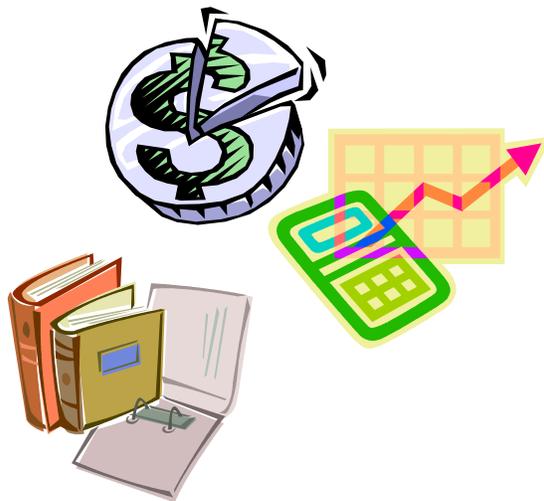


# Module 7 Budget and Capital Improvements Program Overview

## Workbook



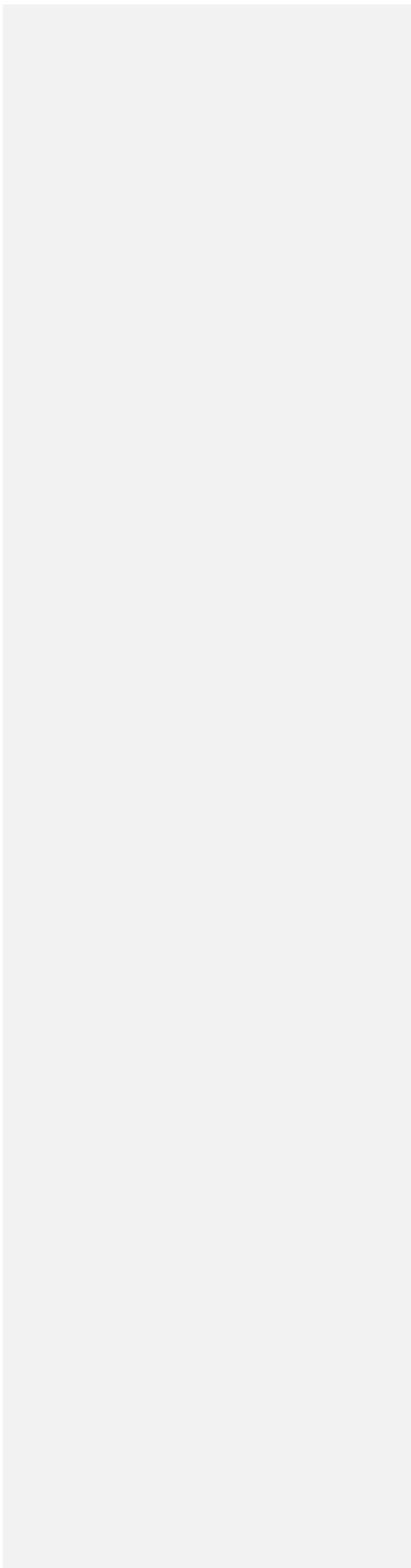
## Financial/Managerial Series

This course includes content developed by the Pennsylvania Department of Environmental Protection in cooperation with the following grantees:

RCAP Solutions, Inc.  
Penn State Harrisburg Environmental Training Center

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# Training Module 7

## Budget and Capital Improvements Program Overview



### Objectives:

The purpose of this training module is to enable you to:

- Describe why a budget is important as a tool for good financial management of the system.
- Calculate the following elements of a budget:
  - Projected revenue
  - Delinquent payment rate adjustments
  - New customer revenue
  - Miscellaneous revenue sources
  - Projected expenses
  - Inflation and expense increase adjustments
  - Budget total (subtract adjusted revenue from adjusted expenses)
- Explain the importance of a Capital Improvements Program, and identify the basic elements of this program.
- Describe the relationship between the rate structure and the budget.
- Participate in the next budget process.

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## Introduction



During this training module, we'll be describing:

- The basic elements of a budget and its relationship to the rate structure
- The ways revenues and expenses can be projected for a budget
- An example of a budget and associated exercises
- Capital improvements planning and the basic elements of a capital improvements program

## Budgets and Examples



To do this, let's start with the definition of a budget.

A budget is a projection of revenues and expenses for the upcoming fiscal year or other future period that is used to determine the financial performance of the system and to prevent overspending and misuse of system funds. The revenues and expenses are kept in two separate sections and the difference is shown at the bottom. If this number is positive the system will make money and if it is negative, the system will lose money over the budget cycle.

Revenues are funds that are received by the system such as user fees and tap fees. Expenses are funds expended by the system to cover costs of loan repayment and system operation.



Now we have an idea what a budget is and most of us have seen one before. Why have one at all? You may be required to prepare a budget to satisfy the requirements of a loan agreement through a funding agency such as the U.S. Department of Agriculture's Rural Utility Service (RUS). RUS requires a budget be submitted the month prior to the beginning of the fiscal year. Budgets also make very effective management tools.

Great, but how do we put one together? Let's start with the easy part first – revenues. To project the bulk of the revenue the system will receive, we need the existing rate structure, the number of customers, and the amount of water billed for in the last calendar year.

The existing metered rate structure will usually include two components:

- The base rate allows systems to charge all users the same amount to cover fixed costs such as debt repayment and administrative costs.
- The usage charge allows the system to charge users based on their water consumption to cover its variable costs, or the costs that vary along with water consumption such as O&M and utilities.

The revenue from the users can then be determined from the following formula:

$$\text{Revenue} = \text{Base} + \text{Usage}$$



We have those numbers. Now what do we do with them?

This information can be used to project the most revenue the system can expect to receive from its customers. Let's run through an example to see how.

**Exercise #1**

The Smallville Water Company is trying to determine the revenue it could expect next year and you've offered to give them a hand. The system has provided the following information:

Customers:	200
Gallons billed last year (in 1000's):	15,000 water units
Water rate (base):	\$15.00/month
Water rate (usage):	\$ 2.00/1000 gallons or water unit

Take a few moments to project the system's maximum user revenue for the next year. Feel free to pair up if you wish or you can work individually. Use the space below to complete your work.



Here's the most the system can expect next year in user revenue:

Base + Usage = Revenue

$$(200 \text{ cust.} * 12 \text{ mths} * \$15/\text{mth}) + (\$2/\text{water unit} * 15,000 \text{ water units}) \\ = \$36,000 + \$30,000 = \$66,000$$



**Budgeting Tip:**

- Note that it's not the number of gallons *treated*, but the number of gallons *billed*. Why? Because you need to recover your costs based on the water that is consumed (i.e. billed) by users. A percentage of the water that is treated is lost through leaks and for other reasons.



Bear in mind that this is likely the maximum revenue the water billing system can expect from its customers. When projecting this amount for the budget, it will be need to be modified. Why?

We all know that not every customer will pay the bill every month. This is unavoidable and must be considered when projecting the revenue amount.



In order to modify the revenue projection properly, you need to know the delinquency rate for your system. If 5% of your customers didn't pay you last year or if you received 5% less revenue than expected due to delinquencies, you can modify this projection down by 5%. So in this case:

5% delinquency = 0.05 reduction in total without delinquency

$$\$66,000 * (1.0 - 0.05) = \$62,700$$

This is more likely the amount the system will receive from its customers in the form of revenue from users.



What other types of revenue do you need to project? Here are a few examples:

- Tap fees – Do you anticipate the hook up of any new customers during the budget cycle?
- Bulk sales – Will there be any bulk purchases of water during the budget cycle?
- Late fees – Do your customers often pay you late and do you assess a fee?
- Interest income – Do you have a sum of money in the bank or elsewhere that earns interest for the system, such as the debt service reserve or other reserve funds?

If you anticipate any of these revenues, you can project them separately. It is likely that only local officials and personnel such as

board members, operators, and secretaries will have sufficient knowledge of the system to make these projections.



All those projections are combined to form the revenues section of the budget. Now you have a pretty good idea of how much money you will have without a rate adjustment. Next we move on to the expenses section of the budget.



Expenses are a bit trickier but they can be managed if you're careful enough. Some expenses do not change from year to year. These are usually amortized debt repayments for funding agency loans or even vehicle loans. The payments for these types of loans do not change and each payment includes a certain amount of interest and a certain amount of principal. While the total amount does not change, the amount of interest paid decreases and the amount of principal paid increases over time. You might be more familiar with these types of loan than you think if you are currently paying off a mortgage or car loan. Since these payments don't change, you know exactly how much you will have to pay next budget cycle to cover these types of expenses. These do not require any modification and can go directly onto the budget.

Loans through the USDA Rural Utility Service may require the annual funding of a debt reserve account. If you have a loan from RUS and have this requirement, don't forget to account for it in the budget. Just like the loan repayment amount, you will know ahead of time exactly how much you have to pay into this account.



Other expenses are not as easy to project since they vary from year to year based on a number of factors. These include:

- Utilities
- Chemicals
- Salaries and Benefits
- Office expense
- Equipment
- Repairs
- Vehicle expense
- System insurance
- Professional services
- Other expenses that change relative to a user's water consumption



Sometimes you get lucky though. For example, the amount of electricity and chemicals will likely vary directly with any variations in water consumption by the customers. In this case, your expenses go up with consumption and so will your revenue. This is a good reason why your rate structure needs to be carefully designed to prevent any shortfalls in cases like this. In order for your increased revenue to cover your increased expenses, a sufficient rate structure must be in place, but that's a subject for another training module (Module 8, Rate Design Overview for Small Water Systems).



A lot of your expenses from last year can be used in the budget but you need to adjust them for inflation and increases first. When was

the last time anything got cheaper? Before you do that though, you should ask yourself some questions about the expenses for next year. Some of these questions can include:

- Are raises proposed for staff during the next budget cycle?
- Are the costs of benefits going up?
- Will there be any special projects or other circumstances that would require increased use of an engineer or solicitor?
- Is there any equipment, for both the plant and office, or vehicles which will be purchased or replaced next budget cycle? We deal with this further in the capital improvements program section.
- Will there be necessary, required general maintenance, such as pipe and meter replacement, pump repairs, etc.?
- Is the system insurance going to increase? It's often the case that the agent will contact you with increases before you have to do your next budget. Include that amount or feel free to shop around for a better deal.
- Are there any announced increases for the costs of utilities? PUC regulated utilities will need to notify you of increases.
- Is the postal rate going to increase? If you do a large number of mailings, this increase can be significant.
- Did you have any unanticipated expenses last year? If so, you may want to include an expense to fund a contingency reserve to cover unanticipated expenses.



Certainly that list of questions isn't exhaustive, but it puts you in the mindset of thinking about the future. That's what a budget is all about!



#### **Budgeting Tips:**

- Don't just use last year's revenues and expenses. When developing the budget, ask yourself questions about the future to help you better anticipate revenues and expenses.
- When projecting expenses for the upcoming year, some of the previous year's expenses plus an inflation factor can be used. However, be certain to include any new expenses you anticipate, such as a new truck, computer, pump replacement, etc., that you may not have had last year. Large expenditures are covered in the CIP section.



Once again, the local officials and personnel will likely be best able to answer these sorts of questions. Don't just let your engineer or other outside party put together a budget without considerable input and review from the local officials and personnel.



### Budgeting Tips:

- Even the most complicated budget will be inadequate if it doesn't include input from local officials and personnel and if it shows a shortfall.
- Remember the *K/SS* principle: *Keep It Simple, Student!* Don't do more budgeting than you need.



So now might be a good time to apply what we've learned. Let's try an example.

### **Exercise #2**

The Smallville Water Company liked your work so much that they asked you to help them with the entire revenue section of the budget. Since you spoke to them last, some information has changed. The system has provided the following new information:

Fiscal year:	1-1 to 12-31
Customers:	200
Gallons billed last year (000's):	15,000
Water rate (base):	\$ 15.00/month
Water rate (usage):	\$ 2.00/1000 gallons
Delinquency rate:	5%
New customers (July 1):	3
Tap fee:	\$1,500/customer
Bulk sales in gallons (000's):	500 (billed at the same rate)

Pair up or work individually to determine the water system's projected revenue based on this information. Use the space on the next page to complete your work.





Most of you probably remember this from the first exercise:

$$(200 \text{ cust.} * 12 \text{ mths} * \$15/\text{mth}) + (\$2/\text{water unit} * 15,000 \text{ water units})$$

$$= \$36,000 + \$30,000 = \$66,000$$

$$\$66,000 * (1.0 - 0.05) = \$62,700$$

That covers the existing customers, but you are getting 3 more half way through the year so you need to include them. You need to project their contribution to the system revenue.

In order to find the new customer revenue, you need to find the monthly average water consumption per customer:

$$(15,000 \text{ water units} / 12 \text{ months}) / 200 \text{ customers} = 6250 \text{ gallons} = 6.25 \text{ water units}$$

You need to do the following to determine the user fees the new customers will contribute in the second half of the year:

$$(3 \text{ customers} * 6 \text{ months} * \$15/\text{month}) + (3 \text{ cust.} * 6.25 \text{ water units} * \$2/\text{water unit} * 6 \text{ months}) = \$270 + \$225 = \$495$$

Don't forget to adjust it by the delinquency rate:

$$\$495 * (1.0 - 0.05) = \$470.25$$

User revenue should be:

$$\$470.25 + \$62,700 = \$63,170.25$$

They will also pay tap-fees of \$1500 per customer, so they should contribute another \$4500. We're going to assume they all actually pay this. If you have reason to believe otherwise, use your judgment.

Also, the system anticipates bulk sales of 500,000 gallons:

$$\text{\$2/water unit} * 500 \text{ water units} = \text{\$1000}$$



That was a little messy so let's clean it up here. The revenue projections look like this:

User revenue:	\$63,170.25
Tap fees	\$ 4,500
Bulk sales:	<u>\$ 1,000</u>
Total projected revenue:	\$68,670.25

Now that's easier to read!



We may as well finish what we started and try to work out the expenses section of the budget.

### **Exercise #3**

The Smallville Water Company was suitably impressed by how thorough you were with the revenue projections that you've been asked to help with the expense section of the budget. The system has provided the following expenses from its last year:

Salaries/benefits:	\$15,000
O&M:	\$ 5,000
Chemicals/Testing:	\$ 4,000
Professional Services:	\$ 5,000
Debt service:	\$20,000
Debt service reserve:	\$ 2,000
Admin/Office:	\$ 2,400

System insurance:	\$ 2,500
Electricity:	\$ 3,600
Vehicle:	\$ 1,200
Miscellaneous:	\$ 1,200

Those are the expenses from the last twelve months. These should be adjusted by an inflation factor of 2% unless otherwise you have other information. Below are a few things the water system indicated will happen next year:

- 5% salary/benefit increase as enacted by the board
- The office will need a new \$1000 computer
- The PUC regulated electric company has informed you that there will be a 4% rate increase
- The insurance agent has called to say that the insurance premium for next year will increase by \$500
- A new test will be required next year that costs \$50/month.
- The auditor fee will increase by \$200 next year.

In condensed form, that gives us the following increases next year:

Salary/benefit	5%
Office expense	\$1000
Electricity	4%
Insurance	\$ 500
Testing	\$ 50/month
Auditor	\$ 200

Pair up or work individually to determine the water system's projected expenses based on this information. Use the space on the next page to complete your work.





Did you get the following?

Salaries/benefits:	$\$15,000 * 1.05$	= 15,750
O&M:	$\$ 5,000 * 1.02$	= 5,100
Chemicals/Testing:	$\$ 4,000 + (50 * 12)$	= 4,600
Professional Services:	$\$ 5,000 + 200$	= 5,200
Debt service:	$\$20,000$	= 20,000
Debt service reserve:	$\$ 2,000$	= 2,000
Admin/Office:	$\$ 2,400 + 1000$	= 3,400
System insurance:	$\$ 2,500 + 500$	= 3,000
Electricity:	$\$ 3,600 * 1.04$	= 3,744
Vehicle:	$\$ 1,200 * 1.02$	= 1,224
Miscellaneous:	$\$ 1,200 * 1.02$	= <u>1,224</u>
Total expense:		= 65,242

These can now be used as the projected expenses for the budget.



So in a nutshell, the Smallville Water System has the following simplified budget:

Revenue:	\$68,670.25
Expense:	<u>\$65,242.00</u>
Total Income:	\$ 3,428.25

The system will show a surplus next year, so it appears that the rate structure is sufficient to support the system since the system will make money during the next budget cycle. Wrong! Remember there will be 3 new customers who will pay \$4,500 in tap-fees, which is more than the total income. The tap-fees are non-recurring revenue

that the system will not receive from those customers the following year. Also, nothing was budgeted for capital improvements, an operating reserve fund, or a contingency fund. That may be OK for next year but it will need to be budgeted in the future. The rate structure will have to be revised before the next budget process and it is recommended that it should be done now.



### **Budgeting Tips:**

- It is important to include an O&M reserve or other reserve to cover unanticipated expenses in the upcoming year (they were left out of the examples on purpose).
- Having cash on hand in reserves can really help to get the system out of a bind during emergencies and other times.
- There is no hard and fast rule in determining how much to put in reserves. Use your good judgment initially and adjust accordingly in the future.



This was a pretty basic example of a budget but it fairly well covers everything a small system can expect to need to project in a budget. You can see the completed budget in Appendix 1 in your workbook. Many sources offer worksheets and other aids that can be used to facilitate this process. If you have access to any, feel free to use them but remember that there is no “one-size fits all” approach to budgeting and no worksheet will do the work for you, especially when it comes to thinking about the future. Only you and other local officials and personnel can do that.

Additionally, there is an optional exercise you can work through after the course if you want more practice.



### **Budgeting Tips:**

- There is not one best method of budgeting that fits every water system.
- Budgets should be not be an individual effort but a team effort that includes local officials and personnel who are most familiar with the workings and needs of the system.

## **Capital Improvement Planning (CIP)**



Smallville has a pretty good budget now, but it only covers one year. Although you don't have to do more than a year, budgets can be done out to 3, 5, even 10 years or more. A major drawback of a one year budget is that it may not consider some things such as necessary replacement of major equipment in the years following. That's where Capital Improvement Planning, or CIP, comes in.



What is CIP anyway? CIP is a five step planning process where the necessary future acquisition or replacement of expensive parts, repairs, or procedures (capital improvements) are considered.

What? Perhaps a very simple example will help. You know that in three years you will have to replace a \$1500 pump. You may not have the money to replace it when the time comes. Through CIP, this will be identified and it will show that you should include \$500 in your budgeted expenses for the next three years so you will have the money to pay for its replacement in the future. CIP is more complex

but it has the same underlying idea – budget now for major expenditures you have to make in the future.



Before we begin to describe CIP in more detail, you may be wondering why you need to go through the effort. Here are a few reasons you should perform CIP:

- Avoid budget shortfalls and cash flow problems in the future
- Protect public health and welfare by having the funds ready to use for the replacement of critical plant components
- Provide a window into the future financial situation of the water system
- Reduce needless or frivolous spending of surplus funds by earmarking them for future expenditures
- Reveal that the current rate structure is inadequate to meet system needs
- Provide the necessary time to apply for funding by identifying major future expenditures now



Those are all pretty convincing arguments. Before you start the CIP planning process, you need to make a few decisions. These include:

- Who to include on the CIP team and who is to be the lead?
- How to include public input?

- How long to plan for and what constitutes a capital improvement? (smaller systems may have a different definition than larger systems)
- How often to update the CIP program and schedule?



When you've made those decisions, you can jump right into the planning. Here are the five steps in the CIP process.

1. Inventory existing capital equipment conditions
2. Evaluate existing capital equipment conditions
3. Prioritize the capital improvement needs
4. Identify the funding and/or rate restructuring options
5. Schedule the capital improvements to match the funding

Let's discuss each step in a little more detail.



The first step is undertaken to inventory existing capital equipment conditions. Before you can inventory something, you need to know what it is first. So what would be considered a capital improvement? The first slide of this section provided a definition, so we'll go over a few examples here. Capital improvements would include:

- New or replacement mains or lines
- Pumps
- Vehicles

- Tank painting
- New or replacement equipment at the plant
- Pretty much anything that costs a lot but isn't replaced regularly

You get the gist of it, but as was said before smaller systems may differ in the definition relative to larger systems. For example, Bigtown Water Department with 100,000 customers may not consider the replacement of a \$1500 pump to be a capital improvement but Smallville, with its 200 customers, does.

In the first step, you will sit down with the operators and other local officials and personnel to prepare an inventory of the major items that will need to be replaced in the future. This inventory should be well organized, likely by function, so it is of some use for the next step.



OK, you have an inventory of everything that is considered a capital improvement. What now? The second step is to evaluate what you've inventoried including how long until the capital improvement is likely needed, how much it is likely to cost, and its importance to public/employee health and safety, environmental concerns, legal obligations, nuisance, efficiency, convenience, etc.



Based on your evaluations, you now need to prioritize your future capital improvements in step 3. If you've done a good job evaluating, prioritizing should be a breeze. You can rank order them based on most critical to least critical or any other method you see fit to use. Just make sure you can justify how you have ranked the capital improvements. In general, it is better to have cash on hand to pay for

capital improvements than taking loans since you will not have to pay interest. That's why it's so important to fund your capital improvements in advance!



You now know the priorities you have in making capital improvements. You also know when you'll have to make them and how much it will cost. Now comes the hard part in step 4. Where to come up with the money?

Maybe you are lucky enough that your system has sufficient surplus funds at the end of each budget cycle to fund your capital improvements, but most of you probably aren't. So you have two ways to come up with the money, rate restructuring or debt funding.

You should consider rate restructuring first since your system should be self sufficient. It is possible that increases in the rate will enable you to put enough in reserve to keep pace with your capital improvement expenditures. However, you may need a lot of money soon and raising the rate won't be enough to put funds in reserve to cover the capital improvements. In this case you must consider taking additional debt to fund the improvements. Thankfully through CIP you've identified this early enough that you have sufficient time to make the appropriate and necessary funding applications.



Grant funding may be available to pay for part of very large capital improvements. However, grants are very limited and there is always a high demand so you cannot count on this to pay for your capital improvements. If your funding is not 100% grant, your rate will need to increase to cover the additional debt repayment.

Don't forget to include the capital improvements reserve in your future budgeting! Otherwise the funds may be spent improperly and not saved for future capital improvements.



Make sure that your capital improvements do not cause the rate to become unaffordable for your customers. You may run into this problem if you have many “wish-list” items improperly prioritized. There are metrics or other “rules of thumb” you can use to determine affordability such as the annual cost of water less than 1.5-2.0% of the Median Household Income of your customers. Bear in mind that there may be capital improvements you must make in the future regardless of how they affect affordability.



Once the first four steps are completed, you can begin to schedule the capital improvements in Step 5. This schedule becomes your capital improvements program. However, once done this is not set in stone nor does it obligate the water system to make any expenditures. This should be revisited annually to assess the changing needs of the system.

## Summary



Before we summarize what has been covered, let's see what you've learned so far. You'll find a short exercise in your workbooks. Take a

few minutes to answer the questions. You can look back through your workbooks if you need to.

### Budgeting and CIP Exercise

1. What are the two main sections of a budget?
  - a. \_\_\_\_\_
  - b. \_\_\_\_\_
2. Can you just use last year's expenses in your budget?
  - a. \_\_\_\_\_
3. Who should be involved in the budget process since they know the most about the water system and its future needs?
  - a. \_\_\_\_\_
4. Is it important to consider delinquencies in your budget process?
  - a. \_\_\_\_\_
5. If your budget shows a surplus for the next fiscal year, does it mean your rate structure is adequate?
  - a. \_\_\_\_\_
6. What does CIP stand for?
  - a. \_\_\_\_\_
7. What does a Capital Improvement Program consider that a budget may not?
  - a. \_\_\_\_\_
8. Can water systems differ in what they consider a capital improvement?
  - a. \_\_\_\_\_



The key points of this module are:

- All budgets have two main sections:
  - Revenue
  - Expense

- Revenue is mainly determined by the rate structure, the number of customers and the water consumed.
- Expenses are mainly determined by the debt of the system, salaries, utilities, and operations and maintenance (O&M) costs.
- Revenues should exceed expenses every year to ensure financial capacity of the system.
- Projected revenues and expenses can be determined a number of ways including the use of historical data.
- Budgets can range from fairly simple to very complex depending on the size and needs of the system.
- No single budget type is best for all systems.
- Capital improvements planning (CIP) should be done annually as part of the budget process.
- The capital improvements program funding should be included in every budget.
- The Capital Improvement Program is a long range program to add or replace equipment, vehicles, and other capital (or “big-ticket”) items that will be funded through significant reserves or additional debt.
- Budgets and Capital Improvement Programs are only guidelines and do not legally obligate the system to make the scheduled expenditures. Deviations from these are often justified and/or necessary for a variety of reasons.

## Resources and References



**Instructor Note:** *Display Slide #37.*

The following are references and resources you can use when you have to prepare a budget or CIP for your water system:

PA Department of Environmental Protection, Technical Assistance and Outreach, Dennis Lee, (717) 772-4058

RCAP Solutions, Don Schwartz, PA/NJ Program Manager, (814) 861-6093

University System of Maryland, Environmental Finance Center  
Jean Holloway, Training Manager, (301) 403-4220

“Capital Improvements Planning” presentation by Jean Holloway

The complete list of training modules includes:

- Module 1, Water Supply System Basics Operations
- Module 2, Responsibilities of Governing Boards
- Module 3, The Safe Drinking Water Act
- Module 4, Dealing with Consultants, Technical Assistance Providers, Regulators, and Funding Agencies
- Module 5, The Basics of Accounting and Finance for Small Water Systems
- Module 6, Business Planning for Small Water Systems
- Module 7, Budgeting and Capital Improvements Planning Overview for Small Water Systems
- Module 8, Rate Design Overview for Small Water Systems
- Module 9, Bidding, Purchasing, and Leasing
- Module 10, Project Management Overview for Small Water Systems

## APPENDIX 1

### Smallville Water System - Operating Budget

#### *Revenues*

User fees:	\$63,170.25
Tap fees	4,500.00
Bulk sales:	<u>1,000.00</u>
Total revenue:	\$68,670.25

#### *Expenses*

Salaries/benefits:	\$15,750.00
O&M:	5,100.00
Chemicals/Testing:	4,600.00
Professional Services:	5,200.00
Debt service:	20,000.00
Debt service reserve:	2,000.00
Admin/Office:	3,400.00
System insurance:	3,000.00
Electricity:	3,744.00
Vehicle:	1,224.00
Miscellaneous:	<u>1,224.00</u>
Total expense:	<u>\$65,242.00</u>
<i>Total income</i>	<i>\$ 3,428.25</i>

**Note that the total income does not exceed the amount of non-recurring tap-fees. This indicates that the rate will need to be adjusted. Additionally, the capital improvements program and other reserves are not funded in this budget. Be sure to include them in your own budget!**

## APPENDIX 2

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### Module 7 Optional Exercise

#### Water Supply Budget Calculations

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#### A. General Elements of a Budget: Values for Pheasant Run example:

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- Customers	45
- Gallons billed previous year	2,700,000
- Basic Water Rate	\$12.50/month
- Water Consumption Rate	\$3.00/1,000 gal
- Delinquency Rate	5%
- Projected # New Customers	5
- # Months new cust. Present	3
- New Tap Fee	\$700
- Bulk Sales	\$25,000
- Salaries/Benefits	\$9,000
- Operation & Maintenance	\$3,500
- Chemicals/Testing	\$1,500
- Professional Services	\$3,500
- Debt service	\$15,000
- Debt service reserve	\$1,000
- Administration/Office	\$1,500
- System insurance	\$1,000
- Electricity	\$2,000
- Vehicle	\$500
- Miscellaneous	\$1,000
- Inflation Factor	1%
- Salary/benefit increase	3%
- Office purchases	\$500
- Utility rate increases	2.5%
- Insurance premium increases	\$250

#### B. Steps for Calculating an Annual Water Supply Budget:

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Step 1 - Determine the maximum projected revenue

Step 2 - Adjust the projected revenue for delinquent payments

Step 3 - Factor in new customers

Step 4 - Adjust the delinquency rate and tap rates for new customers

Step 5 - Add in other revenue sources

Step 6 - Determine projected expenses

Step 7 - Adjust projected expenses for inflation and expense increases

Step 8 - Subtract revenue from expenses to get a budget total

**C. Example Calculations using the Pheasant Run figures:**

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**Step 1 – Determine Maximum Projected Revenue:**

The Pheasant Run Development Water System has 45 customers. Each customer is billed a basic rate of \$12.50 a month for their drinking water. The consumption rate is \$3.00 per 1,000 gallons. During 2003 (Jan-Dec), the community used 2,700,000 gallons of water. What revenue can Pheasant Run expect during 2004?

[(Total customers) (12 months)(basic water rate)] + [(water consumption rate) (total gallons used previous year)]

First, let's plug the numbers into the calculation:

[(45 customers) (12 months)(\$12.50)] + [( \$3.00 ) (2,700,000 gallons)]  
month 1,000 gallons

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Next, let's cancel out the units:

[(45 customers) (~~12 months~~) (\$12.50)] + [( \$3.00 ) (2,700,000 ~~gallons~~)]  
month 1,000 gallons

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(6,750) + [(0.003) (2,700,000)] (6,750) + (8,100)

Maximum Pheasant Run projected revenue for 2004= \$14,850.00

**Step 2 – Adjust the Projected Revenue for Delinquent Payments:**

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During 2003, the manager of the Pheasant Run Water Supply found that 5% of the residents were delinquent with their water system payments. If their projected revenue for 2004 is \$14,850.00, what will their adjusted projected revenue be once they factor in delinquencies?

(unadjusted projected revenue) x [(100% revenue received) – (% revenue not received)]

(\$14,850) x [(1.0) – (0.05)] (\$14,850) x (0.95)

Pheasant Run adjusted projected revenue for 2004 = \$14,108

**Step 3 - Factor in new customers:**

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Recently the Pheasant Run water system found out they will have 5 new customers that will be moving in the last 3 months of the year.



Total 2004 adjusted projected revenue = \$43,000

**Step 6 – Determine projected expenses**

Pheasant Run is using the expenses from 2003 to project for 2004:

**2003 Expenses:**

- *Salaries/Benefits	\$ 9,000
- Operation & Maintenance	\$ 3,500
- Chemicals/Testing	\$ 1,500
- Professional Services	\$ 3,500
- *Debt service	\$15,000
- *Debt service reserve	\$ 1,000
- *Administration/Office	\$ 1,500
- *System insurance	\$ 1,000
- *Electricity	\$ 2,000
- Vehicle	\$ 500
- Miscellaneous	\$ 1,000
<b>Total expenses from 2003:</b>	<b>\$ 39,000</b>

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**Step 7 – Adjust projected expenses from 2003 for inflation and expense increases – then use this expense amount for 2004:**

Pheasant Run expects the following inflation and expense increases:

- Inflation Factor	2%
- Salary/benefit increase	3%
- Office purchases	\$500
- Utility rate increases	2.5%
- Insurance premium increases	\$250

(\*The Inflation factor does not apply to salaries, debt service, debt service reserve, system insurance, administration/office, or the utility [e.g. electricity rate] because the above amounts already include inflation rates.)

Overall 2% inflation factor = (projected expenses that do not have applied inflation) x (2%)

Example: Operation & Maintenance – (\$3,500) x (0.02)  
= \$70

Total O&M cost for 2004 (\$3500 from 2003 + \$70 inflation rise) = \$3,570

3% Salary/benefit increase = (salary/benefits) x (3%)  
= (9,000) x (0.03)  
= \$270

$$\begin{aligned}
 \underline{2.5\% \text{ Utility rate increase (electricity)}} &= (\text{electricity}) \times (2.5\%) \\
 &= (\$2,000) \times (0.025) \\
 &= \$50
 \end{aligned}$$

Using the above calculations where applicable, let's adjust our expenses from 2003 to 2004:

<b>Expenses</b>	<b>2003:</b>	<b>2004:</b>
- *Salaries/Benefits	\$ 9,000	\$ 9,270
- Operation & Maintenance	\$ 3,500	\$ 3,570
- Chemicals/Testing	\$ 1,500	\$ 1,530
- Professional Services	\$ 3,500	\$ 3,570
- *Debt service	\$15,000	\$15,000
- *Debt service reserve	\$ 1,000	\$ 1,000
- *Administration/Office	\$ 1,500	\$ 2,000
- *System insurance	\$ 1,000	\$ 1,250
- *Electricity	\$ 2,000	\$ 2,050
- Vehicle	\$ 500	\$ 510
- Miscellaneous	\$ 1,000	\$ 1,020
<b>Total expenses :</b>	<b>\$ 39,500</b>	<b>\$40,770</b>

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### **Step 8 - Subtract revenue from expenses to get a budget total**

Pheasant Run's 2004 projected adjusted budget:

Total adjusted revenue:	\$43,000
Total adjusted expenses:	-\$40,770
<b>Budget total</b>	<b>\$ 2,230</b>

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### **Step 9 – Further investigation**

Pheasant Run's 2004 projected income is \$2,230. This is less than the nonrecurring tap-fees of \$3,500 from the new customers. Consequently, the rate structure is insufficient and adjustments should be made to ensure that the system will generate sufficient revenue in the future.