



# MLGW Service Improvement Plan

## February 2019

*MLGW Mission: "To safely deliver services that create and sustain superior customer experiences."*

# Overview

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- **Our Focus**
  - Customer Value
  - Reliability
  - Modernization
  - Quality
- **Infrastructure Modernization and Rehabilitation**
  - Electric - 5-year reliability improvement plan
  - Gas – regulatory initiatives and new north community office
  - Water – rehabilitation of pumping stations and construction of new wells
- **Proposed Rate Actions and Bond Issuances for funding**
- **Cost containment and Revenue Enhancements**
  - TVA power supply pre-pay savings
  - Pension savings
  - Medical savings
  - OPEB savings
  - LNG revenue

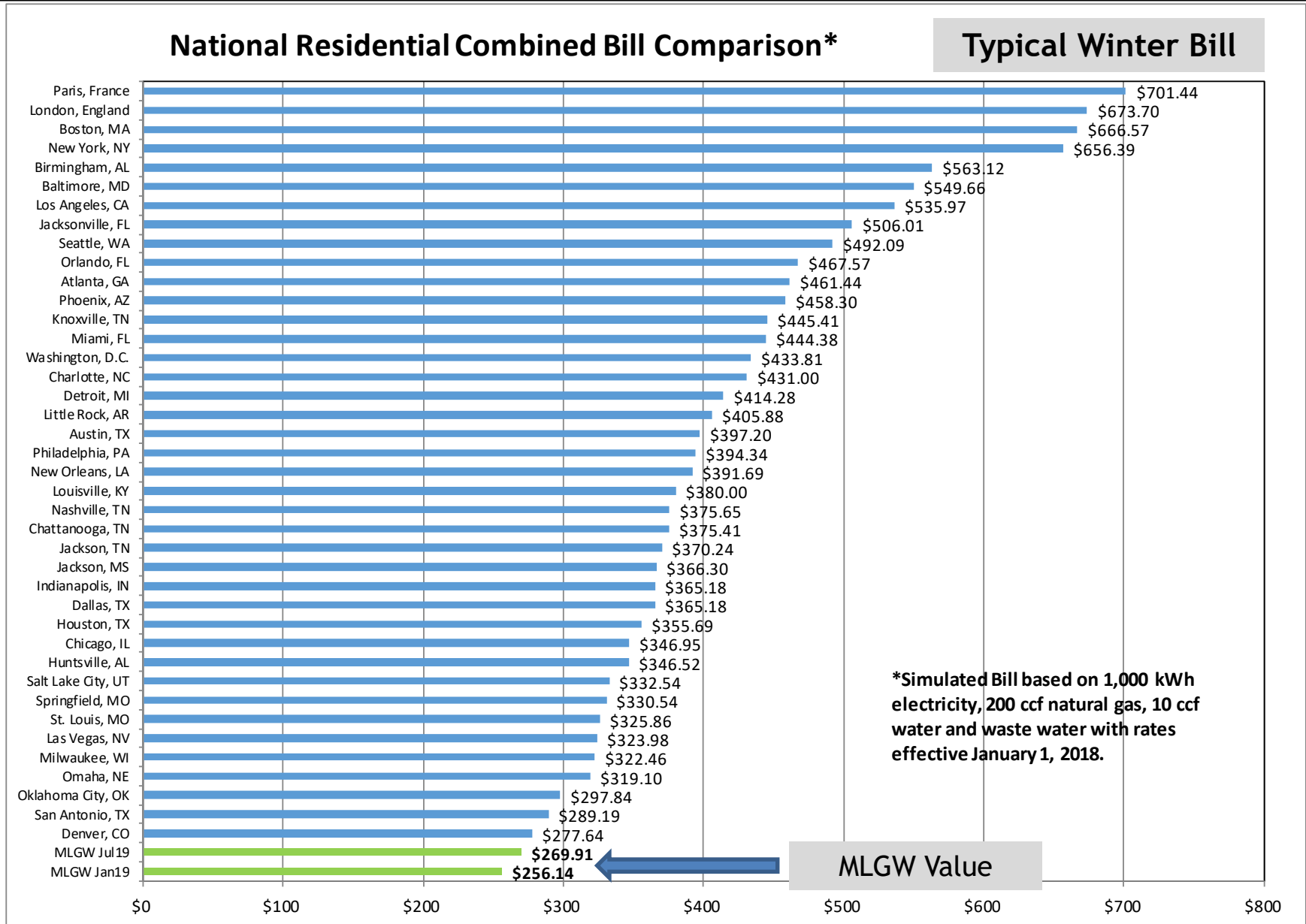


# Customer Value Proposition

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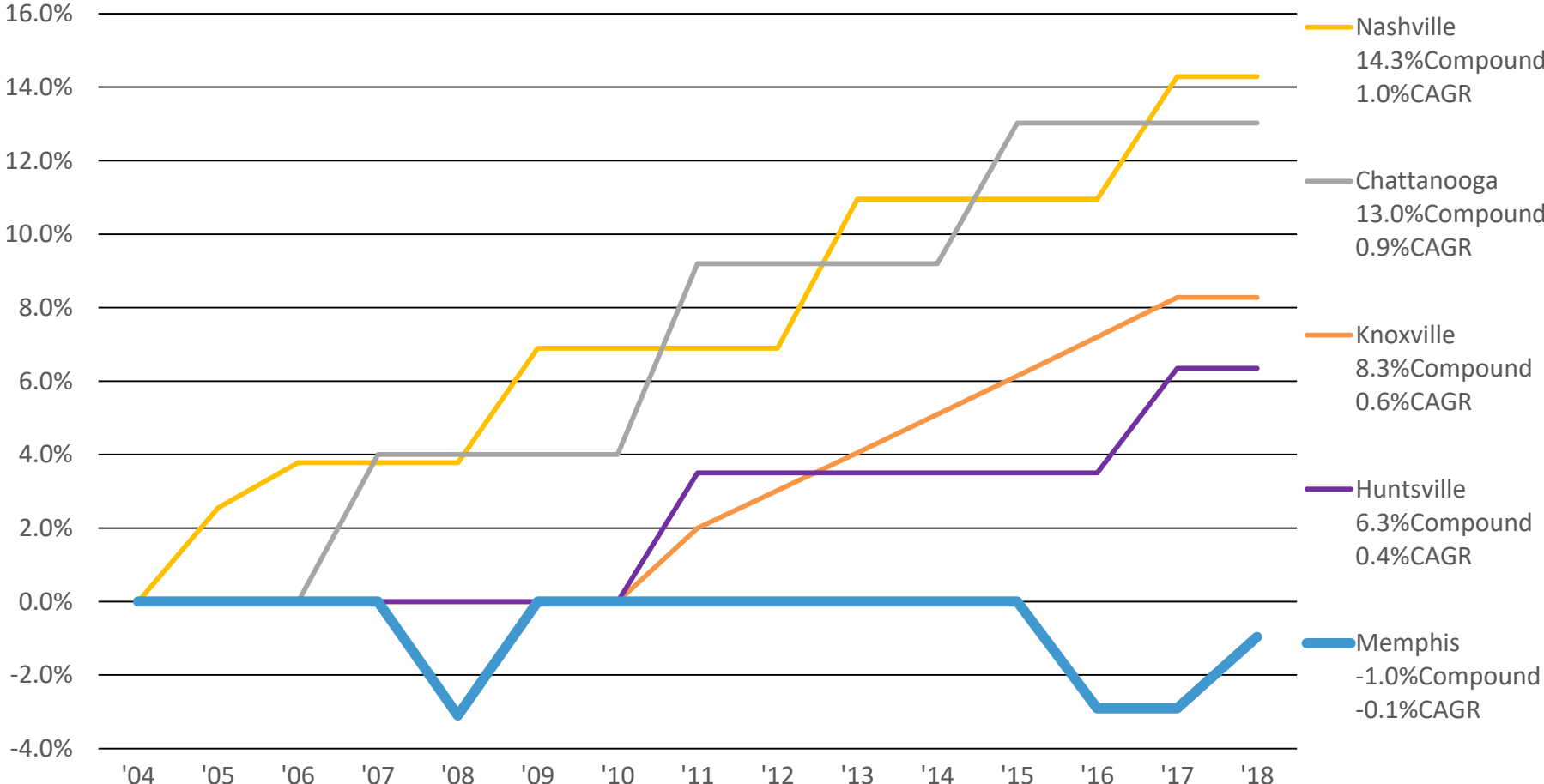
- Rate options are designed to help mitigate impact of increases while still allowing infrastructure improvements to occur.
- MLGW is dedicated to improving the customer experience.
- We must modernize to improve reliability and resilience...Customers will see benefits from our efforts.
- The condition of our aging infrastructure dictates that we must make upgrades sooner than later.
- MLGW has the lowest combined residential electric, gas, water, and sewer rates in the country for the sixth consecutive year among the 40+ utilities we survey.
- 5-year MLGW commitment ('Stay-out Provision'...Exceptions: energy & gas costs, regulatory compliance and/or natural disasters) provides customers with assurances and we will continue to seek efficiencies.
- Improvements will contribute to the overall viability of our community.

# Value Proposition – MLGW Bill vs. Others



# Value Proposition – Rate Increase Comparisons

Electric Increases as Compound Percentage with 2004 as the Base Year



\*CAGR – Compound Annual Growth Rate, the average yearly rate of change  
 With 2019 increase MLGW would be at 3.6% and then 5.7% after 2021.



# Value Proposition – Savings & Efficiencies

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- TVA Power Supply pre-pay cumulative savings of \$225 million since 2004.
- Pension cumulative savings of \$122.9 million since 2010.
- Medical cumulative savings of \$77.0 million since 2006.
- Cumulative sales revenue of Liquefied Natural Gas (LNG) of \$32.3 million since 2012.
- 2019 Budget includes additional OPEB funding reduction of \$13 million due in part to medical plan changes made in 2018.
- Total cumulative impacts of **\$470.2 million**.

# Value Proposition – Lower Energy Burden

MLGW Customers Energy Burden Analysis						
Energy Burden as defined by ACEEE (American Council for an Energy Efficient Economy)						
"a household's energy burden is its total <b>annual utility spending</b> (electric, gas, and/or other heating fuel) as a percentage of total <b>annual gross household</b> income."						
<a href="https://factfinder.census.gov/faces/nav/jsf/pages/community_facts.xhtml">https://factfinder.census.gov/faces/nav/jsf/pages/community_facts.xhtml</a>						
<i>(for income used in denominator)</i>						
Year	Electric	Gas	Total	Annualized	Annual Household Income	Energy Burden
2009	\$108.48	\$62.01	\$170.49	\$2,045.89	\$36,535	5.60%
2017	\$110.50	\$36.40	\$146.89	\$1,762.74	\$36,975	4.77%
<b>Percent reduction of Energy Burden</b>						<b>-14.9%</b>

- MLGW is sensitive to the energy burden of our customers.
- The energy burden has been on a decreasing trend.

# Value Proposition – How We Help Our Customers

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- Gift of Warmth
- Plus-1
- Gift Of Comfort
- Play it Cool
- Share the Pennies
- On Track
- PrePay
- AutoPay
- Budget Billing
- Winter Moratorium
- EnergySmart Memphis
- M.I.N.E. (MLGW in Neighborhoods Everywhere)
- Extended Payment Plan
- Net Due Date Program
- Holiday Bill Break
- Third Party Notification



## Assistance Programs

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# Infrastructure Modernization and Rehabilitation

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# Infrastructure Highlights

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- Electric Division
  - Improve reliability by modernizing the system primarily through installation of distribution automation and replacement of aging equipment
- Gas Division
  - Continuation of regulatory projects to keep the system in compliance
- Water Division
  - Rehabilitation of aging pumping stations
  - Drilling and replacing more wells

# Electric System Modernization

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- Embarking on a electric reliability and modernization improvement plan
- The plan involves five primary components:
  - Distribution Automation
  - Substation circuit breakers and transformers
  - Cable retrofits
  - Pole replacements
  - Tree trimming



# Substation Rehabilitation

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The median age of our substation transformers is 31 years.

The median age of our substation circuit breakers is 33 years.



# Substation Transformers

## SUBSTATION TRANSFORMERS (IN THOUSANDS OF DOLLARS)

Description	2019	2020	2021	2022	2023
Replace 23/12 kV transformer banks 1835 & 1837 @ Substation 11	\$2,000				
Replace 115/12 kV transformer banks 4557 & 4559 @ Substation 4	\$3,000				
Replace 115/12 kV transformer banks 1157 & 1159 @ Substation 21		\$3,000			
Replace 161/23/12 kV transformer bank 32649 @ Substation 32			\$3,000		
Replace 23/12 kV transformer banks 5335 & 5337 @ Substation 5				\$3,000	
Replace 115/12 kV transformer banks 6555, 6557 & 6559 @ Substation 6					\$4,000
Miscellaneous Failed Transformers/Procure Spares	\$2,500	\$2,500	\$2,500	\$2,500	\$2,500
Totals	\$7,500	\$5,500	\$5,500	\$5,500	\$6,500

# Substation Circuit Breakers

## FEEDER BREAKERS (IN THOUSANDS OF DOLLARS)

Description	2019	2020	2021	2022	2023
Replace Breakers Substation 21 - Network Substation Contingency	\$550	\$550			
Replace Undersized 12 kV Breakers (Insufficient Fault Withstand)	\$250	\$250	\$250	\$250	\$250
Replace 115, 12 & 23kV Breakers @ Substations 1, 24, 6, 7, 15 (Aging Infrastructure)	\$1,400				
Replace 23 & 12 kV Breakers @ Substations 4, 26, 11, 14, 27 (Aging Infrastructure)		\$1,200			
Replace 161, 115 & 12 kV Breakers @ Substations 11, 46, 24, 13, 25, 38 (Aging Infrastructure)			\$1,500		
Replace 23 & 12 kV Breakers @ Substations 4, 41, 61, 6 (Aging Infrastructure)				\$1,200	
Replace 23 & 12 kV Breakers @ Substations 4, 11, 25 (Aging Infrastructure)					\$1,200
Contingency Replace Breakers	\$400	\$400	\$400	\$400	\$400
<b>Totals</b>	<b>\$2,600</b>	<b>\$2,400</b>	<b>\$2,150</b>	<b>\$1,850</b>	<b>\$1,850</b>

# Pole and Cable Replacements

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# Distribution Automation

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## Intelligent Switching Device



**The most impactful component of reducing customer minutes of interruptions**



# Reliability Improvement Plan (5 year totals)

Reliability Improvement Item	Approximate Cost-- Plan/5 Years	CMI Saved-- Enhanced Plan	Units of Savings	Minutes per Customer
Substation Equipment Replacement	\$42,000,000	35,000,000	CMI Saved/5 Years	81 minutes
Tree Trimming	\$105,000,000	53,000,000	CMI Saved/5 Years	123 minutes
Pole Replacement	\$15,000,000	3,500,000	CMI Saved/5 Years	8 minutes
Cable Replacement	\$50,000,000	1,500,000	CMI Saved/5 Years	3 minutes
Distribution Automation	\$130,000,000	81,000,000	CMI Saved/5 Years	188 minutes
Totals	\$342,000,000	<b>174,000,000</b>	CMI Saved/5 Years	
<b>Estimated Customer Minutes of Interruption Doing Nothing</b>		<b>350,000,000</b>		

This plan is estimated to reduce customer outage minutes by almost 50% over 5 years.

# Gas Capital Major Initiatives

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## Distribution Integrity Management (DIMP)

- Retrofit Cast Iron System
  - Plan implemented 1991 thru 2021 with 330 miles of Cast Iron
  - Approximately 98% complete
  - All small diameter cast iron eliminated
  - Approximately 8 miles large diameter remaining
  - Approximately 2 miles scheduled to be abandoned in 2018
  - \$11.5 million remaining to completion
- Steel Tap Replacement
  - This is a long term program to address the highest risk in the distribution system
  - There are estimated to be 142,899 Steel Taps in the distribution system
- New North Community Office



# Cast Iron Retrofit

Replacement of 12" cast iron pipe with 12" steel pipe



# Cast Iron Retrofit

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Installation of a 12" steel main line and 2- 6" valves



# North Community Office

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- Current location has
  - Crowded customer conditions
  - Inadequate parking availability
  - Poor building conditions
- Services customers in the North Memphis, Frasier, Raleigh and Bartlett areas
- To be located on Hollywood between Shasta Ave. and Dexter Ave.

# Gas Capital Major Initiatives

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Categories <i>(In Thousands)</i>	2019	2020	2021	2022	2023
Retrofit Cast Iron System	\$4,500	\$4,500	\$2,500	-	-
Steel Tap Replacement	\$400	\$400	\$2,400	\$4,900	\$4,900
New North Community Office	\$300	\$7,300	-	-	-

# Water Capital Major Initiatives

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- Rehabilitation of water pumping stations
- Construct new wells
- Construct waste water recovery basin
- Digital Process Control Systems
- Medium Voltage Circuit Breakers and Switchgear replacement



# Allen Pumping Station

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## Allen Pumping Station Low Voltage Switchgear 1951





# Sheahan Pumping Station

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## Sheahan Pumping Station High Service Pump Variable Frequency Drive 1997



# Sheahan Pumping Station

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## Sheahan Pumping Station Header Chamber – High Pressure Pipes & Hardware 1931



# Sheahan Pumping Station

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Sheahan Pumping Station  
Header Chamber – High Pressure Pipes & Hardware  
1931



# Sheahan Pumping Station

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Sheahan Pumping Station  
Header Chamber – Pipes & Hardware  
1931



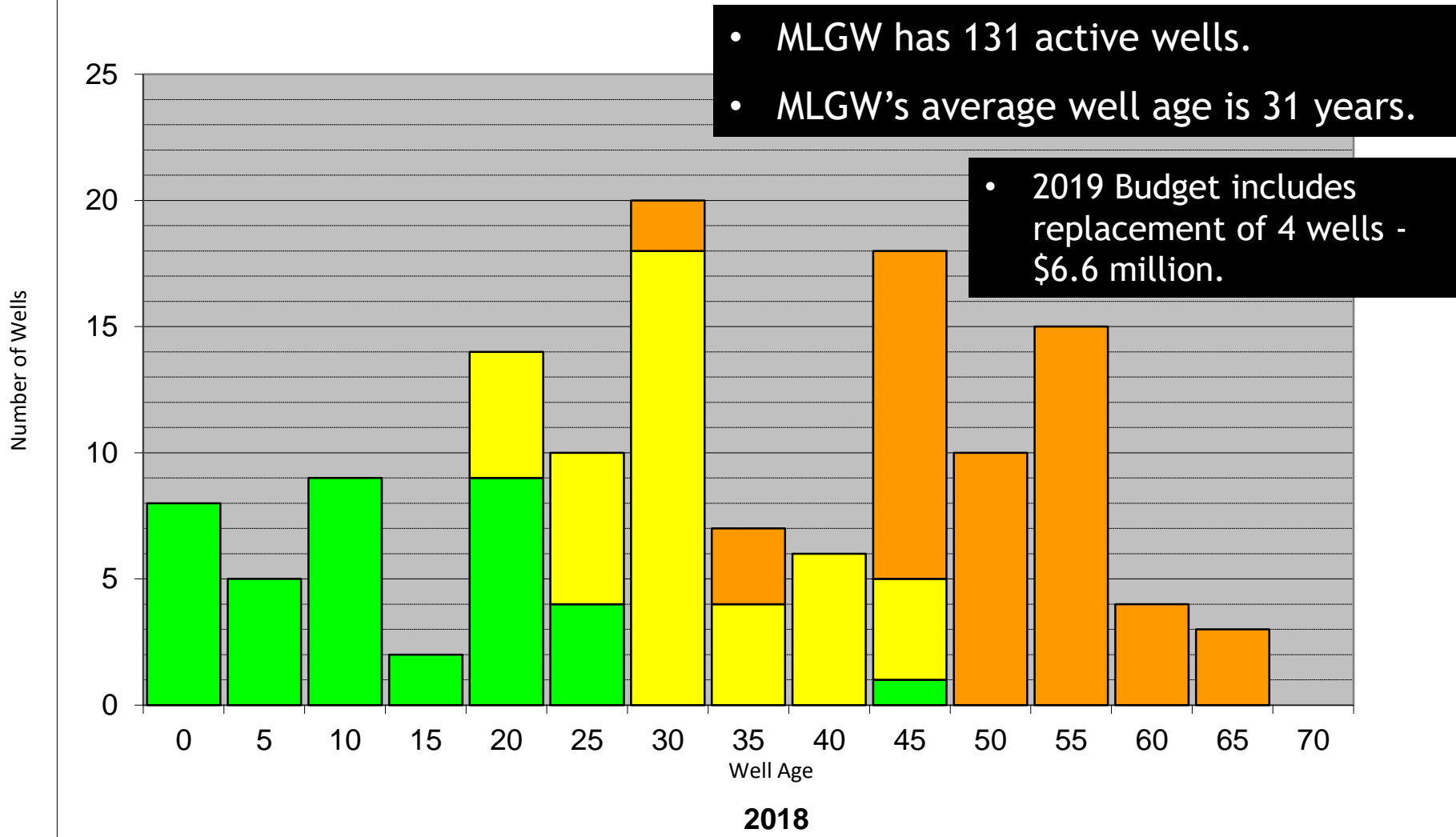
# Water Treatment Plants Overview

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	Original Construction	Expanded	Rehabilitation
Mallory – 35 MGD	1924	1970	2016
Sheahan – 35 MGD	1932	1972	-
Allen – 30 MGD	1953	-	2018
McCord – 35 MGD	1958	1973	-
Lichterman – 30 MGD	1965	-	-
LNG – 1.1 MGD	1967	-	-
Palmer – 5.5 MGD	1970	-	-
Davis – 30 MGD	1971	-	-
Morton – 30 MGD	1982	-	-
Shaw – 30 MGD	1990	-	-
<b>Average Age</b>	<b>57 years old</b>	-	-

# Water Production Well Age Distribution

## All Wells Age Distribution



# Rehabilitation of Pumping Stations

Pumping Station	* Station Totals (All WO Types)	2016 & 2017 (Actual)	2018 (Projected)	2019	2020	2021	2022	2023
Mallory	\$15,731,655	\$9,231,655	\$2,000,000	\$2,000,000	\$2,500,000	\$0	\$0	\$0
Allen	\$16,280,000	\$0	\$650,000	\$7,505,000	\$5,250,000	\$2,875,000	\$0	\$0
Shaw	\$3,000,000	\$0	\$0	\$0	\$0	\$2,000,000	\$1,000,000	\$0
Davis	\$6,500,000	\$0	\$0	\$0	\$0	\$2,000,000	\$2,500,000	\$2,000,000
Lichterman	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Morton	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
McCord	\$100,000	\$0	\$0	\$100,000	\$0	\$0	\$0	\$0
Sheahan	\$3,000,000	\$0	\$0	\$1,000,000	\$500,000	\$0	\$0	\$1,500,000
LNG	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Palmer	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>Total</b>	<b>\$44,611,655</b>	<b>\$9,231,655</b>	<b>\$2,650,000</b>	<b>\$10,605,000</b>	<b>\$8,250,000</b>	<b>\$6,875,000</b>	<b>\$3,500,000</b>	<b>\$3,500,000</b>

\* Excludes rehabilitative costs beyond 2023

# Water Division Initiatives

Description	2019	2020 – 2023
DPC Systems	\$2,210,000	\$2,120,000
VFDs, Motors & Transformers	\$15,000	\$14,100,000
Medium Voltage Breakers, Switchgears, Electric Service Retrofits, Dedicated Well Circuit, Generator	\$1,770,000	\$13,400,000
Station Rehab	\$10,605,000	\$22,125,000
Water – Land Purchase	\$95,000	\$300,000
Station Rehab & Eng. & Construct WWRB	\$3,740,000	\$2,490,000
Construct / Abandon Wells	\$9,640,000	\$39,760,000



# Rate Options

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# Rate Options Overview

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Objective is to mitigate annual customer bill impacts by spreading out proposed increases, while still achieving MLGW objectives.

- **Original option** is the rate plan approved by the MLGW Board and rejected by the City Council on 12/18/2018.
- **Option A** is a scenario of reducing and/or leveling the implemented rate increases (July implementations) along with reduced capital spending if necessary (primarily in the Electric Division).
- **Option B** is a scenario of more frequent but smaller rate increases (January implementations after 2019) each year with reduced capital spending if necessary.
- **Option C** (suggested by Councilwoman Robinson) includes no increases in 2019. Increases would not begin until January 2020 along with reduced capital spending in 2019 as necessary.

# Residential Bill Impacts of Option C

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<b>Cumulative Increases per Month</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>Average Increase in Monthly Bill Over the 5 Years</b>
<b>Electric</b>	<b>\$0.00</b>	<b>\$5.47</b>	<b>\$7.34</b>	<b>\$8.60</b>	<b>\$9.87</b>	<b>\$6.26</b>
<b>Gas</b>	<b>\$0.00</b>	<b>\$1.49</b>	<b>\$2.26</b>	<b>\$3.05</b>	<b>\$3.85</b>	<b>\$2.13</b>
<b>Water</b>	<b>\$0.00</b>	<b>\$2.52</b>	<b>\$3.91</b>	<b>\$4.47</b>	<b>\$4.86</b>	<b>\$3.15</b>
<b>Total</b>	<b>\$0.00</b>	<b>\$9.48</b>	<b>\$13.51</b>	<b>\$16.12</b>	<b>\$18.58</b>	<b>\$11.54</b>

# Summary

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- Rate options are designed to help mitigate impact of increases while still allowing infrastructure improvements to occur.
- 5-year MLGW commitment ('Stay-out Provision'...Exceptions: energy & gas costs, regulatory compliance and/or natural disasters).
- Quarterly updates will be made to the MLGW Board and MLGW Committee regarding budget, infrastructure and business efficiencies progress.
- We are assessing other options for power supply. The earliest that any potential savings associated with such options will be realized is at least 5 years out. Regardless, infrastructure needs remain and can't be paid for with anticipated savings. It will be wise to pay for improvements as they are constructed.
- If a change of supplier is warranted, MLGW (with Board approval) would bring recommendation(s) to the Council of any proposed changes after thorough evaluations.
- We remain committed to improving the customer experience.

# Questions??

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