

14 – Putting everything together



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Objectives

- We've covered all of the pieces that are required to develop an asset management plan
- Now, how do you put those pieces together?

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The big picture

- Identify your assets – start with as-built maps and hydrology study
- Determine the current state of the assets – expected useful life
- Determine the level of service are the assets providing – from both the standpoint of the system and the customer
- Determine which assets are critical – develop a prioritization score method to prioritize asset refurbishment/replacement
- Determine the cost of the assets at the time that it needs to be refurbished/replaced – account for inflation
- Develop a long-term funding plan that will implement refurbishment/replacement strategies

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Critical component

Asset management team – these roles need to be filled

- Operator
- Maintenance supervisor
- General manager
- Clerk
- Board president/mayor
- Governing board
- Engineer
- Regulators

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Asset management plan development

- Develop a table of the plans for each asset with the remaining useful life
 - This demonstrates what you are planning to do
- But you also have to develop the capital cash flow needed to fund the asset management plan
 - This cash flow is developed from the financing plan
 - Only includes debt financing and self-financed projects

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Cash flows need to fund asset management plan

Year	Amount	Year	Amount	Year	Amount	Year	Amount	Year	Amount
2026	\$303,202	2035	\$284,046	2044	\$550,539	2053	\$807,397	2062	\$819,557
2027	\$303,202	2036	\$450,047	2045	\$550,300	2054	\$807,397	2063	\$819,557
2028	\$303,202	2037	\$449,230	2046	\$586,163	2055	\$807,397	2064	\$819,557
2029	\$303,202	2038	\$439,084	2047	\$586,163	2056	\$807,397	2065	\$819,557
2030	\$303,202	2039	\$435,771	2048	\$586,163	2057	\$807,397	2066	\$1,579,622
2031	\$292,262	2040	\$433,447	2049	\$586,163	2058	\$804,493	2067	\$1,579,622
2032	\$292,262	2041	\$553,398	2050	\$586,163	2059	\$804,493	2068	\$1,579,622
2033	\$292,262	2042	\$551,329	2051	\$807,397	2060	\$804,493	2069	\$1,579,622
2034	\$284,046	2043	\$551,329	2052	\$807,397	2061	\$819,557	2070	\$1,579,622

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Adjusting rates

- It's important to remember that the cash flow numbers that are shown in the table on the previous page **DO NOT** include the normal operating expenses of the system
 - These values are from debt financing and self-financed projects – these types of projects will have to be funded (sooner or later) by the system's rate structure
- These numbers should be incorporated into a system rate study
- In our case study, the 2" and 2.5" pipe will be replaced in five years; therefore, we will use the original rate study for the first five years of the asset management plan.
- In succeeding years, we will be able to utilize the expanded population version of the rate study tool.

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Cash flows need to fund asset management plan

These amounts will need to be incorporated into the initial five-year rate study

Year	Amount	Year	Amount	Year	Amount	Year	Amount	Year	Amount
2026	\$303,202	2035	\$284,046	2044	\$550,539	2053	\$807,397	2062	\$819,557
2027	\$303,202	2036	\$450,047	2045	\$550,300	2054	\$807,397	2063	\$819,557
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2026-2030 rate study – current population

Expense Categories	
1 Administrative Expenses	\$1,897.93
4 Bank Service Charge Contract Services	\$0.00
3 Accounting Fees	\$3,939.00
1 Billing Services	\$8,761.40
3 Engineering Services	\$1,000.00
3 Legal Fees	\$1,000.00
2 Meter Reading Services ¹	\$9,595.00
2 Operator Services ²	\$49,054.95
8 Depreciation Expense	\$62,422.44
6 Membership Dues	\$0.00
1 Insurance	\$6,172.79
7 USDA Loan	\$14,988.80
6 Miscellaneous Expense	\$539.73
1 Office Expense	\$127.93
5 Distribution Supplies	\$329.06
4 Production Supplies	\$2,433.21
5 Distribution R&M	\$10,955.00
4 Production R&M	\$78.00
1 Taxes	\$70.00
4 Electric Utilities	\$7,299.61
4 Water Quality Testing Expense	\$590.00
6 Central Volunteer Fire Department	\$2,784.00
9 Savings	\$0.00
Total	\$184,038.85

Inflation must be estimated in order to achieve meaningful results

Inflation Factor		4.0%	4.0%	4.0%	4.0%	4.0%
Consolidated Budgeted Expenses						
	2025	2026	2027	2028	2029	2030
1 Administrative Expenses	\$17,030	\$17,711	\$18,420	\$19,156	\$19,923	\$20,720
2 Contractual Expenses	\$58,650	\$60,996	\$63,436	\$65,973	\$68,612	\$71,357
3 Professional Fees	\$5,939	\$6,177	\$6,424	\$6,681	\$6,948	\$7,226
4 Production Expense	\$10,401	\$10,817	\$11,250	\$11,700	\$12,167	\$12,654
5 Distribution Expense	\$11,284	\$11,735	\$12,205	\$12,693	\$13,201	\$13,729
6 Miscellaneous Expense	\$3,324	\$3,457	\$3,457	\$3,457	\$3,457	\$3,457
7 Debt Service	\$14,989	\$15,588	\$15,588	\$15,588	\$15,588	\$15,588
8 Depreciation Expense	\$0	\$0	\$0	\$0	\$0	\$0
9 Capital Budgeting/Asset Mgt	\$0	\$303,302	\$303,202	\$303,202	\$303,202	\$303,202
Total Expenses	\$121,616	\$429,783	\$433,981	\$438,450	\$443,098	\$447,932

It is important to note that the capital budgeting/asset management estimates take the place of depreciation.

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2026-2030 rate study – current population

Current Rates – 253 customers

Water Rates					
Manual Variations					
Baseline Tuning	100.00%	First Analysis Year	2026		
Billing Block Size (gallons)	1,000	Year 1 Net Income	(\$236,833)		
Inflation Rate	4.0%	Year 2 Net Income	(\$238,350)		
Savings Rate	0.0%	Year 3 Net Income	(\$240,674)		
Annual Base Rate Increase	0.0%	Year 4 Net Income	(\$240,764)		
Annual Flow Rate Increase	0.0%	Year 5 Net Income	(\$240,236)		
Water Rates - FY2026					
Effective Meter Charge	\$30.00	\$30.00	\$30.00	\$30.00	\$30.00
Minimum Gallons	0	0	0	0	0
Block 1 Gallons	1,000	1,000	1,000	1,000	1,000
Block 1 Price	\$8.00	\$9.00	\$9.80	\$11.50	\$13.50
Block 2 Gallons	1,000	1,000	1,000	1,000	1,000
Block 2 Price	\$8.00	\$8.00	\$8.00	\$8.00	\$8.00
Block 3 Gallons	1,000	1,000	1,000	1,000	1,000
Block 3 Price	\$8.00	\$8.00	\$8.00	\$8.00	\$8.00
Block 4 Gallons	1,000	1,000	1,000	1,000	1,000
Block 4 Price	\$8.00	\$8.00	\$8.00	\$8.00	\$8.00
Block 5 Price	\$8.00	\$8.00	\$8.00	\$8.00	\$8.00

Exceptionally high increasing block rate – not sufficient

Water Rates					
Manual Variations					
Baseline Tuning	100.00%	First Analysis Year	2026		
Billing Block Size (gallons)	1,000	Year 1 Net Income	(\$122,430)		
Inflation Rate	4.0%	Year 2 Net Income	(\$111,077)		
Savings Rate	0.0%	Year 3 Net Income	(\$98,441)		
Annual Base Rate Increase	0.0%	Year 4 Net Income	(\$84,301)		
Annual Flow Rate Increase	10.0%	Year 5 Net Income	(\$68,461)		
Water Rates - FY2026					
Effective Meter Charge	\$50.00	\$50.00	\$50.00	\$50.00	\$50.00
Minimum Gallons	0	0	0	0	0
Block 1 Gallons	1,000	1,000	1,000	1,000	1,000
Block 1 Price	\$10.00	\$11.00	\$12.10	\$13.31	\$14.64
Block 2 Gallons	1,000	1,000	1,000	1,000	1,000
Block 2 Price	\$11.00	\$12.10	\$13.31	\$14.64	\$16.10
Block 3 Gallons	1,000	1,000	1,000	1,000	1,000
Block 3 Price	\$12.00	\$13.20	\$14.52	\$15.97	\$17.57
Block 4 Gallons	1,000	1,000	1,000	1,000	1,000
Block 4 Price	\$13.00	\$14.30	\$15.73	\$17.30	\$19.03
Block 5 Price	\$14.00	\$15.40	\$16.94	\$18.63	\$20.49

This presents a problem that many small water/wastewater systems are going to have to address. The rates that will be required to cover an objective asset management plan will be exceptionally high. Asset refurbishment/replacement in the initial years can be postponed, but these assets are going to have to be addressed at some point in time. 10

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2026-2030 rate study – doubled population

Current Rates – 545 customers

Water Rates					
<i>Manual Variations</i>					
Baseline Tuning	100.00%		First Analysis Year	2026	
Billing Block Size (gallons)	1,000		Year 1 Net Income	(\$13,055)	
Inflation Rate	4.0%		Year 2 Net Income	(\$17,253)	
Savings Rate	0.0%		Year 3 Net Income	(\$21,722)	
Annual Base Rate Increase	0.0%		Year 4 Net Income	(\$26,370)	
Annual Flow Rate Increase	0.0%		Year 5 Net Income	(\$31,204)	
Water Rates - FY2026					
	2026	2027	2028	2029	2030
Effective Meter Charge	\$30.00	\$30.00	\$30.00	\$30.00	\$30.00
Minimum Gallons	0	0	0	0	0
Block 1 Gallons	1,000	1,000	1,000	1,000	1,000
Block 1 Price	\$8.00	\$8.00	\$8.00	\$8.00	\$8.00
Block 2 Gallons	1,000	1,000	1,000	1,000	1,000
Block 2 Price	\$8.00	\$8.00	\$8.00	\$8.00	\$8.00
Block 3 Gallons	1,000	1,000	1,000	1,000	1,000
Block 3 Price	\$8.00	\$8.00	\$8.00	\$8.00	\$8.00
Block 4 Gallons	1,000	1,000	1,000	1,000	1,000
Block 4 Price	\$8.00	\$8.00	\$8.00	\$8.00	\$8.00
Block 5 Price	\$8.00	\$8.00	\$8.00	\$8.00	\$8.00

Much more modest rate increases are sufficient

Water Rates					
<i>Manual Variations</i>					
Baseline Tuning	100.00%		First Analysis Year	2026	
Billing Block Size (gallons)	1,000		Year 1 Net Income	\$7,278	
Inflation Rate	4.0%		Year 2 Net Income	\$6,047	
Savings Rate	0.0%		Year 3 Net Income	\$4,546	
Annual Base Rate Increase	0.0%		Year 4 Net Income	\$2,864	
Annual Flow Rate Increase	0.0%		Year 5 Net Income	\$998	
Water Rates - FY2026					
	2026	2027	2028	2029	2030
Effective Meter Charge	\$31.00	\$31.00	\$31.00	\$31.00	\$31.00
Minimum Gallons	0	0	0	0	0
Block 1 Gallons	1,000	1,000	1,000	1,000	1,000
Block 1 Price	\$8.50	\$9.00	\$9.50	\$10.00	\$10.50
Block 2 Gallons	1,000	1,000	1,000	1,000	1,000
Block 2 Price	\$8.50	\$8.50	\$8.50	\$8.50	\$8.50
Block 3 Gallons	1,000	1,000	1,000	1,000	1,000
Block 3 Price	\$8.50	\$8.50	\$8.50	\$8.50	\$8.50
Block 4 Gallons	1,000	1,000	1,000	1,000	1,000
Block 4 Price	\$8.50	\$8.50	\$8.50	\$8.50	\$8.50
Block 5 Price	\$8.50	\$8.50	\$8.50	\$8.50	\$8.50

Note the difference that the additional customers make in the left table. Rates will not have to rise nearly as much to cover the annual direct expenses plus the asset management plan requirements.

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What does this mean?

- A key takeaway from this is that **system population** makes a difference in the financial sustainability of the water/wastewater utility
- Another takeaway not covered in this course is the knowledge of water versus wastewater expenses
 - Most systems have wastewater rates that are 50% of the levels of water rates
 - Most systems that actually track charges indicate that wastewater costs 1.5 to 2 times as much to treat as water
 - System population is a significant factor with WW utilities as well
- Systems might want to consider some form of **consolidation** to be able to cover their asset management plans

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Consolidation issues

- Too often, consolidation has been defined as **“one community system being absorbed into another or taken over by another”**
- A better definition came from AWWA – **“the creation of an appropriate managerial or contractual administrative organization or a coordinated physical system plan of two or more community water systems in a geographical area for the purpose of utilizing common resources and facilities to their optimum advantage”**

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Consolidation advantages

- Increase economies of scale – rates don't have to be nearly as high
- Greater access to capitalization
- Elimination of duplicated services – billing, operator expenses, etc.
- Backup water sources – “systems” may not be eliminated, but organizations will be
- Fewer systems for the regional engineers to deal with – Scooter can spend more time with you!
- Lower cost for regulatory compliance

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Consolidation disadvantages

- Communities may lose autonomy
- Additional debt may be acquired – the system may need this debt
- May result in a loss of jobs
- Confusion among customers
- Jealousy and mistrust may create political barriers
- It may be impossible for water systems to connect
- Different systems (organizations) have different management goals
- Cost/benefit inequities may appear. One system may incur costs from acquiring or consolidating with the other system that would not have arisen if consolidation did not occur

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Responsibility transfer

Non-structural			Structural
Informal Cooperation	Contractual Assistance	Joint Powers Agencies	Ownership Transfer
Coordination with other systems but without any contractual obligations	Contract with another system, but the contract is under the system's control	Creation of a new entity designed to serve the systems that form it	Takeover by an existing system to create a new system

No
Responsibility
Transfer

Complete
Responsibility
Transfer


Increasing Transfer of Responsibility

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Characteristics of consolidation options

	Type of Approach	Ease of Creation	Ease of Termination	Affect on Ownership	Loss of Community Power and Independence	Impact on Operating Efficiency	Impact on Economic Efficiency	Expenses Involved
Informal Cooperation	Non-structural	Easy to create and implement	Easy to terminate	Does not affect ownership	No potential loss of community power and independence	Duplicate services can be eliminated	System saves money by sharing facilities, equipment, etc.	Expenses tend not to become an issue
Contractual Assistance	Non-structural	Easy to create	Easy to terminate	Does not affect ownership	No potential loss of community power and independence	System has access to specialized services it cannot afford	Economies of scale created	Can potentially be expensive at times

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Characteristics of consolidation options

	Type of Approach	Ease of Creation	Ease of Termination	Affect on Ownership	Loss of Community Power and Independence	Impact on Operating Efficiency	Impact on Economic Efficiency	Expenses Involved
Joint Powers Agency	Non-structural	Easy to create	More difficult to terminate than contractual assistance	Does not affect ownership	Can potentially impact community power and independence somewhat	Duplicate services eliminated; more efficient use of personnel, facilities, etc.	Larger economies of scale	Sometimes difficult to distribute cost equally with other system(s) involved
Ownership Transfer	Structural	More difficult to create and implement	Difficult to terminate	Ownership is transferred through a merger, acquisition, or takeover	Impacts community power and independence	Duplicate services eliminated; more efficient use of personnel, facilities, etc.	Larger economies of scale	Sometimes difficult to distribute cost equally with other system(s) involved

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Mandated consolidation?

HOUSE BILL NO. 4117 (2024 Regular Session) – Rob Roberson (R-Starkville) – Died in Committee

An act to authorize the governing authorities of the city of Starkville, Mississippi, to request that the Public Service Commission make certain inquiry as to whether any rural water association, which provides water service to Starkville city residents, is providing such service in an adequate manner; to provide that if a determination is made that water service is not adequately provided, **then a rural water association shall be required to sell and convey its water assets** so that water can be adequately supplied to Starkville city residents; and for related purposes.

The governing authorities of the City of Starkville, Mississippi, are authorized and empowered, to request the Public Service Commission ascertain whether any rural water association located within the corporate limits of the city has the ability to adequately provide water service within the city. ... in the event that a determination is made, ..., that a rural water association is not able to provide adequate water service within the city limits, then the city is authorized to require such water association to enter to a negotiated agreement for the sell of the association's water assets to the city, and the association shall be compensated as provided under this act.

... The city shall pay the rural water association fair market value for such assets, **which value shall be determined by an independent appraisal of the city's choosing.**

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Mandated consolidation?

HOUSE BILL NO. 1088 (2025 Regular Session) – Deweese and Crawford– Died in Committee

An act to amend sections 21-27-7 and 19-5-181, Mississippi Code of 1972, to grant municipalities and counties the authority to purchase water associations through the issuance of revenue and special improvement bonds; and for related purposes.

The governing authorities of a municipality, with mutual agreement between the municipality and a water association, shall have the authority to purchase the assets of the water association, including water supply and distribution systems, by the issuance of revenue bonds, provided that such bonds are payable solely from the revenues generated by the waterworks system.

The board of supervisors, with mutual agreement between the county and a water association, shall have the authority to issue revenue bonds or special improvement bonds to fund the purchase of the water association ,water supply systems, or related facilities within the district. The issuance of such bonds shall be subject to the same procedures outlined herein, including the approval of the board of supervisors and the pledge of revenues from the purchased waterworks to repay the bonds.

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Mandated consolidation?

Politico – 5/29/2024 – EPA rule could spur consolidation of water sector

<https://www.eenews.net/articles/epa-rule-could-spur-consolidation-of-water-sector/>

Water utilities that cannot provide safe drinking water to their customers could face more scrutiny and reorganization under a forthcoming EPA rule.

The Biden administration will propose a rule Thursday morning requiring states to evaluate water systems that repeatedly violate drinking water standards or face major financial challenges.

State regulators would need to come up with plans to assess those systems and improve water service, which could include consolidating multiple providers or transferring a failing system to another owner.

[https://public-inspection.federalregister.gov/2024-](https://public-inspection.federalregister.gov/2024-11687.pdf?utm_campaign=pi+subscription+mailing+list&utm_medium=email&utm_source=federalregister.gov)

[11687.pdf?utm_campaign=pi+subscription+mailing+list&utm_medium=email&utm_source=federalregister.gov](https://public-inspection.federalregister.gov/2024-11687.pdf?utm_campaign=pi+subscription+mailing+list&utm_medium=email&utm_source=federalregister.gov)

Journal AWWA – Dec 2021 – Too Small to Succeed: State-Level Consolidation of Water Systems

https://ectinc.com/wp-content/uploads/2023/01/2021_JAWWA_consolidation.pdf

California – SB88 – State Water Board can require systems to consolidate with or receive an extension of service from another public water system

Kentucky – SB409 – KY Infrastructure Authority established water management areas to encourage regionalization and consolidation efforts and provide funding

Kansas – KSA19-3545 – enables the creation of public wholesale water districts and KSA 82a-639 which enables counties to consolidate rural water districts

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Takeaways

- One of the largest barriers to water system/utility consolidation is the question of cost
 - How much will it cost to get the water system being acquired to the standards of the water system that is doing the acquiring
 - Is there money from the state or the feds to do this – and we're not talking about a loan!
 - How much are rates going to change (**increase**)? Why can we charge other people more because service to them is going to cost more than service to our existing customer base.
- Even where consolidation is not necessarily going to occur, how can we connect systems to provide a backup supply of water?
- This is not an advocacy of consolidation. But very small systems are going to have to increase populations if they are going to sustain their infrastructure

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Possible courses of action

- MSDH-BPWS develops funding opportunities to assist systems in objectively analyzing their consolidation/asset management options
- Water associations and municipalities in specific geographic areas should take the initiative to look at ways to coordinate or consolidate to cut costs and make the systems more sustainable
- All economic analyses undertaken by utilities (rate studies, consolidation studies, etc.) should include an asset management component and should have a forecasted time-line of **at least 5 years**.
- Local governmental bodies should look at ways to support systems if the system can become sustainable in a reasonable time frame.

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