# Capital Planning Approaches and Tools

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# Capital Planning Discussion

- Are you doing capital planning?
- What “tools” do you use?
- Why is this important?

# Ways To Pay

- Pay as you go (current receipts)
- Save in advance and pay
- Pay later (someone loans you money)
- Grants (let someone else pay)

# Grants Aren’t Completely Free Money

- Not sustainable finance
- Application for the grant can be expensive – staff time and money
- Applications can take months to process
- Often lots of strings attached
- Often require a percentage match
- Lots of competition

# Capital Improvement Program

- Identify regulatory deficiencies (discuss with regulatory agencies, look at proposed regulations, talk to consultants) in a 10-20 year window
- Identify population changes (growth, stagnation, decline)
- Identify deferred maintenance problems or where current service is inadequate

# Capital Improvement Program - Timelines

- Use **Asset Management Plan** to plan for capital expenses in the long term (~20 years)

# Capital Improvement Program - Timelines

- Create a **Capital Improvement Plan** with a narrower timeline (~5 years) in more detail. Specify the projects and accurate estimates of cost. Plan where money will come from.

# Capital Improvement Program - Timelines

- Create a **Capital Improvement Budget** with an even narrower timeline (1 – 2 years) committing funds for the planned capital projects. Get it approved/adopted.

# Where Can You Find the Prices?

- Call a vendor.  Actually, call a few.
- Ask other systems
- Look at past expenses but adjust for increases in costs

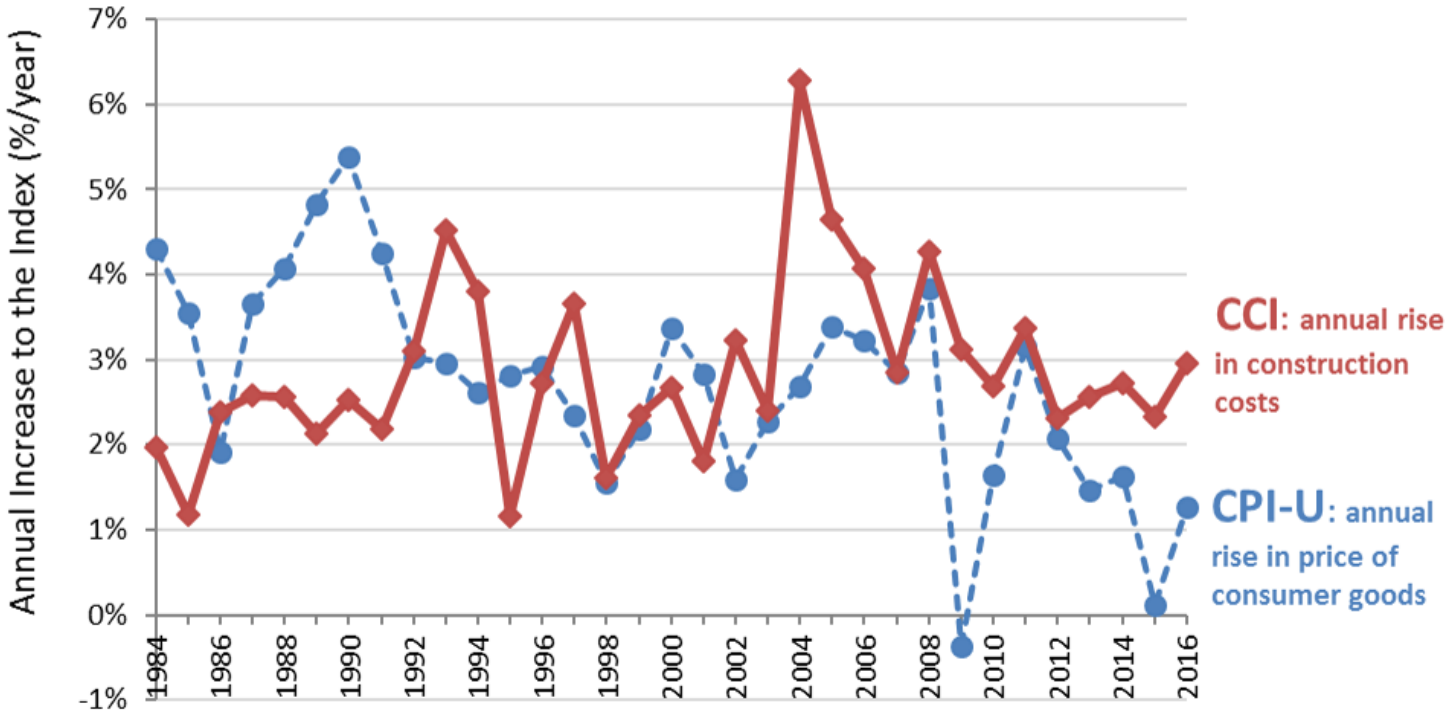
# Measures of Inflation

- **Consumer Price Index (CPI)**—measure of the average change over time in the prices paid by urban consumers for a market basket of consumer goods and services

- **Construction Cost Index (CCI)**—average prices for labor and key construction materials from 20 cities across the United States

## The Construction Cost Index (CCI) has been rising faster than the Consumer Price Index-Urban (CPI-U) in recent years

Construction costs (CCI) rose on average of 2.6%/year in the last five years, while consumer goods (CPI-U) only rose an average of 1.3%/year in the same period




Data graphed by the Environmental Finance Center at the University of North Carolina, Chapel Hill.
Data Sources: Bureau of Labor Statistics (CPI-U), Engineering News-Record ENR.com (CCI), InflationData.com (CPI-U), USDA Natural Resources Conservation Services (spreadsheet containing CCI and CPI-U).

Source: *Environmental Finance* blog post available at http://efc.web.unc.edu/2012/09/26/using-an-index-to-help-project-capital-costs-into-the-future/

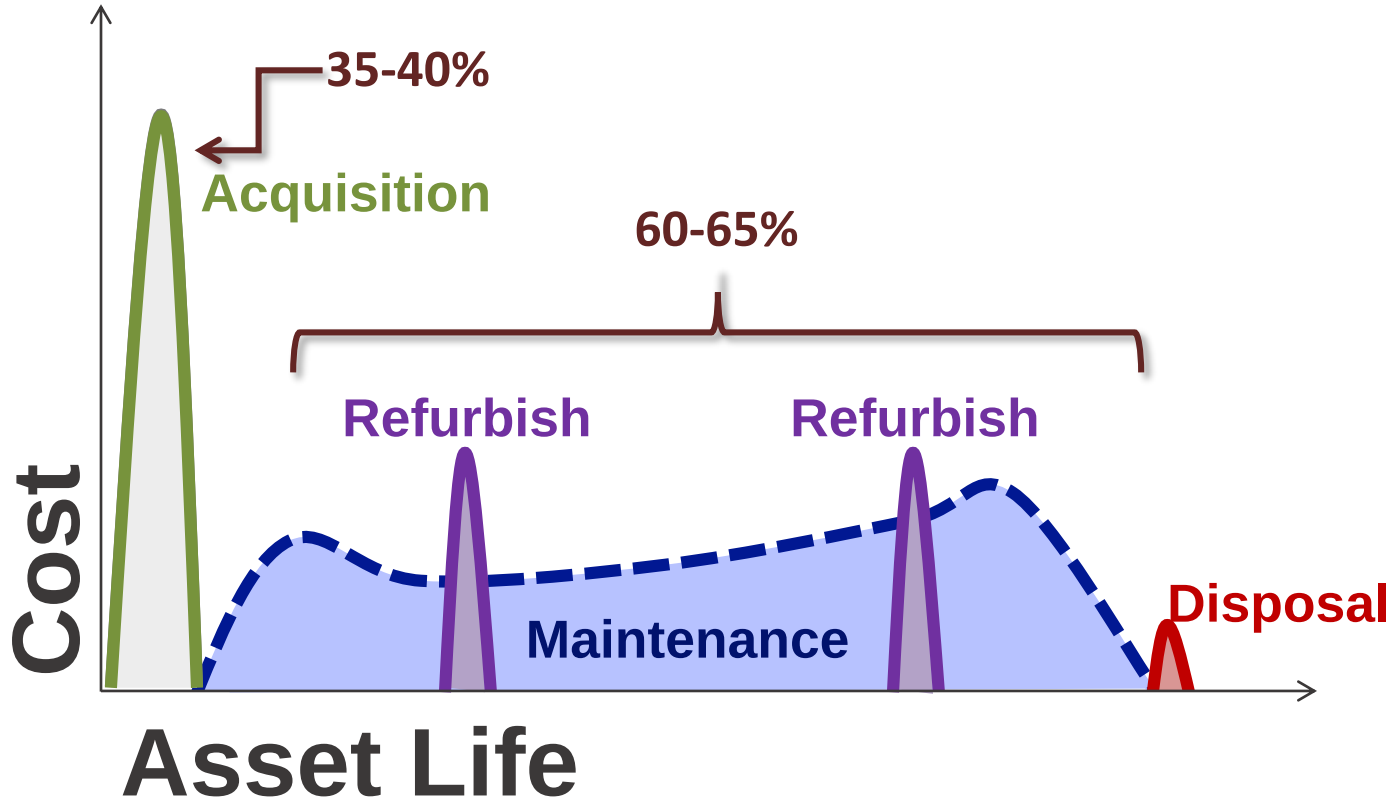
# Long Term Capital Planning

- This is strongly related to asset management
- An official multi-year document that identifies and prioritizes capital projects, identifies funding sources, and sets timelines

# Reminder: Life Cycle Costing

- Purchase Price ≠ Total Price

# Capital Investments are Just the Tip of the Iceberg…




Source: Adapted from Steve Allbee, USEPA

# WBOP and Other Tool Discussion

- Have you heard of the Waterworks Business Operation Plan (WBOP)?
- Are you using the WBOP or other planning tools?
- What aspects do you find most helpful about the tools you use?

# Waterworks Business Operations Plan

- Virginia Department of Health Office of Drinking Water assess a system's...
  - **Technical Capacity** – physical assets, as well as knowledge and skills to operate the system
  - **Managerial Capacity** – planning and organizational expertise
  - **Financial Capacity** – the ability to generate enough revenue, leverage funding, and manage funds to meet operational, maintenance, and expansion costs

VDH VIRGINIA DEPARTMENT OF HEALTH
To protect the health and promote the well-being of all people in Virginia

# WATERWORKS BUSINESS OPERATIONS PLAN

Please download one of the following files depending on your waterworks type:

| | |
|---|---|
| Community Business Operations Plan.zip | Serving residential populations |
| NTNC Business Operations Plan.zip | Serving the same non-residential population |
| NTNC EZ Plan.zip | Serving Pre-school/Daycare Facilities |
| TNC Form (Word Document) | Serving differing non-residential populations |

# Documents Downloaded

- Community Excel Workbook (Excel)
- Community Form (Word)

Planning tools

- Community Instructions Appendices A-E (PDF)
- Community Staff Review Guide (Word)

Informative

# WBOP – Community Form

- Part 1 – Waterworks Information
- Part 2 – Staffing
- Part 3 – Management, Operations & Procedures
- Part 4 – Planning
- Part 5 – Financial Information
- Part 6 – Sustainability Improvements
- Part 7 – Worksheets and Supporting Documents
- Part 8 – Statements for Owner Signature

# WBOP – Excel Spreadsheet

- Data needed to populate the spreadsheet:
  - Financial reports
  - Up-to-date budget
  - Rate sheet
  - Capital improvement plan, if you have one
  - Census data

# WBOP – Excel Spreadsheet

**Worksheet 1** – Six-Year Technical, Managerial & Financial Commitment Summary

- Inventories revenues, expenses, CIP, and reserves
- Financial evaluation with analyses

| Line | FISCAL YEAR ENDING | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 |
|---|---|---|---|---|---|---|---|
| FINANCIAL EVALUATION | | | | | | | |
| 23 | TOTAL REVENUE REQ.(Add 9+13+19B+20B+21B+22B) | $ 1,286,751.00 | $ 2,982,799.00 | $ 1,254,535.00 | $ 1,290,247.00 | $ 1,343,909.00 | $ 1,343,909.00 |
| 24 | NET INCOME-BUDGET SURPLUS / DEFICIT (Line 4-23) | $ 63,049.00 | $ (1,690,289.00) | $ 76,951.00 | $ (59,976.00) | $ (61,386.00) | $ (61,386.00) |
| | | | | | | | |
| ANALYSES | | | | | | | |
| | | | | | | | |
| 27 | Revenues ≥ expenses | Sustainable | Not Sustainable | Sustainable | Not Sustainable | Not Sustainable | Not Sustainable |
| 28 | Operating Cash Reserve ≥ Minimum Balance | Sustainable | Sustainable | Sustainable | Sustainable | Sustainable | Sustainable |
| 29 | Emergency Reserve ≥ Minimum Balance | Sustainable | Sustainable | Sustainable | Sustainable | Sustainable | Sustainable |
| 30 | Debt Service Coverage Ratio | 1.41 | 0.11 | 1.55 | 0.56 | 0.56 | 0.56 |
| 31 | Debt Service Coverage Ratio > 1.15XDebt Service | Sustainable | Not Sustainable | Sustainable | Not Sustainable | Not Sustainable | Not Sustainable |
| 32 | Household Affordability Ratio (from Revenue Projection Wksht) | 0.93% | 0.93% | 0.93% | 0.93% | 0.93% | 0.93% |

## Explanation of Analyses

**Line 27: Revenues > Expenditures:** A "Not Sustainable" result on this analysis could mean the waterworks does not have adequate financial capacity. The waterworks should review the submittal for errors and/or consider the following:

1. Identify any expenses that can be eliminated or reduced
2. Review the revenues to determine if the rate structure can be modified to increase revenues, increase water rates, evaluate assessment of "special charges" when applicable, etc.
3. Consider whether or not consolidation or transfer of the waterworks is a better option.

If after reviewing the data this remains "Not Sustainable," document **Sustainability Improvements** which the waterworks will take in order to address the shortfall.

# WBOP – Excel Spreadsheet

## **Supplemental Worksheet** – Budget Documentation

- Provides a template to breakdown budget or import numbers from an existing budget

| | | | |
|---|---|---|---|
| 1 | **REVENUES** | | |
| 2 | Water Sales | $ | 315,000.00 |
| 3 | Fees and Service | $ | 7,000.00 |
| 4 | Other Revenue | $ | 10,000.00 |
| 5 | **TOTAL REVENUES (Add 2-4)** | **$** | **332,000.00** |
| 6 | **EXPENSES** | | |
| 7 | **Operation & Maintenance Expenses** | | |
| 8 | Salaries & Other Benefits (Operator) | | |
| 9 | Power & Other Utilities | $ | 16,850.00 |
| 10 | Chemical & Treatment | | |
| 11 | Monitoring | | |
| 12 | Materials, Supplies and Parts | | |
| 13 | Transportation Expenses | $ | - |
| 14 | Miscellaneous Expenses | $ | 27,100.00 |
| 15 | **Total Operation & Maintenance Expenses(Add 8-14)** | **$** | **43,950.00** |
| 16 | **General and Administrative Expenses** | | |
| 17 | Salaries & Benefits | $ | 305,681.00 |
| 18 | Office Supplies & Postage | $ | 25,725.00 |
| 19 | Insurance-Vehicle, Liability, and Workers Comp. | $ | - |
| 20 | Legal & Accounting | $ | 2,000.00 |
| 21 | Engineering & Professional Services | $ | 6,000.00 |
| 22 | Fees - and Taxes (VDH Waterworks, etc) | $ | - |
| 23 | Miscellaneous Expenses | $ | 700.00 |
| 24 | **Total General Administrative Expenses (Add I7-23)** | **$** | **340,106.00** |
| 25 | **Depreciation Expense (See Instructions)** | **$** | - |
| 26 | **TOTAL O, M & ADMIN EXPENSES (Add 15+24)** | **$** | **384,056.00** |

| | | |
|---|---|---|
| **TOTAL REVENUE REQ.(Add 26+28+40+44+48+52+ 56)** | **$** | **384,056.00** |
| **BUDGET SURPLUS (DEFICIT) (Subtract 5-58)** | **$** | **(52,056.00)** |

# WBOP – Excel Spreadsheet

**Supplemental Worksheet** – Revenue Projection

- Input:
  - Connections
  - Minimum charges
  - Commodity/volumetric rate
  - Minimum use
  - Breakdown of residential and commercial customers
  - Total gallons produced
  - Total gallons sold for residential and commercial

# WBOP – Excel Spreadsheet

## **Supplemental Worksheet** – Revenue Projection

- Output:

| CALCULATED RESULTS PAGE | | | | | | |
|---|---|---|---|---|---|---|
| FOR PROJECTED FISCAL YEAR | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 |
| **SECTION IV - WATER USE EVALUATION** | | | | | | |
| 18. Gallons of Water Produced | 3,500,000 | 3,552,500 | 3,605,788 | 3,659,874 | 3,714,772 | 3,770,494 |
| 19. Gallons associated with Res min use bills | 0 | 0 | 0 | 0 | 0 | 0 |
| 20. Gallons associated with Non-Res min use bills | 0 | 0 | 0 | 0 | 0 | 0 |
| 21. Residential Customers with > min use bill | 585 | 590 | 598 | 606 | 612 | 620 |
| 22. Gallons Associated with minimum use portion of all non-minimum use Residential Customers | 0 | 0 | 0 | 0 | 0 | 0 |
| 23. Non-Residential Customers with > minimum bill | 0 | 0 | 0 | 0 | 0 | 0 |
| 24. Gallons Associated with minimum use portion of all non-minimum non-residential customers | 0 | 0 | 0 | 0 | 0 | 0 |
| 25. Gallons applied to Residential commodity charge | 2,991,695 | 3,036,570 | 3,082,119 | 3,128,351 | 3,175,276 | 3,222,905 |
| 26. Gallons Applied to the Non-Residential commodity | 0 | 0 | 0 | 0 | 0 | 0 |
| **SECTION V - REVENUE SUMMARY** | | | | | | |
| 27. Annual Revenue from Res Min Bills | $ 8,820.00 | $ 10,495.80 | $ 11,668.86 | $ 12,592.64 | $ 18,942.00 | $ 21,801.00 |
| 28. Annual Revenues from Non-Res Min Bills | $ - | $ - | $ - | $ - | $ - | $ - |
| 29. Revenues From Res Non-min customers | $ 189,940.17 | $ 208,316.96 | $ 220,205.53 | $ 233,182.30 | $ 309,930.60 | $ 341,818.52 |
| 30. Revenues from Non-Res Non Min customers | $ - | $ - | $ - | $ - | $ - | $ - |
| *31. Revenues from Sale of Water* | $ 198,760.17 | $ 218,812.76 | $ 231,874.39 | $ 245,774.94 | $ 328,872.60 | $ 363,619.52 |
| *32. Total Annual Projected Revenues For the PWS* | $ 215,260.17 | $ 235,312.76 | $ 248,374.39 | $ 262,274.94 | $ 345,372.60 | $ 380,119.52 |
| **SECTION VII - AFFORDABILITY EVALUATION** | | | | | | |
| 33. Annual Average User Charge, AUC (Bill Per Residence) | $ 344.40 | $ 361.62 | $ 379.70 | $ 398.69 | $ 418.62 | $ 439.55 |
| 34. Monthly Average User Charge (Bill Per Residence) | $ 28.70 | $ 30.14 | $ 31.64 | $ 33.22 | $ 34.89 | $ 36.63 |
| 35. Median Household Income, MHI (From US Census) | $ 36,836.00 | $ 36,836.00 | $ 36,836.00 | $ 36,836.00 | $ 36,836.00 | $ 36,836.00 |
| 36. Household Affordability Ratio (AUC/MHI) | 0.93% | 0.98% | 1.03% | 1.08% | 1.14% | 1.19% |
| 37 Is the actual HAR <=2%? | YES | YES | YES | YES | YES | YES |

# WBOP – Excel Spreadsheet

## **Supplemental Worksheet** – Household Affordability

| COMMUNITY Waterworks | | | | | | |
|---|---|---|---|---|---|---|
| **Supplemental Worksheet: Household Affordability** | | | | | | |
| *Calculated cells are highlighted in Green ~ All financial figures automatically rounded to the nearest whole number ~* | | | | | | |
| **OWNER:** | | **PWSID NUMBER/S:** | | | | |
| | | | | | | |
| **FISCAL YEAR ENDING** | **2018** | **2019** | **2020** | **2021** | **2022** | **2023** |
| **HOUSEHOLD AFFORDABILITY RATIO** | | | | | | |
| 1. Annual Average User Charge, AUC (Bill Per Residence) | $ 279.00 | $ 306.00 | $ 318.00 | $ 339.00 | $ 357.00 | $ 372.00 |
| 2. Monthly Average User Charge (Bill Per Residence) | $ 23.25 | $ 25.50 | $ 26.50 | $ 28.25 | $ 29.75 | $ 31.00 |
| 3. Median Household Income, MHI (From US Census) | $ 41,163.00 | $ 41,163.00 | $ 41,163.00 | $ 41,163.00 | $ 41,163.00 | $ 41,163.00 |
| **4. Household Affordability Ratio (AUC/MHI)** | 0.68% | 0.74% | 0.77% | 0.82% | 0.87% | 0.90% |
| **AFFORDABILTY INDICATOR** | | | | | | |
| 5. Is the actual HAR <=2%? | YES | YES | YES | YES | YES | YES |

# WBOP – Excel Spreadsheet

## **Supplemental Worksheet** – Debt & Bond Reserve

**COMMUNITY Waterworks**

**Supplemental Worksheet: Debt & Bond Reserve**

*Calculated cells are highlighted in Green ~ All financial figures automatically rounded to the nearest whole number ~*

| OWNER: | PWSID NUMBER/S: |
|---|---|

| CURRENT COMPLETED PROJECTS - DEBTS - BONDS | TOTAL COST | ANNUAL PAYMENT | FINAL PAYMENT YEAR | RESERVE TO BE OBLIGATED PER DEBT | RESERVE YEARLY INSTALLMENT |
|---|---|---|---|---|---|
| | | $ - | | | |
| | | $ - | | | |
| | | $ - | | | |
| | | $ - | | | |
| | | $ - | | | |
| | | $ - | | | |
| | | $ - | | | |
| | | $ - | | | |
| | | $ - | | | |
| TOTALS | $ - | $ - | | $ - | $ - |
| CURRENT YEAR MINIMUM BALANCE REQUIRED | | | | $ - | |

**FUTURE DEBT PAYMENT AND RESERVE REQUIREMENTS FOR PROJECTS UNDER CONSTRUCTION OR PLANNED**

| PROJECTS - DEBTS - BONDS | TOTAL COST | PAYMENT BEGINS | ANNUAL PAYMENT | FINAL PAYMENT YEAR | RESERVE TO BE OBLIGATED PER YEAR PER DEBT | RESERVE YEARLY INSTALLMENT |
|---|---|---|---|---|---|---|
| | | | | | | |
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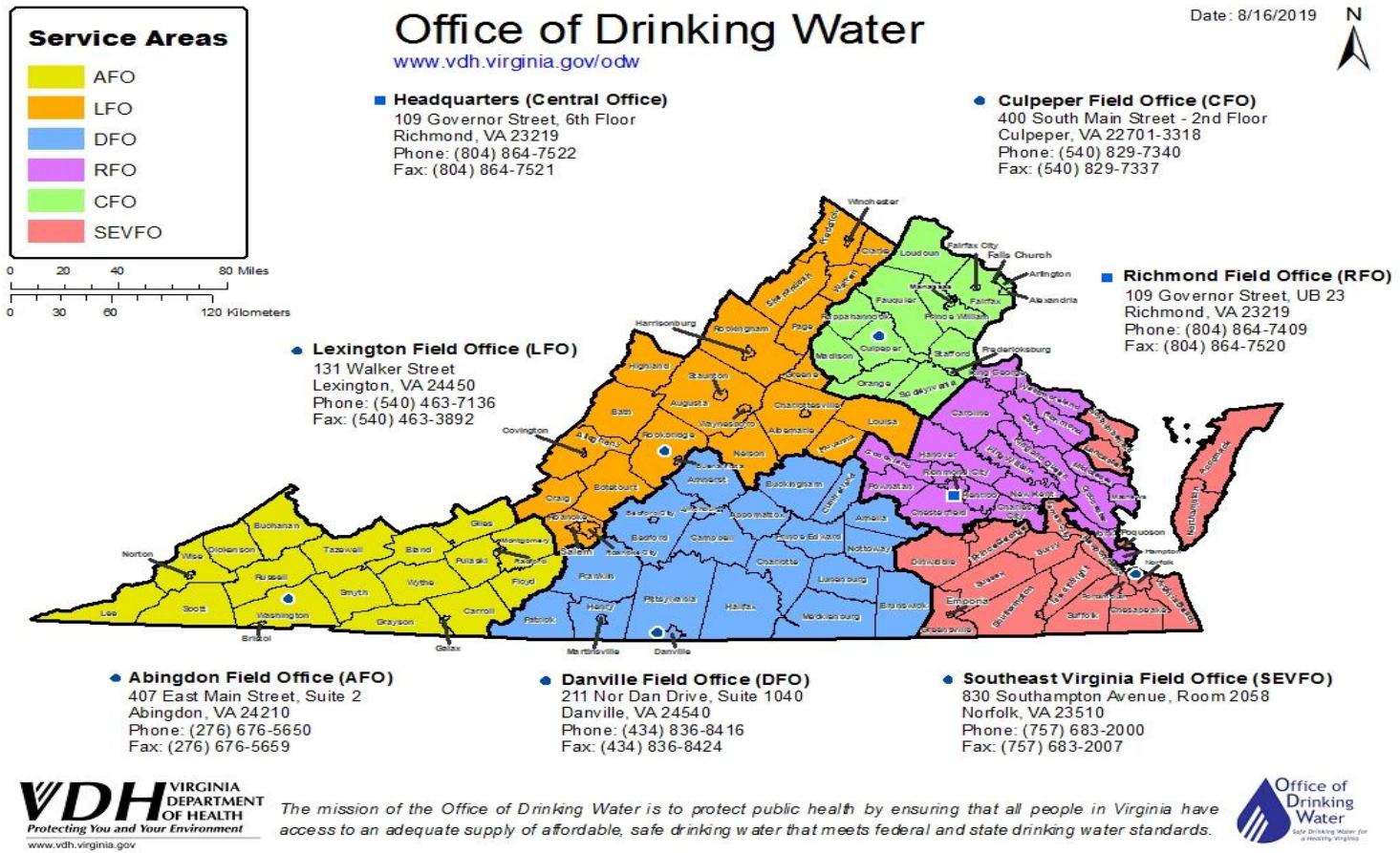
# Who to contact




ODW Capacity Development Division and the Sustainability Coordinators can assist

- **North-Central Region**
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- **Western Region**
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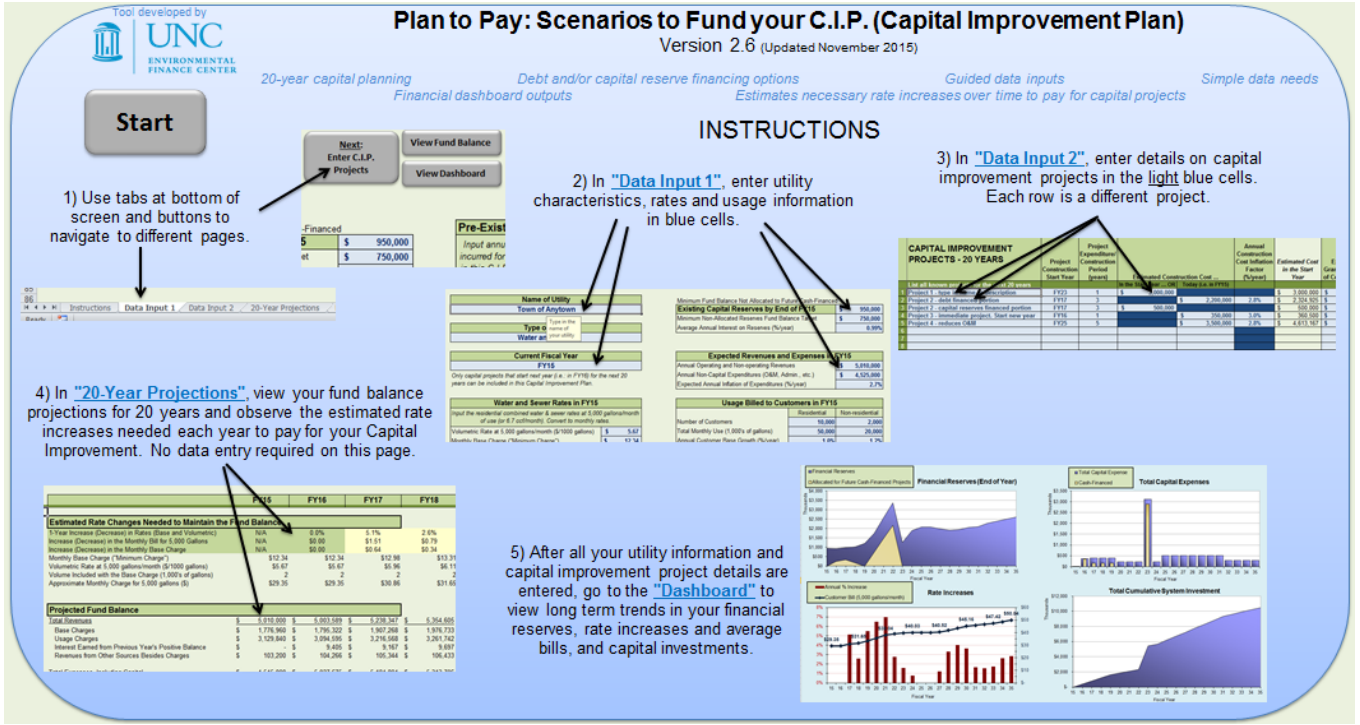
  tamara.anderson@vdh.virginia.gov

# Plan to Pay: Scenarios to Fund your C.I.P.

http://efc.sog.unc.edu or http://efcnetwork.org

Find the most up-to-date version in Resources / Tools

Free, simplified Excel tool allowing you to list your capital projects and plans for funding them, and automatically estimates rate increases



| | CAPITAL IMPROVEMENT PROJECTS - 20 YEARS | Project Construction Start Year | Project Expenditure/ Construction Period (years) | Estimated Construction Cost ... | | More info. Annual Construction Cost Inflation Factor (%/year) | Expected Grants at Time of Construction |
|---|---|---|---|---|---|---|---|
| | List all known projects for the next 20 years | Select here to sort by year | | In the Start Year ... ( | Today (i.e. in FY18 | | |
| 1 | Project 1 - type in name or description | FY27 | 2 | $ 2,000,000 | | | $ 100,000 |
| 2 | Project 2 - debt financed portion | FY21 | 3 | | $ 2,200,000 | 2.8% | $ - |
| 3 | Project 2 - capital reserves financed portion | FY21 | 3 | $ 500,000 | | | $ - |
| 4 | Project 3 - immediate project. Start new year | FY19 | 1 | | $ 350,000 | 2.0% | $ - |
| 5 | Project 4 - energy efficiency reduces O&M | FY29 | 5 | | $ 3,500,000 | 2.8% | $ - |

| Financing Mechanism: Debt Financing or Capital Reserves? | Term of Debt (years) | Interest Rate Charged for Debt (%/year) | First Year of Capital Reserve Allocation | Additional Annual O&M Costs ($/year) |
|---|---|---|---|---|
| Capital Reserves | | | FY22 | $ 2,500 |
| Debt Financing | 15 | 5.00% | | $ 10,000 |
| Capital Reserves | | | FY21 | $ - |
| Capital Reserves | | | FY19 | $ 1,500 |
| Debt Financing | 20 | 2.50% | | $ (250,000) |

| | Project cost in the start year net of grants | Number of years before project starts | Years of construction | Year payments end | Yearly allocations to reserves for capital reserve-financed projects | Number of years allocating to reserves for capital reserve-financed projects | Annual payment: debt service if debt-financed or cash payments during construction years if capital reserve-financed |
|---|---|---|---|---|---|---|---|
| 1 | $ 1,900,000 | 9 | FY27-FY28 | FY28 | $ 316,667 | 6 | $ 950,000 |
| 2 | $ 2,390,023 | 3 | FY21-FY23 | FY35 | | | $ 230,260 |
| 3 | $ 500,000 | 3 | FY21-FY23 | FY23 | $ 500,000 | 1 | $ 166,667 |
| 4 | $ 357,000 | 1 | FY19 | FY19 | $ 357,000 | 1 | $ 357,000 |
| 5 | $ 4,742,336 | 11 | FY29-FY33 | FY48 | | | $ 304,207 |