

City of
PETERSBURG
Virginia

Community Meeting to discuss
The WATER & WASTEWATER UTILITY SYSTEM



March 20, 2017



I AM
PETERSBURG
VIRGINIA



Our Team

Jack Berry

Daniel Harrison

Gerritt VanVoorhees

Jerry Byerly

Janell Sinclair

Steve Stinson

Asst. City Manger for Operations

Interim Director of Public Works

Director Information Technology

General Manger Utilities

Utility Billing Supervisor

Meter Reading Administrator



WE ARE NOT ALONE—CITIES ALL OVER THE COUNTRY ARE GRAPPLING WITH THE COST TO MAINTAIN AND OPERATE THEIR UTILITY SYSTEMS

Why are we here this evening?

- ✓ Because we want to explain the current status of our utility system
 - ✓ Why we need to do something about it
 - ✓ What options we have to fix it
-

Key Points to Remember

- Our water and wastewater system is operating safely at the moment but maintenance, repairs and equipment replacement has been neglected for many years
- If we do not act now, the system will experience a major failure at some point in the future.
- We must find a way to provide funds for a 5 year capital improvement plan (\$51m)
- We must find a way to pay our share of the 5 year capital improvement plans for our water and wastewater authorities (\$46m)
- We cannot afford to pay for a stable system by just raising rates!
- We have to find another alternative (in addition to raising rates)



Our System is Failing a Little or a Lot Everyday

Our System is Signaling Failure

- The City Averages 3 water main breaks a week.
- Staff has identified a leak on Washington St that can not be located and is still leaking as we speak
- Over the Martin Luther King Holiday, the City was losing as much as 3 million gallons per day due to various leaks. Our fire department had to notify Prince George's tanker truck because utilities was concerned about pressure loss and our ability to fight fires.
- There have been two major water main breaks to Locks (major transmission line) one in Oct 2016 and the other in July 2016
- We experience sanitary system overflows during heavy rain events
- We pay to treat one billion gallons of rainwater per year that leaks into our wastewater system
- In prior years our utility staff submitted maintenance and repair budgets and capital improvement plans that were not fully funded.



UTILITY SYSTEM OVERVIEW

Water Source

Water Distribution

Wastewater Collection

Wastewater Treatment



Water Source

Lake Chesdin



ARWA



Water Distribution
WW Collection
Customer Billing
Rainwater

City of Petersburg

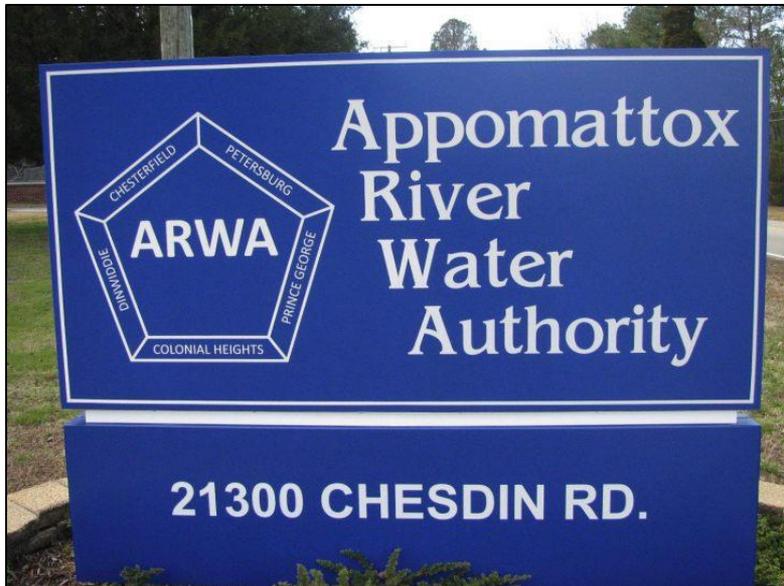


Wastewater Treatment

SCWWA



Appomattox River Water Authority (ARWA)



ARWA



Well maintained
Very Reliable
High Quality Water
Very low rates



ARWA: 2016 Water Production (10.1 Billion Gallons)

Locality	Amount (Gallons)
Chesterfield	7,119,520,000
Petersburg	1,749,510,000
Colonial Heights	619,752,000
Dinwiddie	400,569, 000
Prince George	258,686,000



ARWA: Rates

ARWA charges Petersburg \$0.9017 per 1000 gallons.

The cost to
producing a
gallon of
water
(ARWA
Rates)



Cost to
deliver
through our
water
distribution



CIP



Reserves



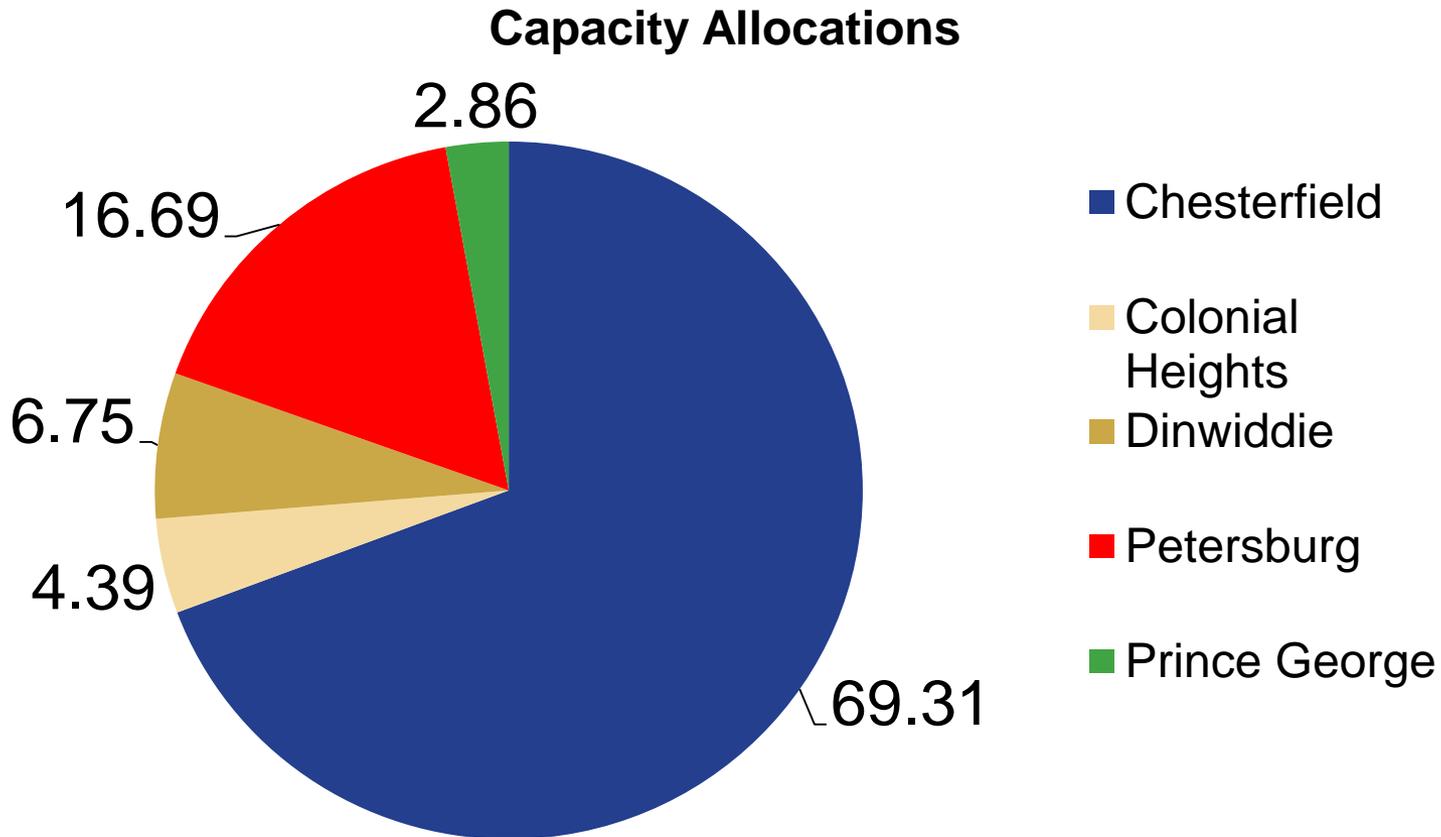
City of Petersburg Water
Rates

**CURRENT RATES
DO NOT INCLUDE
NECESSARY
COST
IMPROVEMENTS!**



ARWA: Current % Capacity Allocations

(Each Jurisdiction Has One Vote)



Petersburg owns **16.7%** of ARWA

Petersburg can claim **16.7%** of
ARWA's available water

Petersburg must pay **16.7%** of
ARWA's operating and capital costs



ARWA: Raw Water Allocation Per Member

Jurisdiction	Plant Allocation	Maximum Daily MGD	Maximum Annual Average Withdrawal
Chesterfield	69.31%	58.4	34.0
Colonial Heights	4.39%	3.7	2.2
Dinwiddie	6.75%	5.7	3.3
Petersburg	16.69%	14.1	8.2
Prince George	2.86%	2.4	49.1
Total	100.00%	84.3	49.1

Petersburg has rights to a maximum of **14.1 MGD** of raw water per day



ARWA: Potential Capital Project

- Raise Lake Chesdin Dam by 18 inches
- Water storage would increase from 9.3 billion gallons to 11.2 billion gallons
- If the project goes forward, Petersburg's water allocation will increase (which is unneeded) and so will its costs



ARWA: Petersburg's Share of Potential Lake Chesdin Dam Raise Costs

Lake Chesdin Dam Raise Project	
Estimated Total Cost	\$28.5 million
State Grant	(\$5.0 million)
Net Cost	\$23.5 million
Petersburg's Share (16.7%)	\$3.9 million*

*Does not include debt service



Petersburg's Share of ARWA's Lake Chesdin Reservoir Project

\$3.9 Million



Water Source

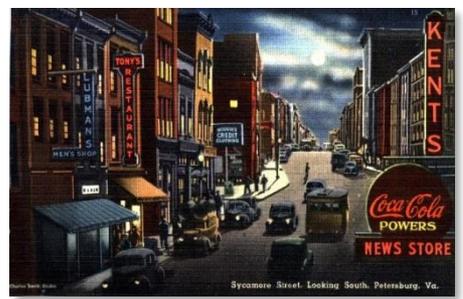
Lake Chesdin



ARWA



Water Distribution
WW Collection
Customer Billing
Rainwater
City of Petersburg



Wastewater Treatment

SCWWA



Petersburg Utilities: Water Statistics

Infrastructure

- 260 Miles of water mains
- 6 Water storage tanks
- 2 Water pump stations
- 1,378 City owned fire hydrants

Constituents Served

- 11,900 Active water accounts
- 38,429 Estimated drinking water customers



Petersburg Utilities: Waste Water Statistics

Infrastructure

- 195 Miles of sanitary sewer lines
- 19 Waste water pump stations

Usage & Capacity

- 7.6 million gallons of average daily waste water
- 17 million gallons maximum daily waste water treated



The Petersburg Utility System has suffered from neglect and mismanagement

- The Petersburg system requires a massive investment due to aging infrastructure
- Rates are artificially low because of past disinvestment
- Large rate increases are inevitable
- Water meter reading issues and failure to issue water bills require us to reestablish credibility



This did not happen overnight. The below excerpt is from 1986.

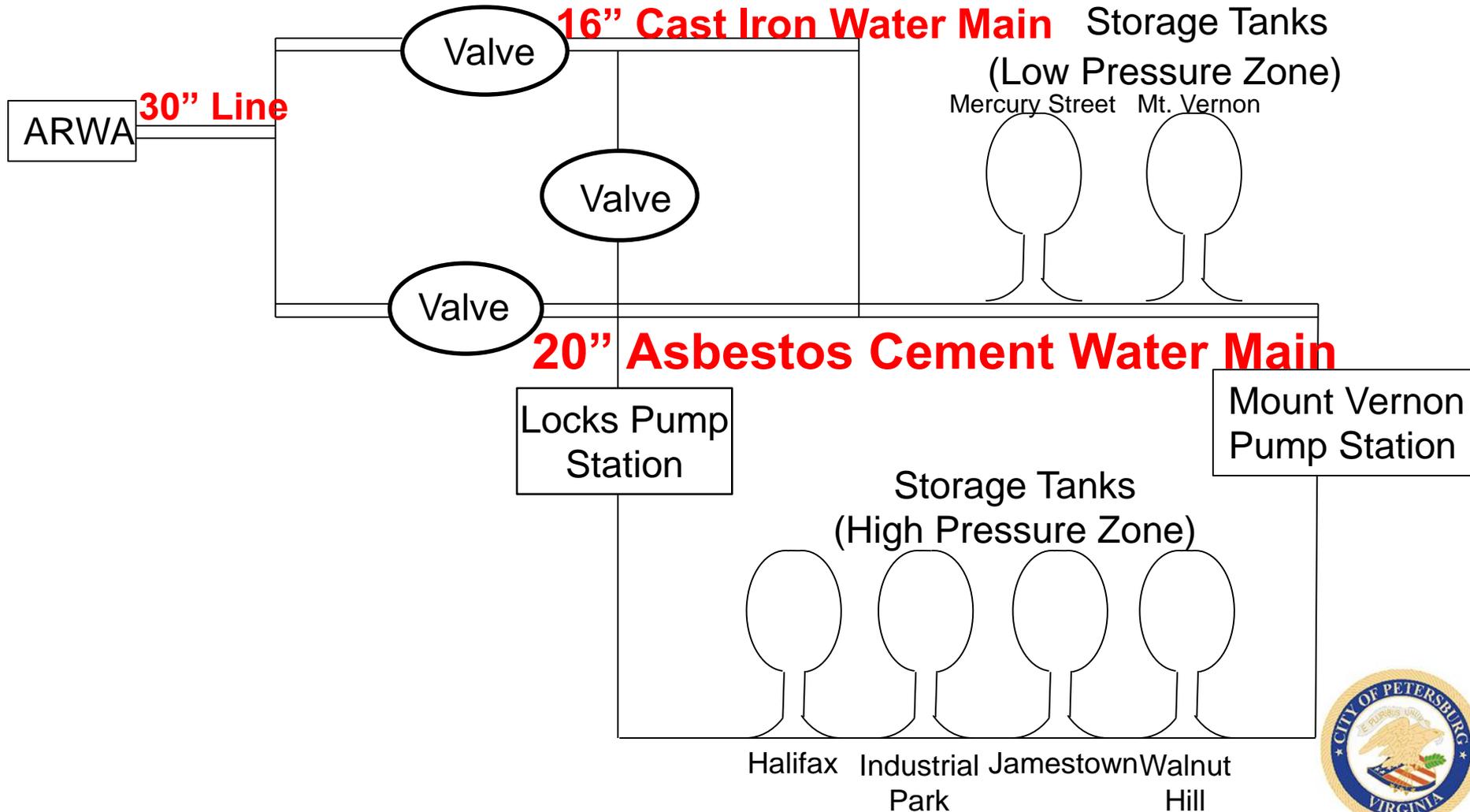
- The single water line that feeds the City belongs to the Appomattox River Water Authority (ARWA).
- Just before the Pressure Reducing Valves (PRV's) the ARWA line splits into 2 20 inch cast iron City owned lines.
- Past the PRV's the 2 lines continue to the Locks Pump Station.
- From Locks the one line reduces to a 16 inch cast iron line circa 1914 and the other line continues as a 20 in asbestos-cement (a-c) line circa 1941.
- **“Due to the corrosion process on the interior and exterior of the cast iron pipe, the pipe has lost approximately 22% of its wall thickness. Flow capacity through the main has been reduced by as much as 65%.”**
- Ductile Iron pipe: “Based on the findings of the physical test it has been determined that the existing pipe is structurally sound and could continue to provide service as a pressurized water transmission main for another 20 years”.
- A-c Pipe: “Based on the observations of the pipe and comparisons with similar pipe it has been determined that the existing pipe is structurally sound and could continue to provide service as a pressurized water transmission main for another 20 years”.

The above are excerpts from the Mattern and Craig Consulting Engineers “Water Main Supply Line Rehabilitation Study, January 1986.

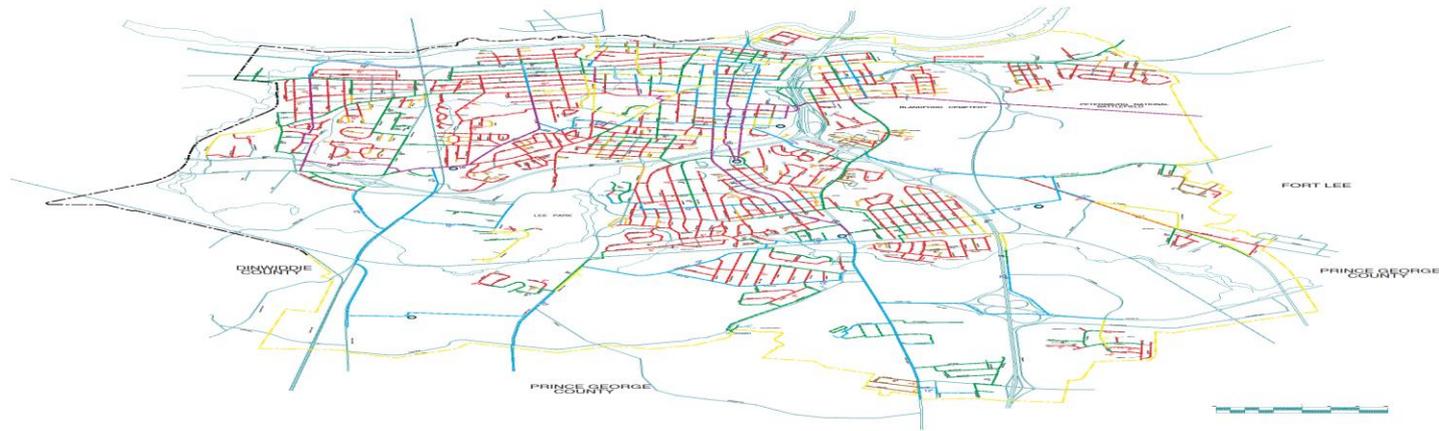


Petersburg Water System

Our main water supply lines should be replaced



City of Petersburg Water System Map



Petersburg must invest in its Infrastructure



Main Supply Lines from ARWA Must Be Replaced with New Ductile Iron Pipes

16 inch cast iron pipe
20 inch concrete asbestos pipe

Water line breaks in July 2016 and October 2016 disrupted flow from ARWA

Petersburg lost all incoming water for 16 hours in July 2016

Petersburg sometimes has four water main breaks a week, other cities typically have four breaks a year



Rain Water Infiltration is Extremely Costly to Treat

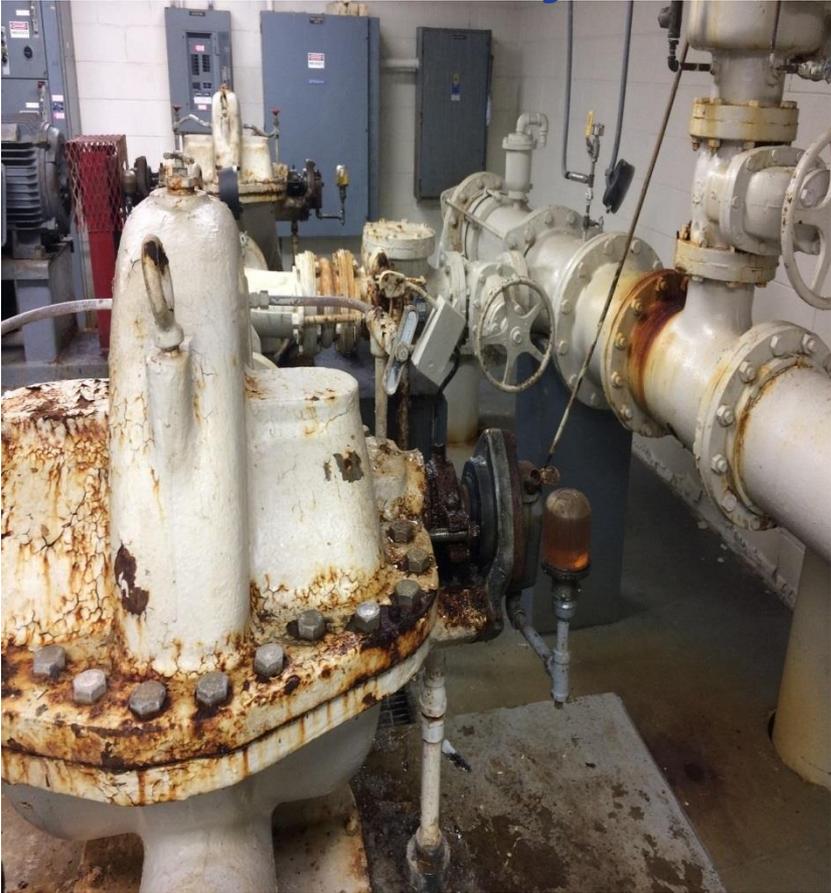


Rain Water Infiltration

- Petersburg purchased **1.7 billion** gallons of water from ARWA (FY16)
- Petersburg treated **2.7 billion** gallons of wastewater through SCWWA (FY16)
- Additional water (and treatment cost) is due to rain water infiltrating the waste water system



Pump Stations Have Been Poorly Maintained and Are Subject to Failure



**City of Petersburg Water
Pump Station**



Industry Standard (Waste Water)



Petersburg must invest in its Infrastructure



CIP: Timmons Engineering Study

Fiscal Year	Project	Cost (millions)
FY16	Poor Creek Force Main	\$3.8
	Water and Sewer Master Plan (Phase 1-3)	\$0.3
	Locks Booster Station Rehab	\$1.1
	Main Pump Station Backup Generator	\$3.3
	Water & Sewage GPS Mapping	\$0.1
	Water Meter Performance Contract	\$1.2
	24" Water Line Rehabilitation	\$2.2
	Replace Distribution Mains	\$0.5
FY17	Poor Creek Force Main	\$0.4
	Interceptors Upgrade (Blackwater Creek & South Crater)	\$1.6
	Water Lines (Rives Water, Wagner Road, Lt. Run Creek)	\$3.9
	Mt. Vernon Pump Station Upgrade	\$0.4
	SCADA Assessment and Implementation	\$0.7
	I&I Study and Implementation	\$4.2
FY18	New Public Works/Operations Facility	\$1.7
	Water Tank Rehabilitation (Walnut Hill, Mt. Vernon, Mercury St.)	\$1.3
	I&I Implementation	\$4
	Replace Water Transmission Mains and Distribution Mains	\$3.5
FY19	New Water Tanks	\$0.9
	Water Tank Rehabilitation (Jamestown, Halifax)	\$1.1
	Pump Station Rehabilitation	\$0.6
	I&I Implementation	\$4.0
	Replace Water Transmission Mains and Distribution Mains	\$3.5
FY20	I&I Implementation	\$4.0
	Replace Water Transmission Mains and Distribution Mains	\$3.0
FY16-FY20	Total	\$51.3 Million



Petersburg 5-Year Utility Capital Needs

\$51.3 Million



Water Source

Lake Chesdin



ARWA



Water Distribution WW Collection Customer Billing Rainwater

City of Petersburg



Wastewater Treatment

SCWWA



South Central Wastewater Authority



SCWWA: Timeline

- 1955 – facility constructed by Petersburg
- 1970s – facility upgraded and expanded
- 1990s – capacity expanded to 20 MGD
- 1996 – system sold to SCWWA



SCWWA Treatment Capacity (23.0 MGD)

Locality	MGD
Chesterfield	2.30
Petersburg	12.08
Colonial Heights	4.60
Dinwiddie	2.30
Prince George	1.72



SCWWA Allocation of Plant Capacity Per Member

Jurisdiction	Plant Allocation	MGD	Share of Budget
Chesterfield	10.0%	2.3	\$745,000
Colonial Heights	20.0%	4.6	\$1,709,000
Dinwiddie	10.0%	2.3	\$684,000
Petersburg	52.5%	12.1	\$4,514,000
Prince George	7.5%	1.7	\$551,000
Total	100.00%	23.0	\$8,202,000

Petersburg is 52.5% of the SCWA plant.

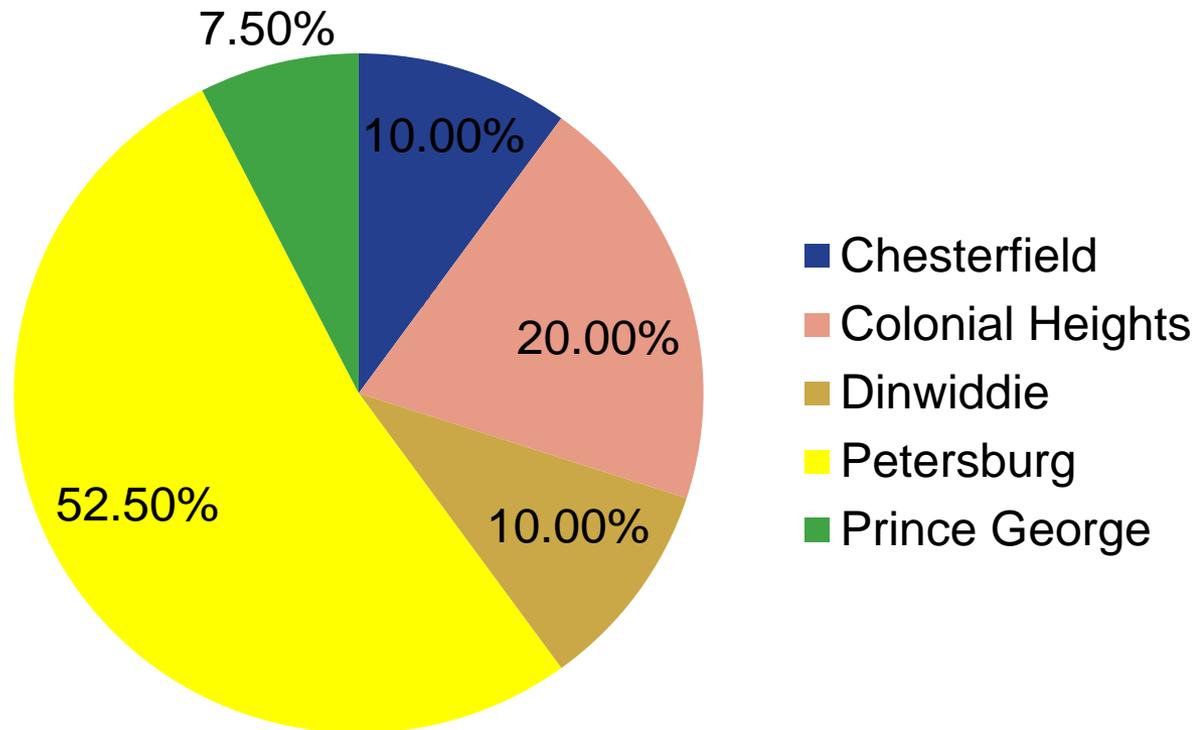


- Petersburg owns **52.5%** of SCWWA
- Petersburg can claim **52.5%** of SCWWA's available capacity
- Petersburg must pay **52.5%** of SCWWA's operating and capital costs



SCWWA Plant Capacity Allocation

(Each Jurisdiction Has One Vote)



SCWWA: Infrastructure Improvement Needs

	2020 Total Costs (million)	Petersburg Total (million)
Aging Infrastructure (ex. pumps, solids handling, headworks, clarifiers, etc.)	\$20.3	\$10.9
Wet Weather Improvements (ex. pumps, disinfection, clarifiers, etc.)	\$17.3	\$9.3
Denitrification (ex. filters, post aeration improvements)	\$40.4	\$21.8
Total	\$78.0 million	\$42.0 million



Petersburg's Share of SCWWA's Capital Needs to Meet Regulatory Requirements

\$ 42.0 Million



Summary of Petersburg Utilities' Major Infrastructure Needs

Type of Infrastructure	Total Cost	Petersburg Share
ARWA Lake Chesdin Dam Raise	\$23.5 million	\$3.9 million
SCWWA <ul style="list-style-type: none"> • Aging infrastructure • Wet Weather Improvement • Denitrification 	<ul style="list-style-type: none"> • \$20.3 million • \$17.3 million • \$40.4 million 	<ul style="list-style-type: none"> • \$42.0 million • \$10.9 million • \$ 9.3 million • \$21.8 million
Petersburg Infrastructure	\$51.3 million	\$51.3 million
Total	\$152.8 million	\$97.2 million



Why do we have these needs?

- ARWA Chesdin Dam \$3.9 Million **CAPACITY**
- Petersburg Infrastructure \$51.3 Million **NEGLECT**
- SCWWA \$42.0 Million **REGULATORY**



Total Price Tag for Petersburg

\$ 97.2 Million



How do we pay for it all?



We cannot borrow the money?

- ARWA will issue debt and costs will be reflected in rates
- SCWWA will issue debt and costs will be reflected in rates
- Petersburg **WILL INCREASE RATES** but we cannot increase rates enough to pay for stabilizing our system. Normally we would issue debt (get a loan) that would provide funds for the repairs and we would pay a debt service (monthly note) on the bond.
- **Petersburg does NOT have access to the credit markets because of our financial condition so we cannot issue debt like most cities would in this situation.**
- We have to find an alternative way to pay for our repairs in addition to rate increases.



THE UTILITY SYSTEM HAS BEEN RUN INTO THE GROUND

If we don't make dramatic changes, the Petersburg Utility will eventually collapse.

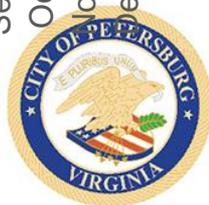


LET'S REVIEW THE TOOLS WE HAVE: BILLING AND RATES

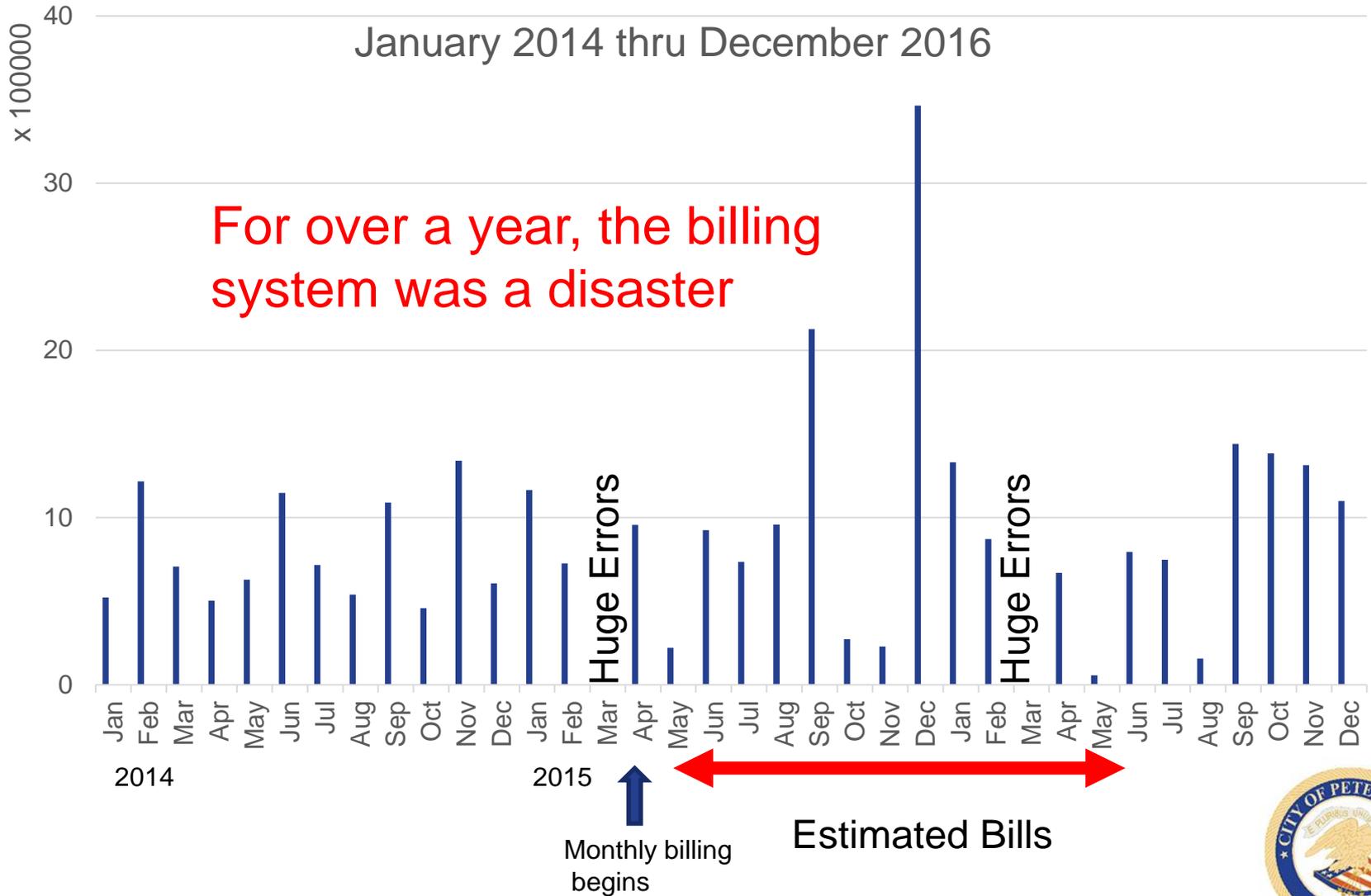


Monthly Utilities Billings (\$)

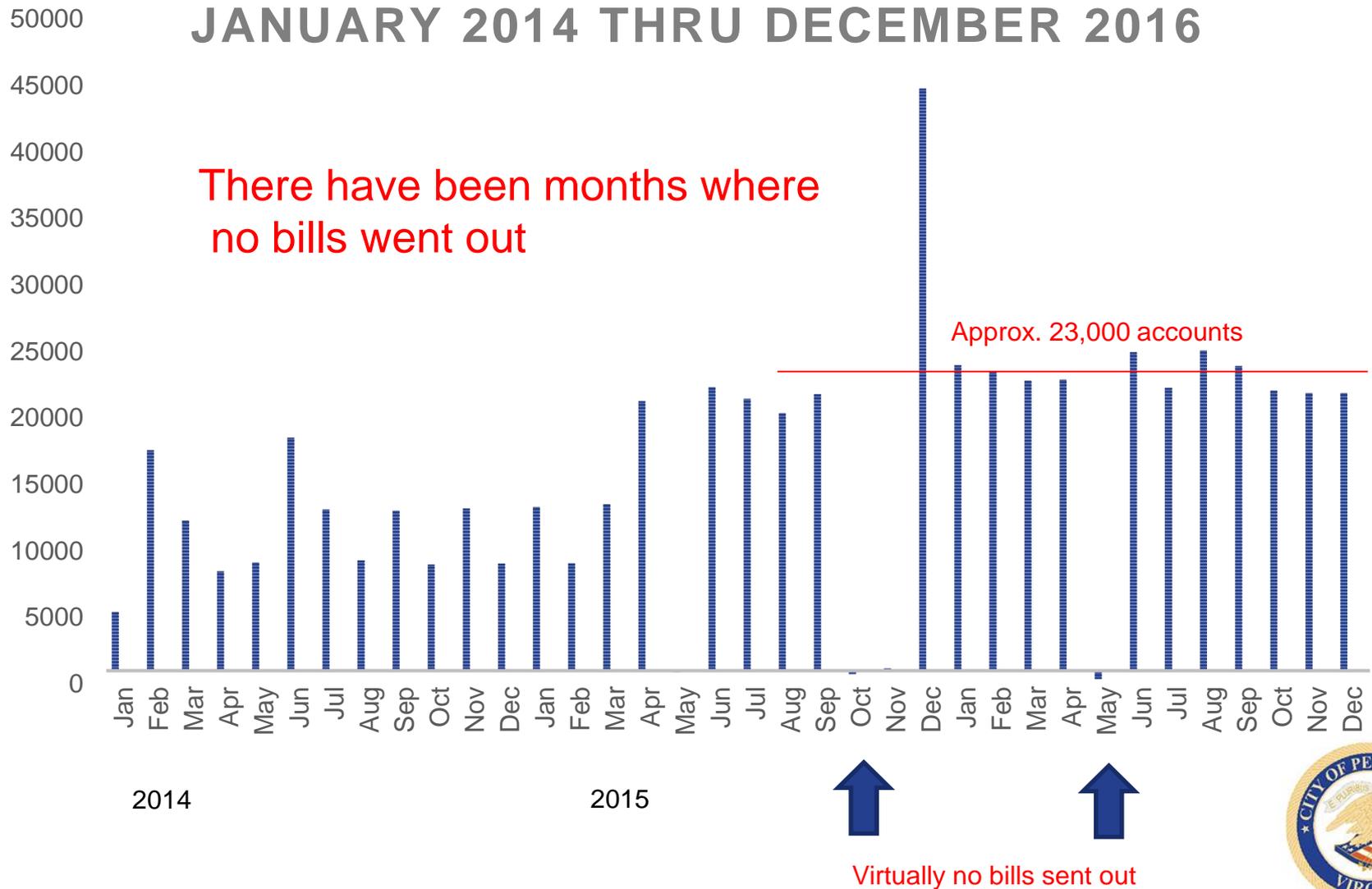
January 2014 thru May 2016



Monthly Utilities Billings (\$)



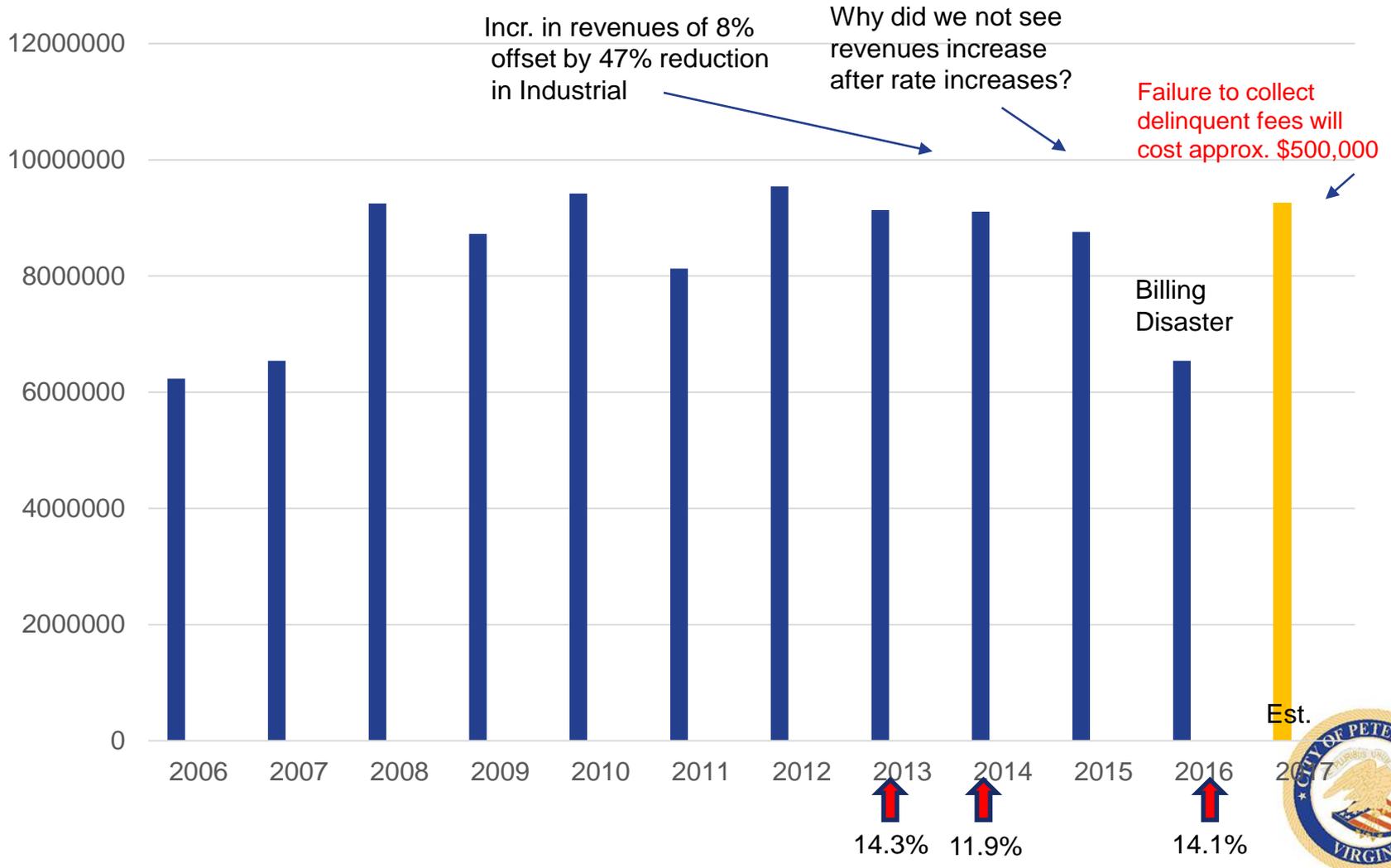
Number of Monthly Bills Sent Out



Utility Fund Revenues

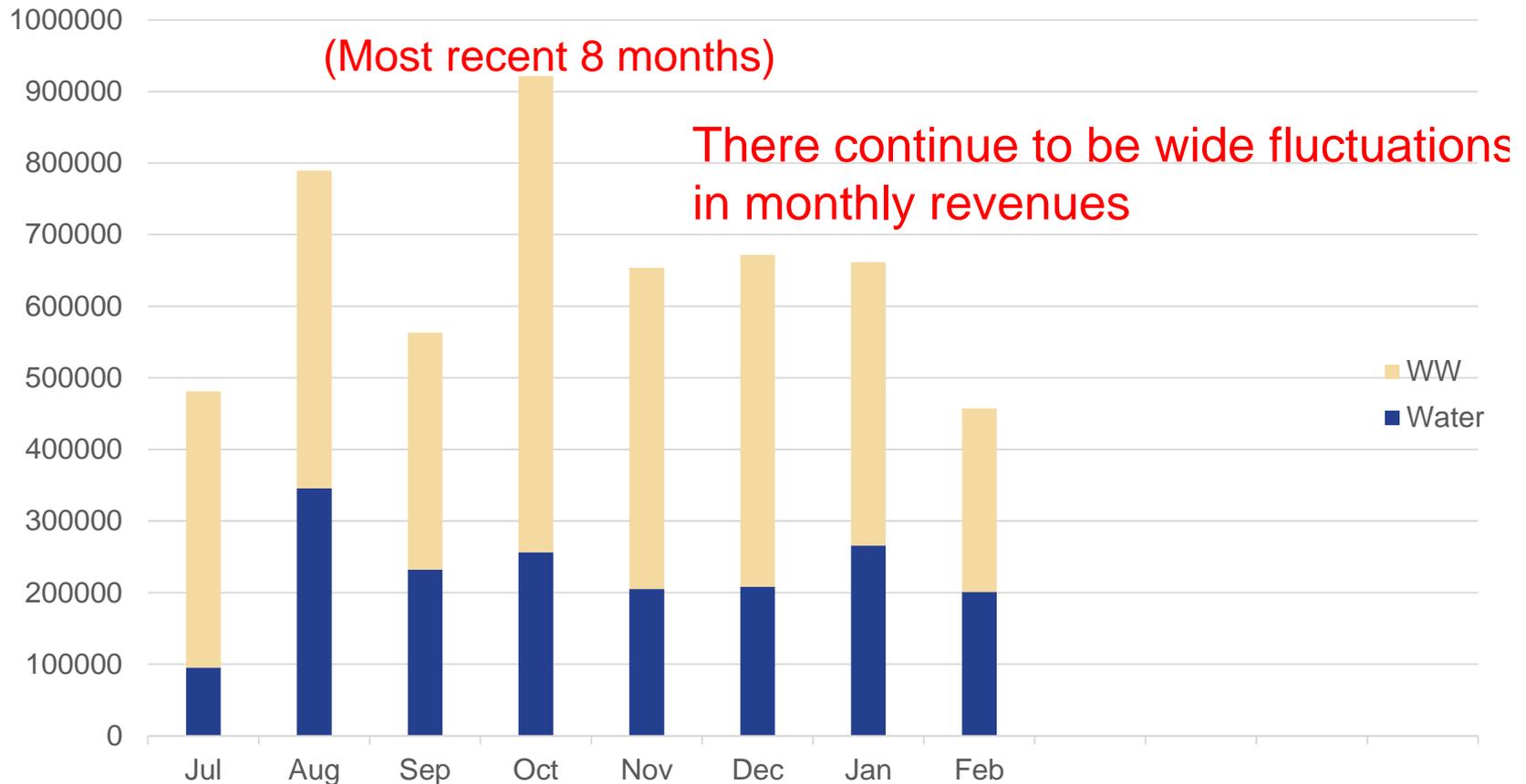
Rate increases have not generated expected revenue increases

Recent Rate Increases



FY 2017 Utility Fund Revenues

Commercial and Residential



June was first month of actual bills

Renewed cutoffs caused a spike



To summarize the billing problems...

We have a huge problem collecting what is owed !!!

- Rate of uncollected bills is excessive
- Petersburg does not charge a delinquent fee (this must change)
- The lag in processing payments by the Treasurer has made it difficult to impose delinquent fees
- Only 192 customers have been cut off from November to March
- 1,483 accounts are 90+ days delinquent
- 507 customers are on payment plans for past due amounts
- Total outstanding past due is currently \$1.9 million including Utilities, Refuse and Stormwater
- About 1,000 active accts. per month have zero usage readings
- About 1,100 old, cubic-foot meters (about 10% of total) still are manually read (and need to be replaced)



WHAT ABOUT OUR RATES?



Absolute Necessity of Rate Increase

- VRA Bond Covenants required enactment and implementation of a 5-year rate increase plan (approved by Council 4/21/2015)
- Failure to follow the plan will create bond covenant default, causing outstanding bonds to become immediately due and payable (\$7M)
- Default will cause loss of access to credit markets
- Legal consequences including criminal penalties
- Inability to correct environmental violations (sewer overflows)
- Potential catastrophic system failure if infrastructure is not renewed



2012 Draper Aden Associates Annual Water and Wastewater Report

Rank	Locality	Residential Water and Wastewater Rate (5,000 gal/month)
1	Middleburg	\$158.37
15	Fluvanna	\$92.55
37	Richmond	\$78.91
75	Botetourt	\$63.25
118	Dinwiddie	\$50.87
131	Prince George	\$48.00
143	Chesterfield	\$42.52
154	Petersburg	\$32.72
155	Altavista	\$20.71

Petersburg rates are very low compared to our neighbors.

Note: 2012 is most recent report that included data from Petersburg



Petersburg Rate Increase History

	Approved Plan (4/21/15)	Rate Ord. Adopted	Rate Increase Implemented
• FY13		14.3%	14.3%
• FY14		11.9%	11.9%
• FY15		-0-*	-0-*
• FY16	14.1%	-0-	14.1% ^(3/16)
• FY17	13.4%	-0-**	-0-**
• FY18	3.2%	TBD	
• FY19	4.9%	TBD	
• FY20	5.0%	TBD	

New Plan



* 9.7% increase tabled by City Council 5/20/14

** 13.4% increase tabled by City Council on rec. of City Mgr. 7/19/16



Rate Comparison (2017)

Current Monthly Charge (6CCF)

	Water	WW	TOTAL
Chesterfield	20.40	28.06	48.46
Colonial Heights	22.33	43.31	65.64
Henrico	18.33	25.69	44.02
Dinwiddie	25.16	33.15	58.31
Prince George	18.46	40.32	58.78
Petersburg	14.05	31.85	45.90
Hopewell	36.79	45.84	82.74
Richmond	36.69	56.76	93.45

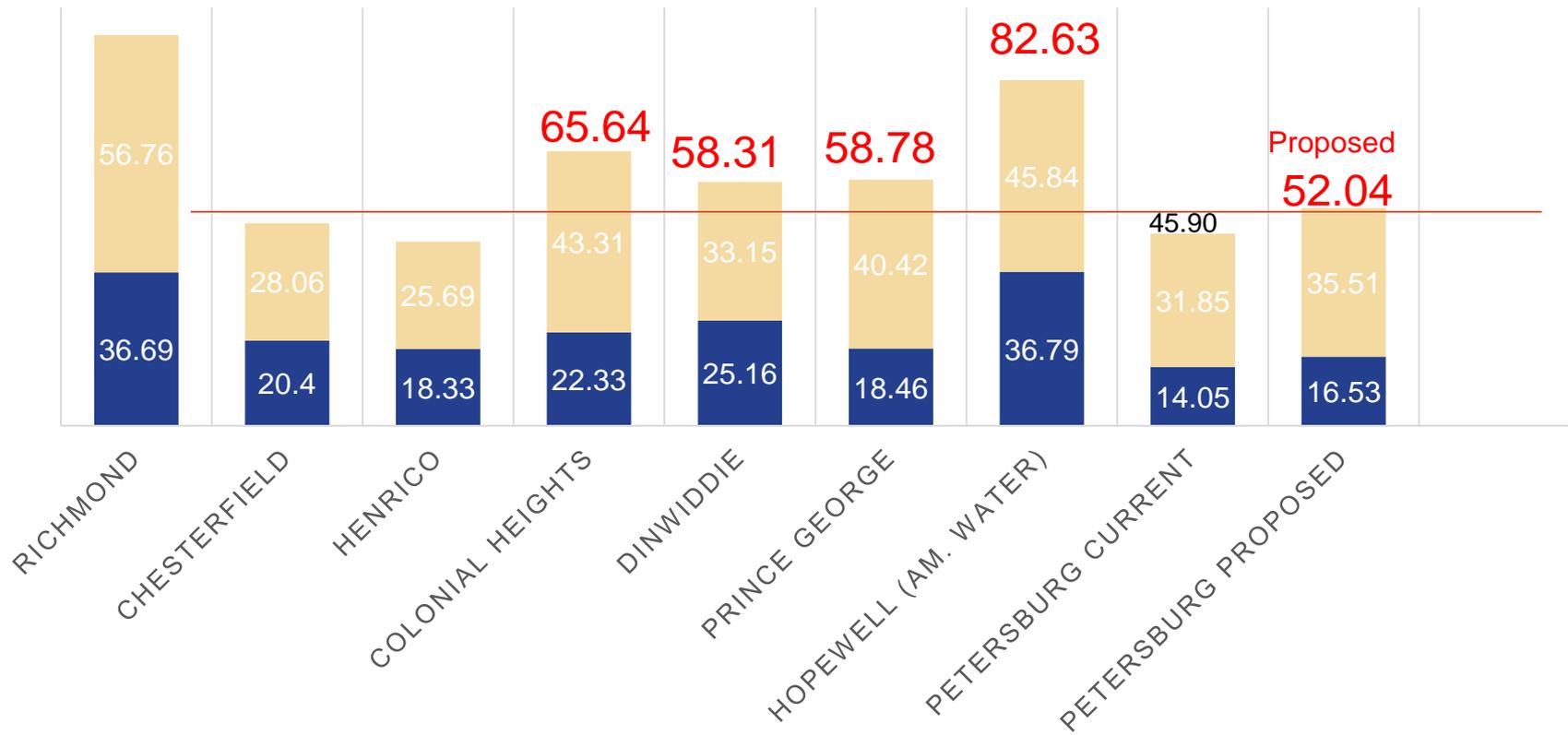
Source: Timmons

Petersburg is second lowest



Comparison of Current Rates (6CCF)

■ Water ■ WW



We have to act now...

To come up with the financial means to **fix the Utility System** and **fix the City's financial dilemma**. These are two huge issues for Petersburg and they are connected. We have to address them both.



Utility System Options



	City			Private	
	Current	Better Management	Better Management w/investment	Private Management	Private Ownership/ Franchise
Performance	Low	High	High	High	High
Infrastructure Investment	No	No	Difficult	Difficult	Yes
Rates	Low	Moderate	Higher	Higher	Higher
Regulatory Control	City	City	City	SCC	SCC
Money to General Fund (Annually)	No	No	Maybe	Maybe	Yes
Money to General Fund (One-Time)	No	No	No	No	Yes
Eliminate Deficit	No	No	No	No	Yes
Reserve Fund Higher Bond Rating	No	No	No	No	Yes
Time Frame	Current	2017	2020	2020	2017



Conclusion – Next Steps

- **We must solve the revenue billing problem and collect what is owed, imposing delinquency penalties for those who do not pay, and implement bi-monthly billing.**
- **We must implement the planned FY17 13.4% rate increase, previously approved by Council to avoid a bond covenant default**
- **We should immediately identify and evaluate every alternative funding / management / ownership arrangements that exists in order to identify the best option for stabilizing our utility system.**

