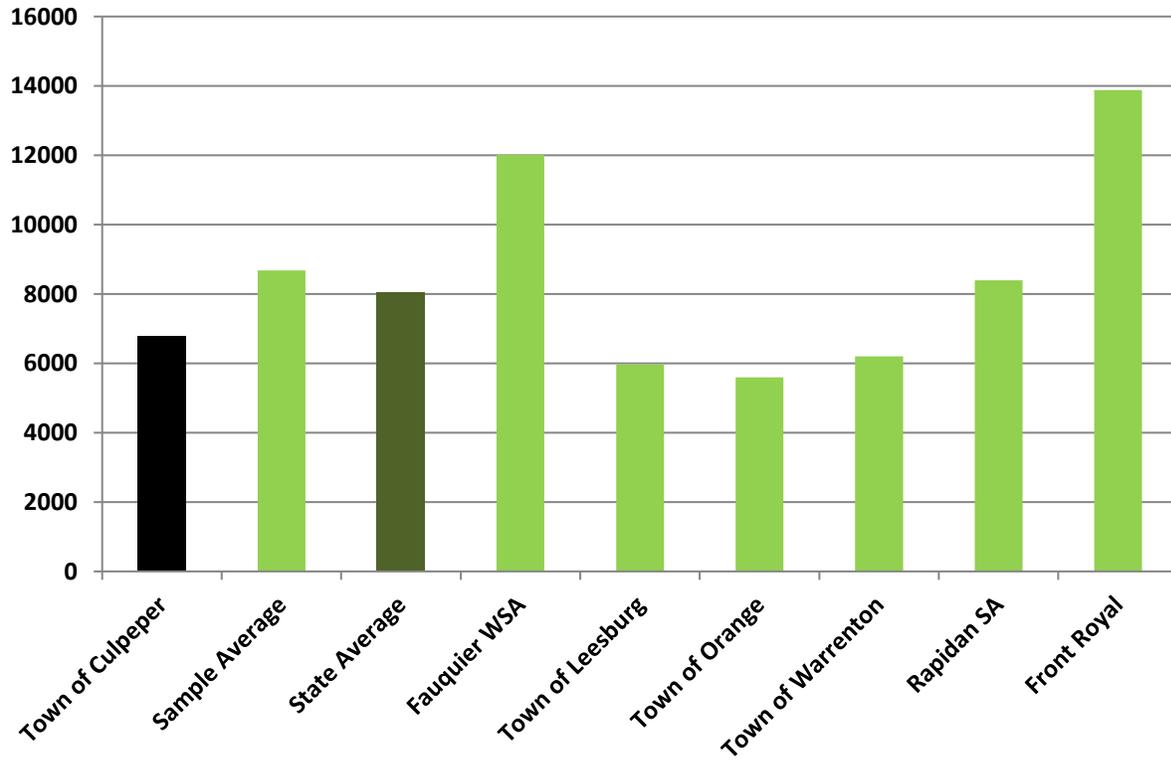
2.3.1 Rates

An analysis of the Town rates indicates that the current monthly wastewater rate for a typical 5,000 gallon per month customer is 13% lower than the state average. When compared to surrounding communities the Town rate is 19% lower, see Residential Wastewater Rate (5,000 gallons) graph. Town rates for a 1,000,000 gallon per month customer are 16% below the state average and 22% below the surrounding community average, see Wastewater Rate (1,000,000 gallons) graph. The Town wastewater rates were lower than the average for the surrounding communities for all classes of usage customers.

Residential Wastewater Rate (5,000 gallons)



Business Wastewater Rate (1,000,000 gallons)



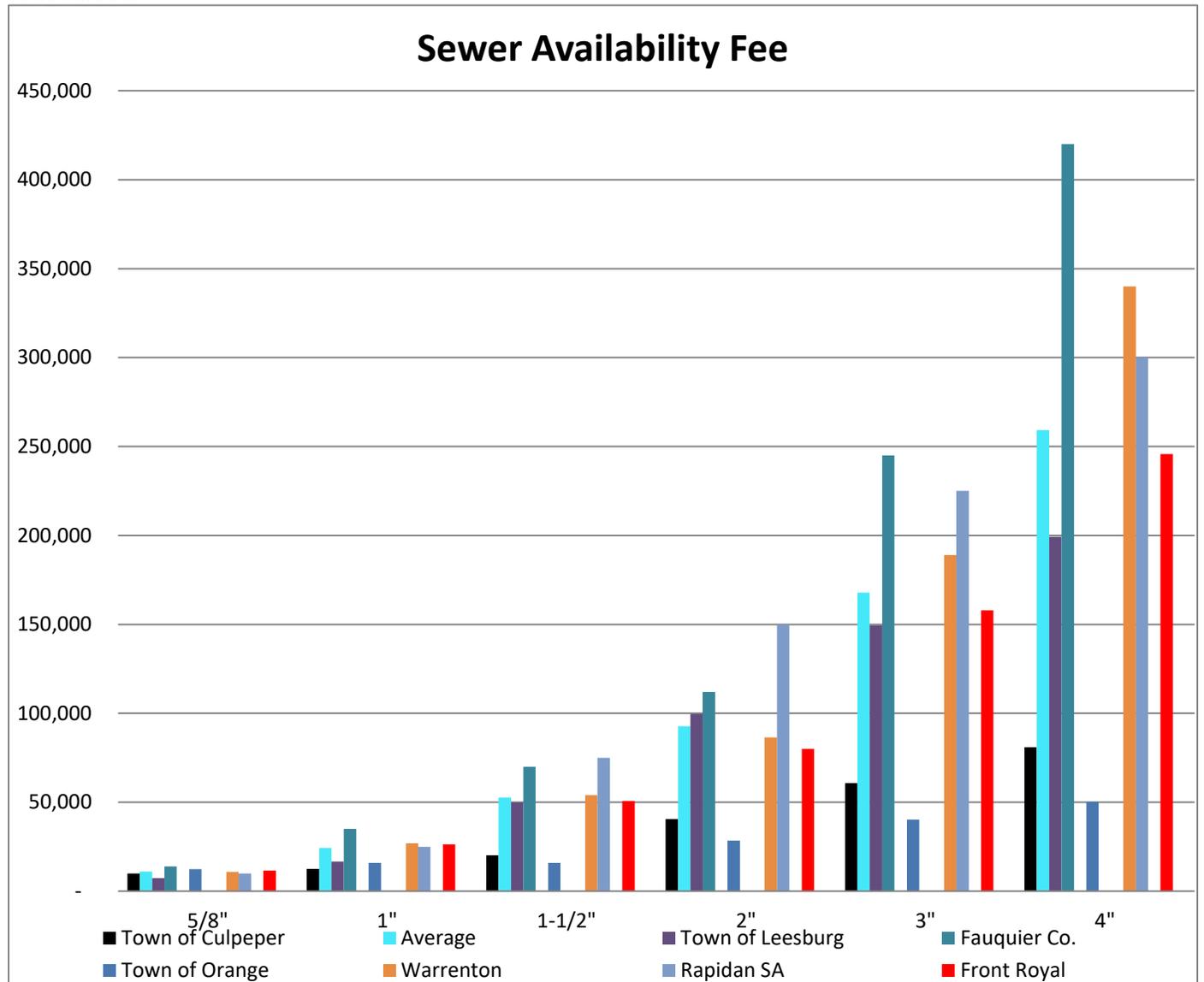
2.3.2 Tap Fees

The Town's current tap fee structure is a declining rate structure where the unit cost of water is reduced as usage increases for all sizes below 1½ -inch. Meter sizes 1½ -inch and above have a flat unit cost of \$0.27/gallon per month. Following is a table showing the tap fees and corresponding unit cost:

WASTEWATER TAP PRIVILEGE ASSESSMENT FEES

	MAXIMUM		
	ALLOWABLE	FEE	RATE
METER SIZE	GALLONS	(\$)	(\$/gal per month)
FIVE-EIGHTHS (5/8")	10,000	10,000	1.00
ONE INCH (1")	25,000	12,500	0.50
ONE & ONE HALF (1½")	75,000	20,250	0.27
TWO INCH (2")	150,000	40,500	0.27
THREE INCH (3")	225,000	60,750	0.27
FOUR INCH (4")	300,000	81,000	0.27

Following is a comparison of the Town tap fees as compared to the average for surrounding communities:



Meter Size Difference (positive indicates higher Town tap fee)

5/8"	-9%
1"	-49%
1-1/2"	-62%
2"	-56%
3"	-64%
4"	-69%

2.4 REVIEW OF FUND STABILITY

To evaluate the stability of the fund, a model was developed to project anticipated revenues and expenses over a 10 year period to determine the impact on the fund cash balance. Variables included in the model were growth projections, rate increases, tap fee increases, increases in expenses and anticipated capital projects. The model is dynamic in nature developed with the intent of being easily updated and recalibrated on an annual basis.

Since water and wastewater operation are closely related with most customers having water and wastewater service, an additional model was developed to evaluate the combined impact of changes made on individual water and wastewater customers. This model provides a more detailed evaluation of the impact of changes on the water and wastewater customers.

For this report and corresponding graphs, the following variables were used:

- Increase in Tap Sales – 0%
- 5/8" Tap Fee Increase – 0%
- O&M Expense Increase – 3%
- PILOT (% of Revenue) – 3.0%
- Administrative Fee Increase – 2%

	FY19	FY20	FY21	FY22	FY23	FY24	FY25
Annual Rate Increase –	2%	2%	2%	2%	2%	2%	2%

Note: Although annual rate increases are shown in FY20-FY25, those additional rate increases are for planning purposes only and will be reviewed and updated annually as appropriate to address inflation, capital, regulatory and other factors that affect the financial viability of each fund.

2.5 RECOMMENDATION

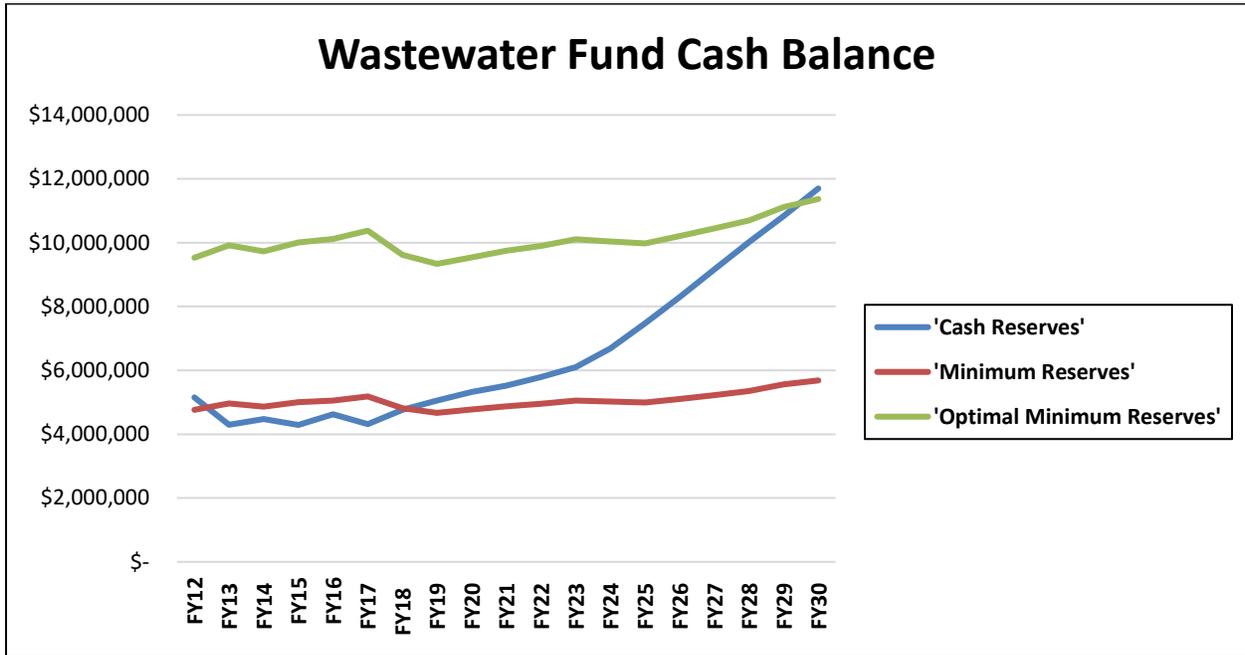
2.5.1 Changes to Tap Fees

Although tap fees for meters larger than 5/8" are currently significantly lower than the surrounding communities, minimal taps are sold in the larger meter categories. It is currently recommended to maintain the tap fees at the present value as an incentive for growth in the larger user categories. In addition, allowing a combined meter for apartments in the downtown development area should be considered to promote redevelopment and increased density in this area of town.

2.5.2 Changes in Rates

Due to the need to sustain desired cash reserves and a comparison of the current rate as compared to other communities within the state, combined with increased costs associated with inflation, a rate increase for FY19 of 2% is recommended.

Based on the variables provided above, the Wastewater Fund cash balance is projected based on the following graph:



3.0 ELECTRIC ENTERPRISE FUND

3.1 BACKGROUND

The Electric Enterprise Fund is currently in fair condition with a cash fund balance of \$2,711,999 as of June 30, 2017. This fund has a significantly higher annual operating expense than either the Water or Wastewater Enterprise Funds and therefore, should maintain a significantly higher cash balance. In FY17, operating revenues exceeded operating expenditures by approximately \$482,091 based on the June 2017 audited financial reports. Approximately \$593,947 in capital improvement was expended in FY17 resulting in a net reduction in the cash fund balance of \$111,856.

3.2 FUTURE VARIABLES IMPACTING FUND

3.2.1 Dominion Generation Credit

In FY18, the Dominion credit was increased by approximately \$109,980 over FY17 credit. In FY19 the Dominion credit is anticipated to be approximately \$355,680 resulting in a net increase of \$104,520 over FY18 levels. Provided below is a spreadsheet reflecting the upcoming year credit amounts.

The auction for Town generation capacity as well as VMEA generation capacity will be placed on the market for valuation again this spring. At this time it is unclear as to what the anticipated value will be. These numbers reflect the credit just for having the capability to run. When called to run, the Town receives additional credits based on the amount of generation online.

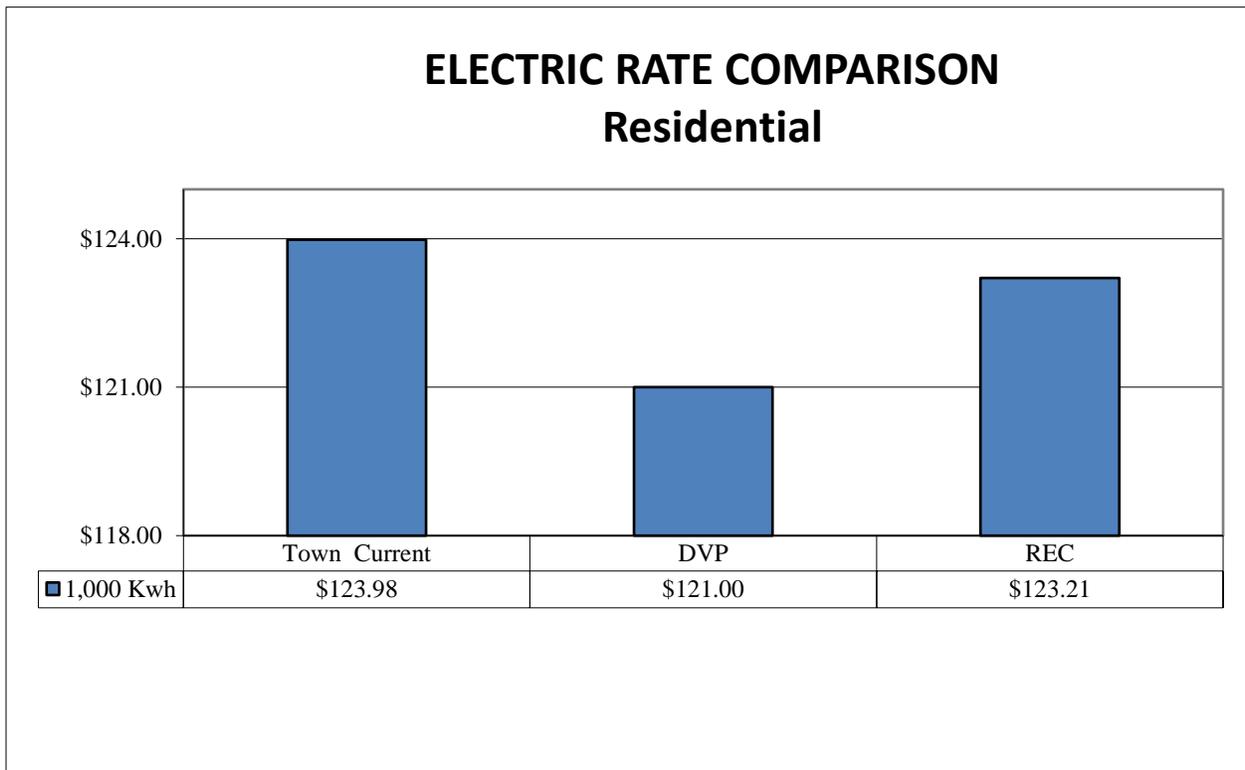
BRA Auction	\$kW-mo	Culpeper kW Nomination	Monthly Savings	Annual Savings
Planning year				
2011/2012	\$3.35	6500	\$21,775.00	\$261,300.00
2012/2013	\$0.50	6500	\$3,250.00	\$39,000.00
2013/2014	\$0.84	6500	\$5,460.00	\$65,520.00
2014/2015	\$3.83	6500	\$24,895.00	\$298,740.00
2015/2016	\$4.14	6500	\$26,910.00	\$322,920.00
2016/2017	\$1.81	6500	\$11,765.00	\$141,180.00
2017/2018	\$3.22	6500	\$20,930.00	\$251,160.00
2018/2019	\$4.56	6500	\$29,640.00	\$355,680.00
2019/2020	\$2.43	6500	\$15,795.00	\$189,540.00
2020/2021	\$2.33	6500	\$15,145.00	\$181,740.00

3.3 ANALYSIS OF RATES AND FEES

3.3.1 Residential Electric Rates

An analysis of the Town rates indicates that the current monthly electric rate for a typical 1,000 KWH per month customer is 2.4% higher than the average for Dominion and 0.6% higher than Rappahannock Electric Company, see Electric Total Bill Comparison, Residential – 1,000 KWH Usage graph for a comparison of the residential rate. The above rate comparison for the other utilities is based on current rates not proposed rate increases being requested. The proposed future rates are currently unknown.

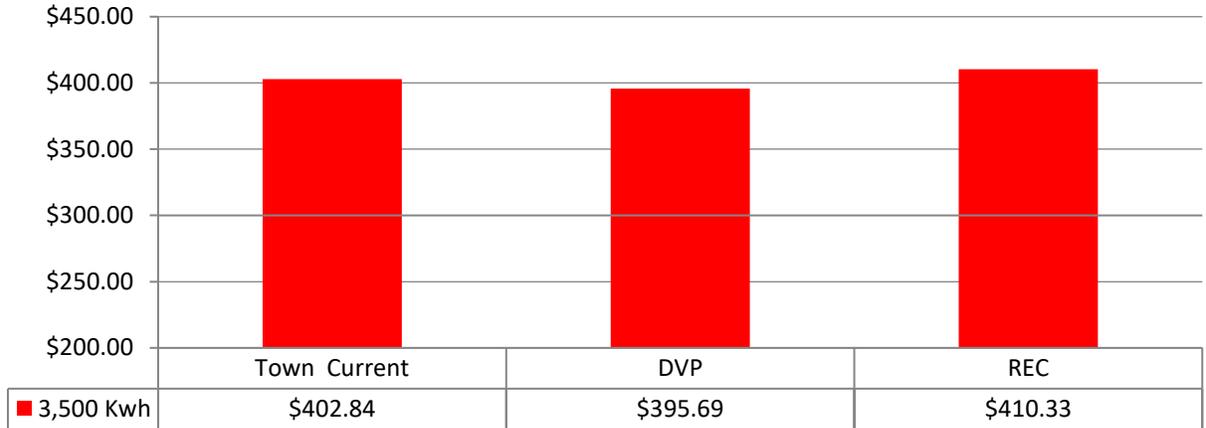
Based on the survey described above, the Town of Culpeper residential rate is slightly higher than the surrounding power providers.



3.3.2 Small General Service Electric Rates

An analysis of the Town rates indicates that the current monthly electric rate for a typical 3,500 KWH per month customer is 1.8% higher than the average for Dominion and 2% lower than Rappahannock Electric Company, see Electric Total Bill Comparison, Small General Service – 3,500 KWH Usage graph for a comparison of the small general service rate.

ELECTRIC RATE COMPARISON Small General Service



Based on the survey described above, the Town of Culpeper small general service rate is within the range of the surrounding power providers.

3.4 REVIEW OF FUND STABILITY

To evaluate the stability of the fund, a model was developed to project anticipated revenues and expenses over a 10 year period to determine the impact on the fund cash balance. Variables included in the model were growth projections, rate increases, increases in expenses and anticipated capital projects. The model is dynamic in nature, developed with the intent of being easily updated and recalibrated on an annual basis.

For this report and corresponding graphs, the following variables were used:

Increase in Sales – 1%

O&M Expense Increase – 3%

PILOT (% of Revenue) – 3%

Administrative Fee Increase – 2%

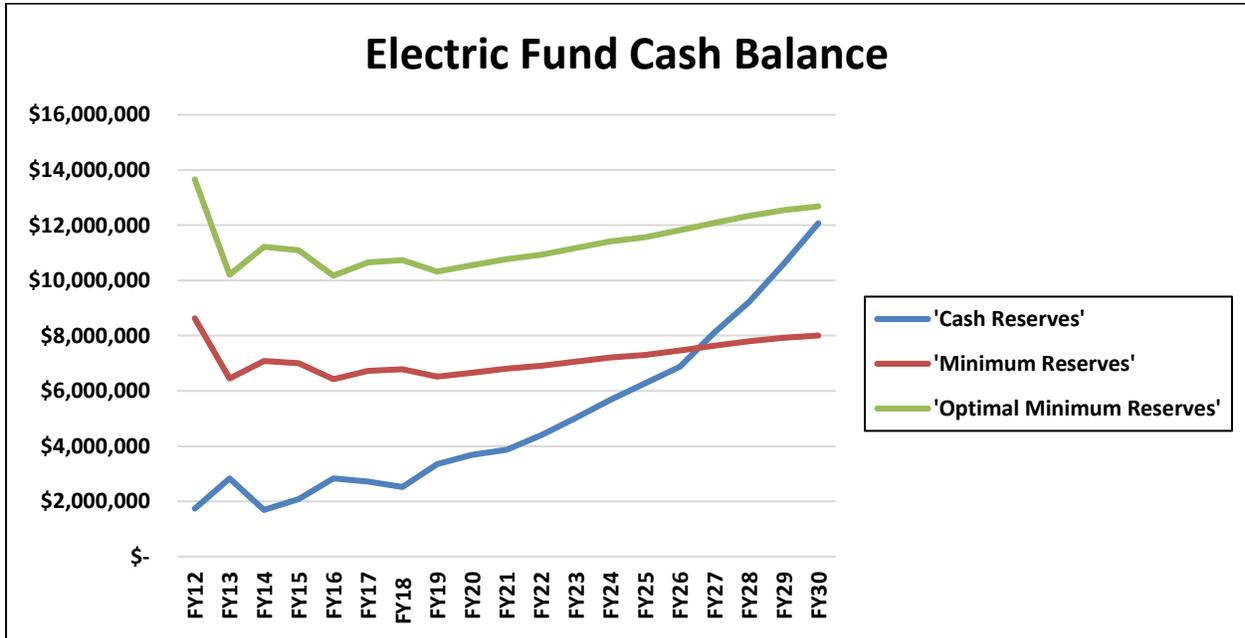
FY18 FY19 FY20 FY21 FY22 FY23 FY24 FY25

Annual Rate Increase – 0% 2% 1.5% 1.5% 1.5% 1.5% 1.5% 1.5%

Note: Although annual rate increases are shown in FY20-FY25, those additional rate increases are for planning purposes only and will be reviewed and updated annually as appropriate to address inflation, capital, regulatory and other factors that affect the financial viability of each fund.

3.5 RECOMMENDATION

Based on the variables provided above, the Electric Fund cash balance is projected based on the following graph:



Although the current Fund Balance Policy, adopted in FY10 recommends the Enterprise Funds should maintain a minimum balance of one hundred percent (100%) of expenditures and an optimum balance of two hundred percent (200%) of expenditures, a policy change should be considered for the Electric Fund since a significant portion of the expenditures are a pass through for the cost of power from VMEA. Due to this significant pass through, it is recommended that the minimum and optimum desired reserve balance in the Fund Balance Policy be changed for the Electric System only to be based on 100% and 200% respectively of all non-VMEA expenses and VMEA expenses be included at 30% in both the minimum and optimum desired reserve balance calculations. The above graph has been revised to lower the minimum and optimum desired reserved based on this recommendation.

Although the cash balance in the Electric Fund is marginal, the cash fund balance has remained stable with a slight upward trend since FY14 which is projected to continue. Due to the need to increase cash reserves to acceptable levels and a comparison of the current rate as compared to other utilities in the Culpeper area, combined with increased costs associated with inflation, a rate increase for FY19 of 2% is recommended.

Note: Although annual rate increases are shown in FY19-FY25, those additional rate increases will be annually reviewed as additional capital projects are identified or as regulations change requiring additional expenditures.

4.0 OVERALL RECOMMENDATION

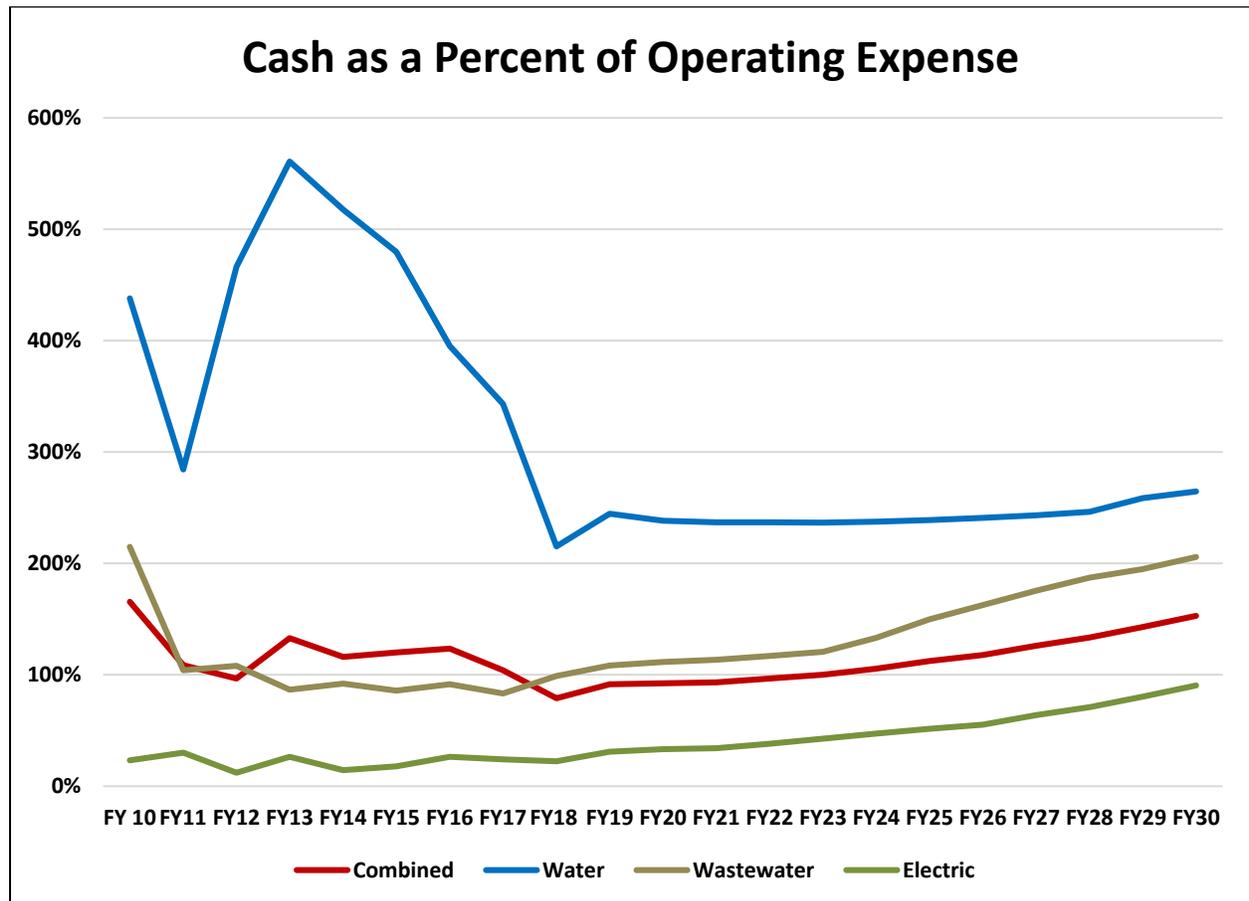
4.1 Capital Improvements Plan

Although not specifically discussed in this report, projected capital expenditures will be included as part of the CIP, considered in the rate study analysis and discussed as part of the regular budget process.

4.2 Cash Reserve Balance

In order to take advantage of economies of scale, the cash balance of the three enterprise funds should be evaluated together to ensure an optimal amount of cash is available to the three funds as a whole. Inter fund loans are a valuable tool which can be used effectively between funds to minimize the impact of large capital expenditures on a given fund.

Currently the Water Enterprise Fund is in the best financial position and should be considered as a potential source of inter fund loan funding to the other funds. When evaluating the use of inter fund loans vs. external financing, the percentage of the total cash balance to annual expenses should be considered. In accordance with the current Fund Balance Policy, adopted FY10, Enterprise Funds should maintain a minimum balance of one hundred percent (100%) of expenditures and an optimum balance of two hundred percent (200%) of expenditures. Following is a graph showing the projected percentage based on the recommendation presented:



This study anticipated all future identified expenditures being cash financed instead of issuing new debt for the three enterprise funds. Due to significant capital improvements in all three funds, the overall combined cash balance is less than 100% of expenditures. This rate model makes recommendations intended to increase cash reserves in all three funds to optimal levels by FY30.

Additionally, the cash balance and anticipated expenses should be evaluated annually to ensure monies are available as required to operate the funds and meet minimum Local Government Investment Pool (LGIP) requirements. Any monies in excess of these minimum requirements should be considered for investment in higher yielding accounts.