Naperville

Financial Advisory Board

Water AMI Funding Scenarios

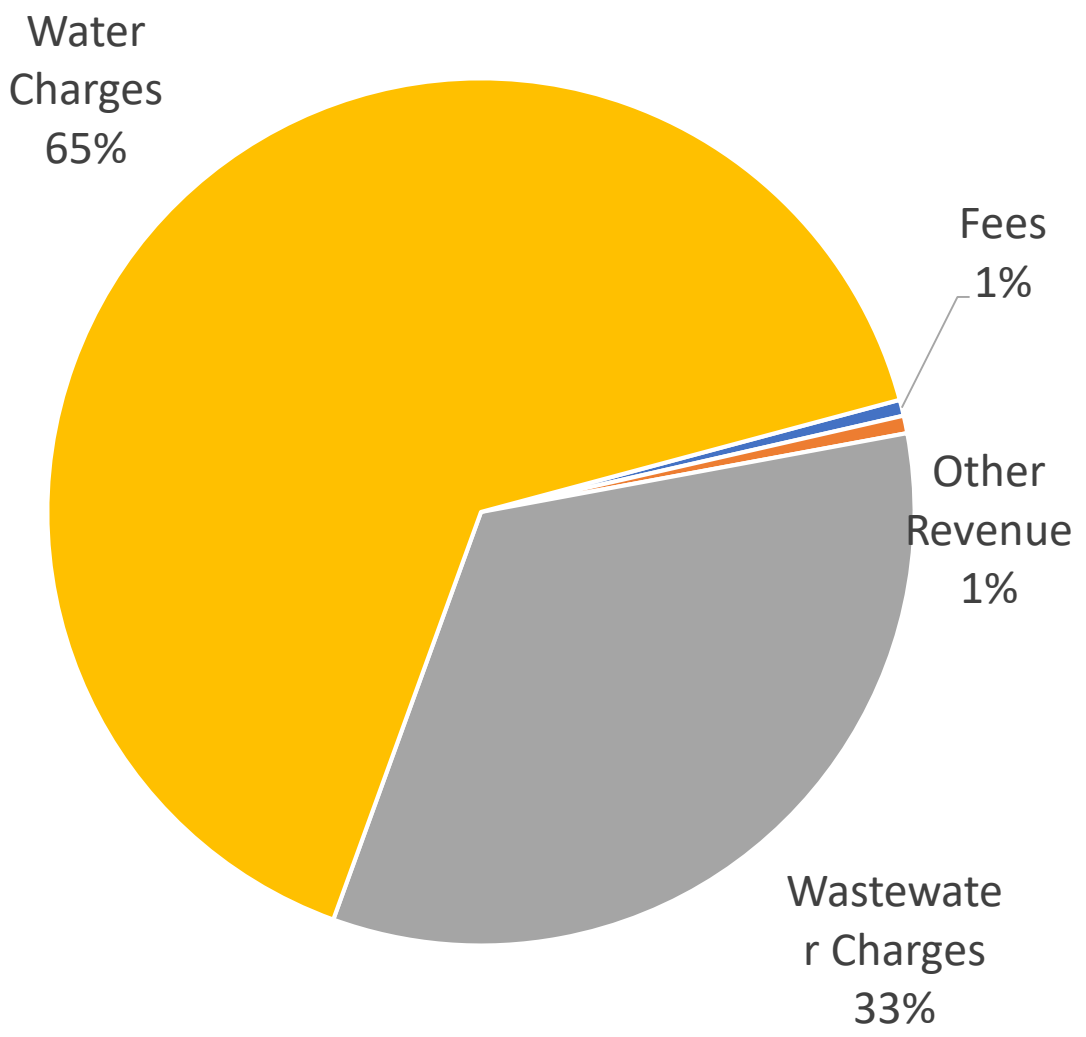
April 29, 2019

Presentation Overview

- Overview of Water Utilities Fund
- Review of Current Rate Model and Phosphorus Surcharge
- Background on Meter Reading Process and Technology options
- Timeline and Cost Estimates provided by West Monroe Partners
- Potential Funding Scenarios
- Next Steps

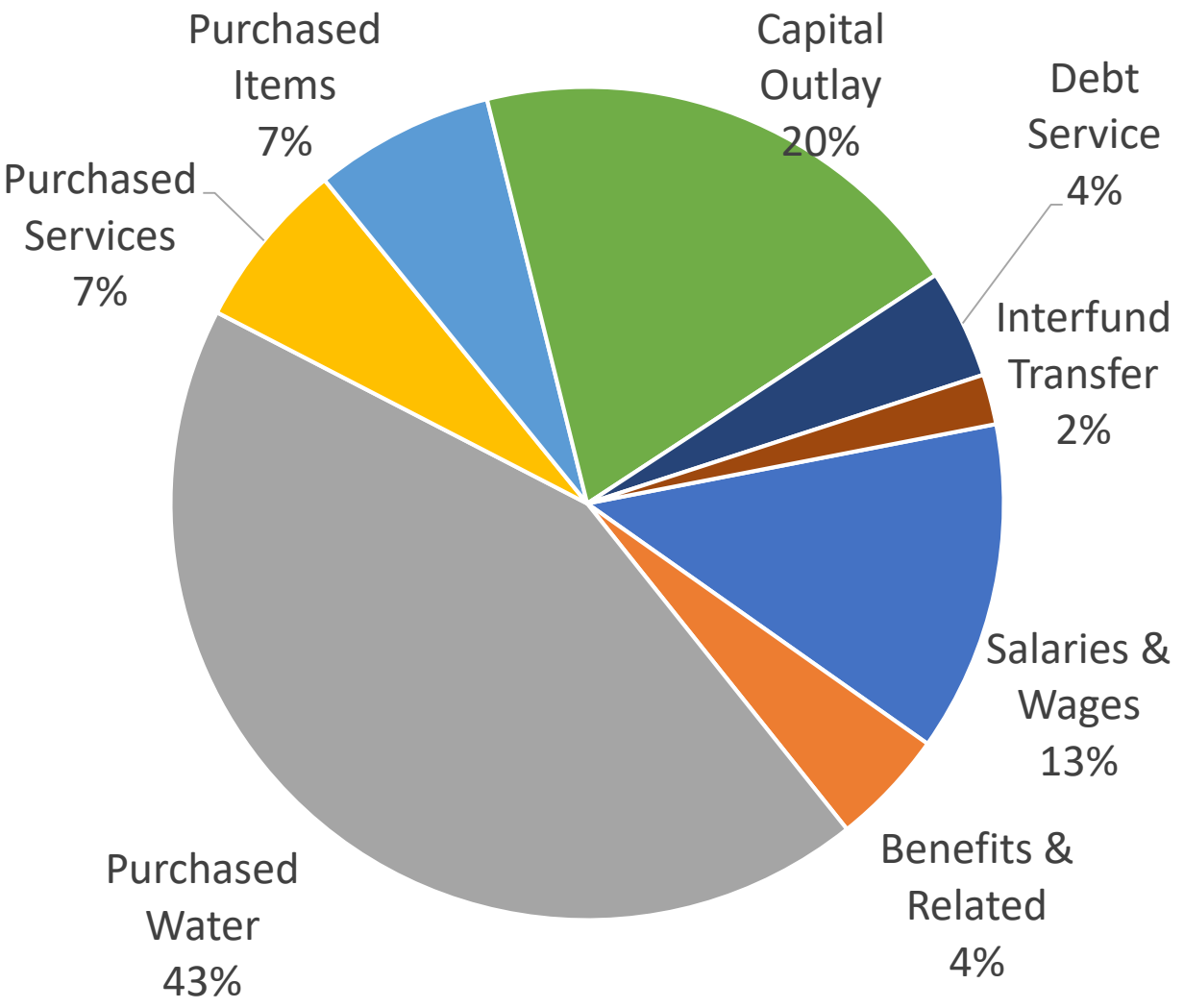
Water Fund - Revenues

- Water Revenues are primarily collected through utility bills
- Water Charges are projected at $41.6 million in 2019
- Overall, Water Fund generates approximately $60 million in revenues.
- Rates are built to increase revenues through 2021.



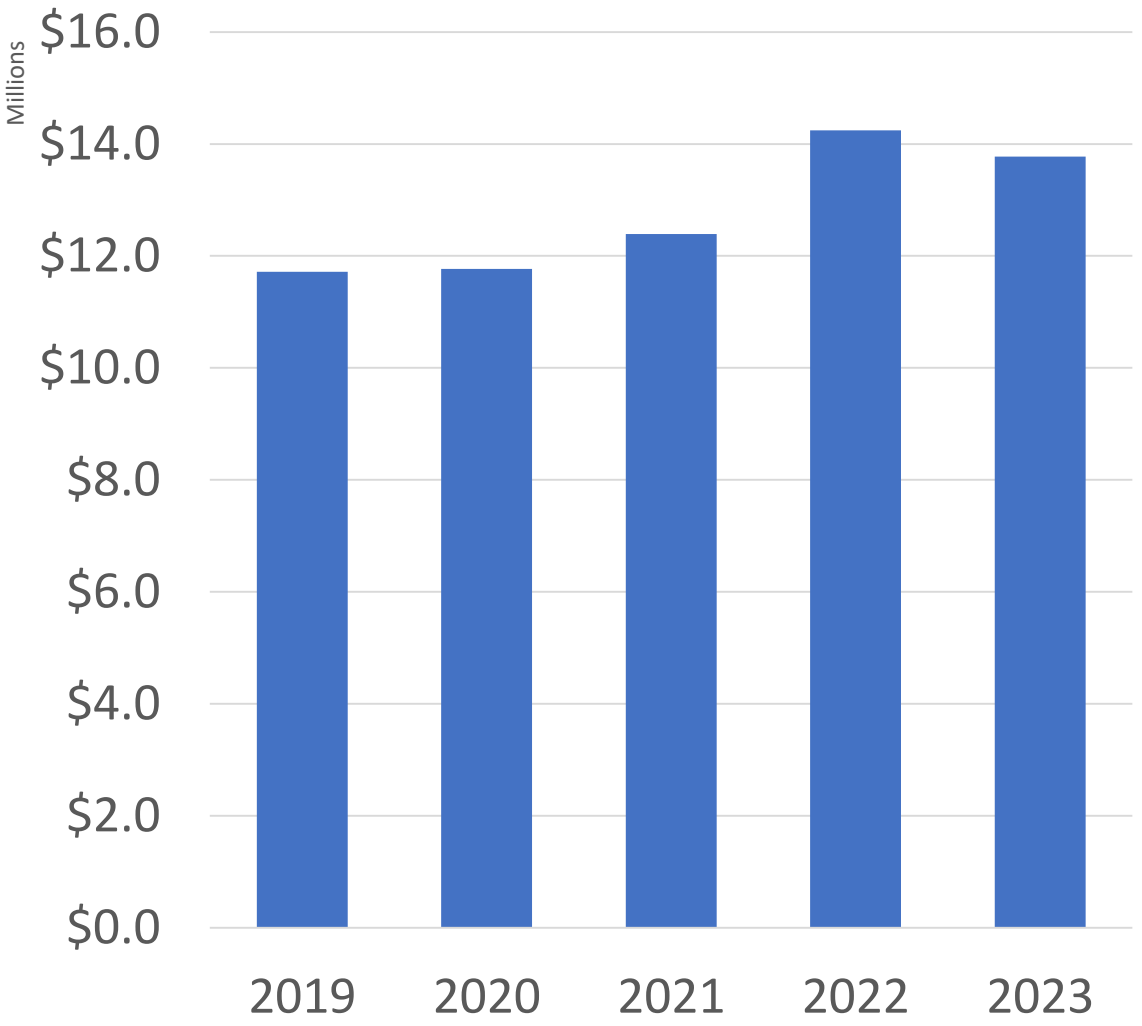
Water Fund - Expenses

- Three major expense categories
  - Personnel: $11M
  - Purchased Water: $27.5M
  - Capital: $12.5M



Water Fund – Capital Improvement Program

- Rate structure built to include increased capital expenses through 2021
- Phosphorus facility upgrades loom as major future project
- Increased funding in 2019 for the water meter replacement program
  - Updating meters identified as a potential area to improve meter accuracy and reduce water loss



Rate Model - Structure

- Rates established in 5-year increments through rate studies
- Last rate study 2016, set rates from 2017-2021
- Three primary rates:
  - Fixed Customer Charge – Flat fee applied monthly
  - Volumetric Rate – Rate applied to the amount of water used
  - Wholesale – Pass through rate to cover the cost of water purchased from the DuPage Water Commission (DWC)
- Established Phosphorus Surcharge in 2017
  - Revenues restricted for anticipated facility upgrades

Rate Increases (%) – Based on Sample Bills					
	2017	2018	2019	2020	2021
Resident (750 CF)	4.1%	11.7%	4.3%	3.1%	1.8%
Commercial (5,500 CF)	4.5%	12.0%	5.6%	5.6%	5.0%
Commercial (35,000 CF)	3.7%	10.8%	4.5%	4.8%	4.4%

- Large increase applied in 2018 to address rate study errors
- Wholesale rate will increase May 1st

Phosphorus Fund – Revenue Balance

	Rate Model	Actuals	Loan Repayment	Fund Balance
2016	-	-	$2.86M	$2.86M
2017	$276K	$167K	$2.86M	$5.88M
2018	$575K	$631K	$8.87M	$15.39M
2019*	$1.08M	$1.19M	-	$16.57M

**2019 figures represent projected totals*

- Created to assist funding for IEPA required improvements that are scheduled to begin in 2025
- Surcharge expires once funds collected equal half the cost of improvements

Meter Reading Process

- Current rate structure set rates for 2017-2021.
  - Alexander's Inc. contracted services through August 2021.
  - Rates account for approximately $421,000 in contract meter reading costs.
- Manual water meter reads have become antiquated throughout the industry and Chicagoland area.
- AMI allows the City to leverage technology.
- AMI provides better data for customers to track their water use.
- AMI technology has become a standard method for water utilities throughout the area.

AMI	Aurora Downers Grove Elmhurst Evanston Joliet	Geneva Glen Ellyn Glenview Lombard Orland Park Tinley Park
AMR	Batavia Carol Stream Plainfield	Wheaton Winfield
Manual	Lisle	Woodridge

Overview of AMI/AMR Scenarios

KEY CONSIDERATIONS

Naperville faces ongoing challenges with the water meter reading contract and is working to reduce the volume of estimated bills. In lieu of developing an in-house meter reading program, Naperville is evaluating the viability of an automated reading system. The following are four network designs under consideration.

1 NAPERVILLE NETWORK

Naperville utilizes the existing DPU-E AMI network, requiring incremental build

- Existing electric AMI footprint could allow efficiencies for an accelerated AMI rollout and decreased capital investment
- Water AMI endpoints relay consumption data via electric endpoints and data collectors

2 PtMP – Low Site

Naperville builds a new, point to multipoint (PtMP) AMI network

- Upfront investment in network infrastructure requires low site mounting for data collectors (~30 ft. high, oftentimes street lights)
- Approximately one data collector is required per square mile
- Water AMI endpoints relay consumption data via one or more data collectors

3 PtMP – High Site

Naperville builds a new, point to multipoint (PtMP) AMI network

- Upfront investment in network infrastructure requires high site mounting for base stations (~150-190 ft. high)
- Approximately six base stations would be required
- Water AMI endpoints relay consumption data via one or more base stations

4 MOBILE RADIO

Naperville leverages a mobile collector, forgoing need for a fixed network

- Upfront investment in infrastructure is low, as there are no mounted network devices
- Technology/processes already exist for approx. 1.6k Naperville endpoints
- Meter reads are gathered via mobile collection once per month

BUSINESS CASE ASSUMPTIONS

Scenario Selection Assumptions

- Assumes one business case with fixed and variable costs over 20 years
- Model assumes 20-year battery life
- Model represents four network design options
- Across all scenarios: develop and implement a robust community outreach program

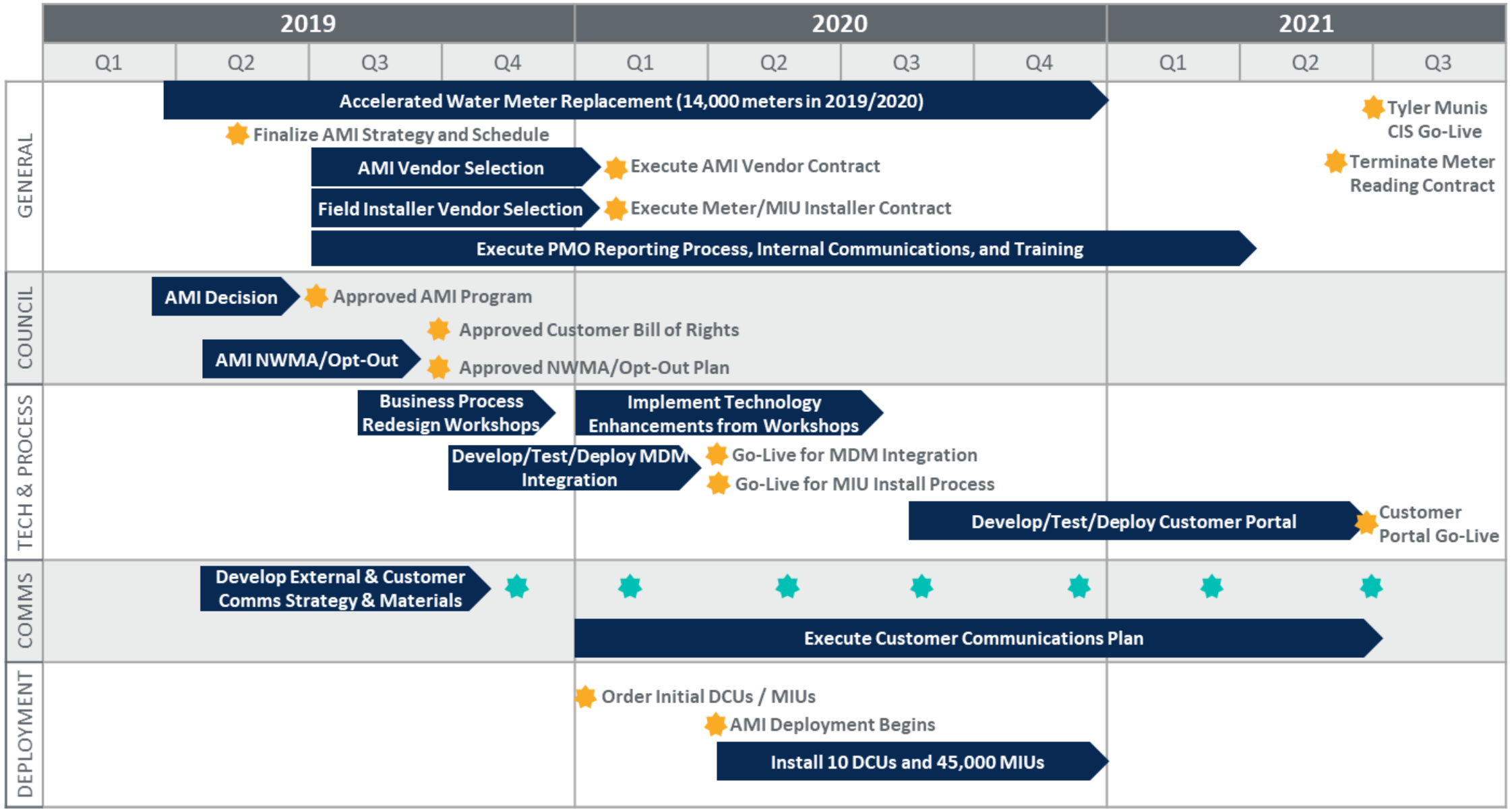
Timeline Assumptions

- Business case assumes year 1 begins immediately in 2020
  - Note: random failure is modeled at 1% for years 1-10 and 2% for years 11-20
- Baseline costs assume termination of contracted meter reading in 2021
- Naperville will utilize contractors to perform AMI/AMR reading device (endpoint) installations during a one-year period through both a mass deployment effort and via day-to-day operations (e.g. accelerated meter replacement program, new business/home, etc.)
- The IT development and system integration work will be performed over two releases, focusing efforts on the most critical functionality first (meter exchange, billing) and other functionality in a second release (customer portal, data analytics)

Data Assumptions

- All 45,000 endpoints will be converted to AMI/AMR with the option for an opt-out program
- West Monroe applies inflation to all expenses over the 20-year business case period

The AMI program would take approximately 24 months to complete after receiving Council approval



This is the most optimistic implementation plan, optimized by leveraging the existing electric AMI network's infrastructural footprint

12-month Outlook

- Continue with manual water meter reading
  - Current contract ends in August with 2 option years remaining
- PUAB recommendation
- FAB discussion
- City Council discussion
- Request for Proposal for vendors
- Update Customer Bill of Rights
- Work on water Customer opt-out program
- Deployment of automated meter reading will allow for integration with the Tyler Utility Billing module (July 2021)
  - Delaying deployment could require an additional $450,000 in additional integration costs

Comparative Scenarios

20-year battery life, 1-year deployment

	Baseline (Manual)	AMI – Naperville Network	AMI – PtMP (Low)	AMI – PtMP (High)	AMR – Mobile
Total 20-Year					
Costs	**-$20,209,291**	**-$18,701,416**	**-$25,505,116**	**-$26,428,607**	**-$16,457,029**
Savings	**$0**	**$22,017,456**	**$22,017,456**	**$22,017,456**	**$19,500,940**
NET Costs / Savings (-/+)	**-$20,209,291**	**$3,316,040**	**-$3,487,660**	**-$4,411,151**	**$3,043,911**
Capital Costs					
2020	-$0	-$7,741,563	-$8,498,911	-$9,700,322	-$6,521,965
2021	-$266,114	-$81,945	-$93,439	-$118,288	-$66,099
Total Deployment Capital	**-$266,114**	**-$7,823,508**	**-$8,592,350**	**-$9,818,610**	**-$6,588,064**
O&M Costs					
2020	-$393,062	-198,391	-$281,467	-$249,452	-$102,765
2021	-$1,279,918	-$244,330	-$398,609	-$365,150	-$251,456
Total Deployment O&M	-$1,672,980	-$442,721	-$680,076	-$614,602	-$354,221
Total Deployment Costs	**-$1,939,094**	**-$8,266,229**	**-$9,272,425**	**-$10,433,212**	**-$6,942,285**

Funding Options – Rate Impact

- All options for future meter reading will result in rate increase
- Business Case options range from $7.7M to $10M
- Funding scenarios include:
  - Rates – not realistic
  - Cash on Hand – Phosphorus Revenues (Interest: 1.1%)
  - Outside Borrowing (Interest: 3.6%)

	Year 1	Year 2
Projected In-House Reading Costs (O&M)		
Rate Impact	$2.82	$1.33
Rate Impact of AMI Implementation		
Cash on Hand (5-Year)	$3.70 - $4.75	$3.65 - $4.80
Cash on Hand (8-Year)	$2.55 - $3.30	$2.55 - $3.50
Borrow (20-Years)	$1.65 - $2.20	$1.65 - $2.30

*Monthly rate impact based off of average monthly bill of $75.70

Water Fund – Debt History

- Average interest rate of outstanding bonds: 4.3%
- Water last borrowed for a project in 2011
- On track to reduce debt by 55.7% by the end of 2022
- Reduced overall debt by $11.3M between 2014 and 2018

Year	Principle	Interest	Total Debt
2018	$1.94	$0.46	$2.40
2019	$1.84	$0.85	$2.69
2020	$1.57	$0.80	$2.36
2021	$1.54	$0.74	$2.28
2022	$1.55	$0.69	$2.25
2023	$2.28	$0.63	$2.92
2024	$3.42	$0.54	$3.95
2025	$2.42	$0.39	$2.81
2026	$1.94	$0.28	$2.22
2027	$1.95	$0.20	$2.15
2028	$1.95	$0.11	$2.06
2029	$0.50	$0.02	$0.53

*in millions

Cash on Hand - Phosphorus Fund Revenue

- Estimated $64M to upgrade Springbrook wastewater facility to comply with new Illinois EPA phosphorus standards.
- Surcharge designed to generate half the needed funds
- Preliminary design projected for 2024 and 2025
- Construction planned for 2026-2028

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Begin Balance	15.38	16.61	17.93	19.32	20.73	22.02	20.57	16.61	(0.45)	(17.70)	(34.95)
Inflow	1.25	1.33	1.41	1.43	1.44	1.46	1.44	1.40	1.22	1.22	1.22
Outflow	(0.03)	-	(0.03)	(0.03)	(0.15)	(2.91)	(5.40)	(18.46)	(18.46)	(18.46)	-
End Balance	16.61	17.93	19.32	20.73	22.02	20.57	16.61	(0.45)	(17.70)	(34.95)	(33.73)

Funding Scenarios – Projected Debt

- Projected costs for deployment of AMI range between $7M - $10M
- Three funding options have been explored
  - Borrowing over 20-years
  - Use of Phosphorus Fund revenues with payback periods of 8 and 5 years

	Needed Capital	Borrow (20-YR)	Internal (8-YR)	Internal (5-YR)
Interest		**3.60%**	**1.10%**	**1.10%**
Estimated Total Debt Service				
AMI – Elster	$7.74	$11.15	$8.13	$8.00
AMI – High	$9.70	$13.97	$10.19	$10.02
AMI – Low	$8.50	$12.24	$8.92	$8.78

*In millions

Total Estimated Costs – Through 2039

Do Nothing - $20.21M				
Options	**Base Cost**	**Borrow (20-Years)**	**Phosphorous (8-Years)**	**Phosphorous (5-Years)**
AMI – Elster	$18.70	$21.55	$19.26	$19.13
AMI – High Point	$26.43	$30.00	$27.13	$26.96
AMI – Low Point	$25.51	$28.63	$26.12	$25.97

Next Steps

- Action Items
  - Discuss any requests for additional or clarifying information
  - Recommend funding option

- PUAB Meeting – May 3
  - Review Business Case and Implementation Plan
  - Review costs & funding options
  - Make a recommendation for City Council

Naperville