



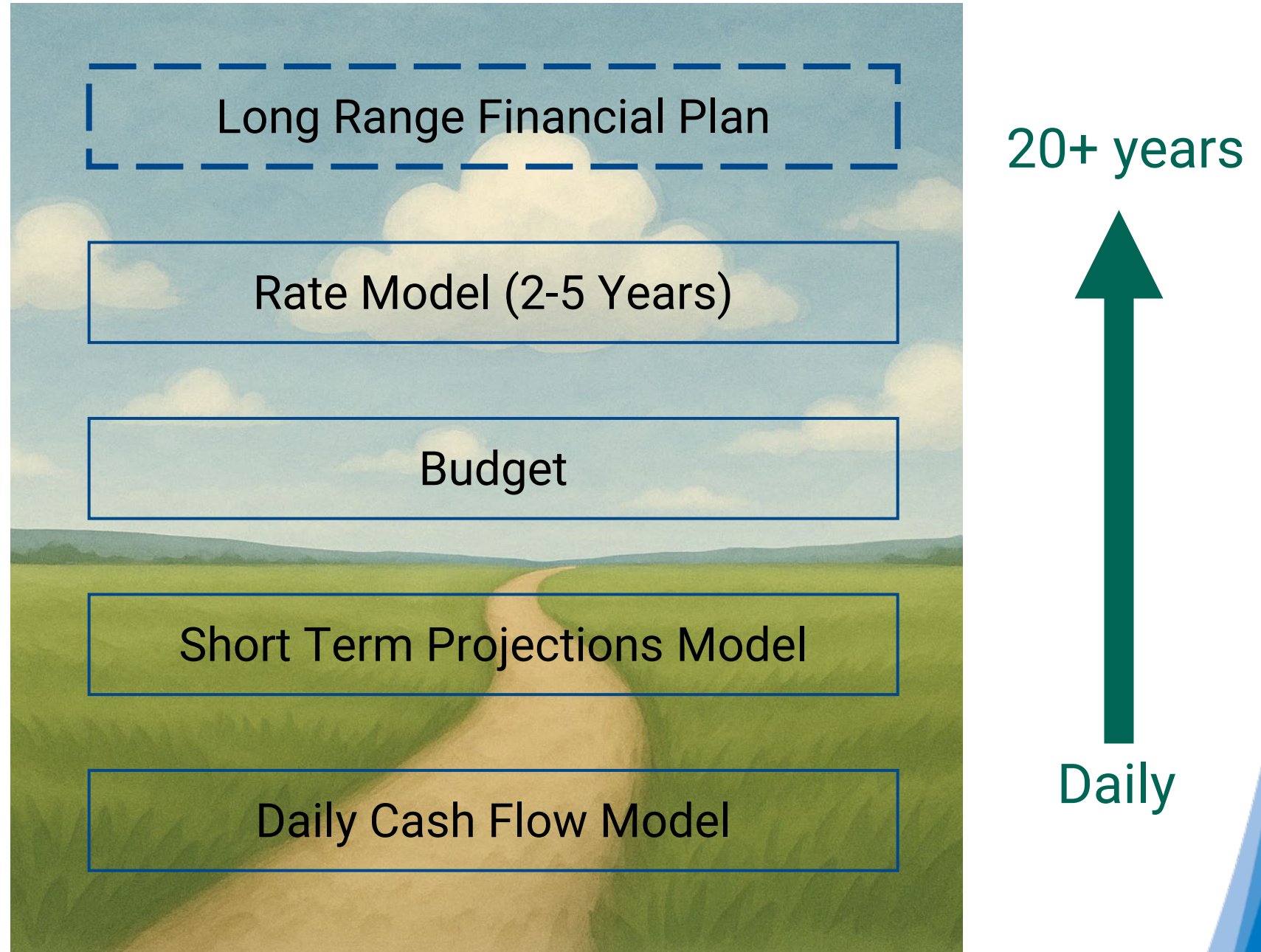
Long-Range Financial Planning for Water Utilities

ACWA 2025 Spring Conference

May 14, 2025

Long Range Financial Planning in Context

Financial Planning Horizons



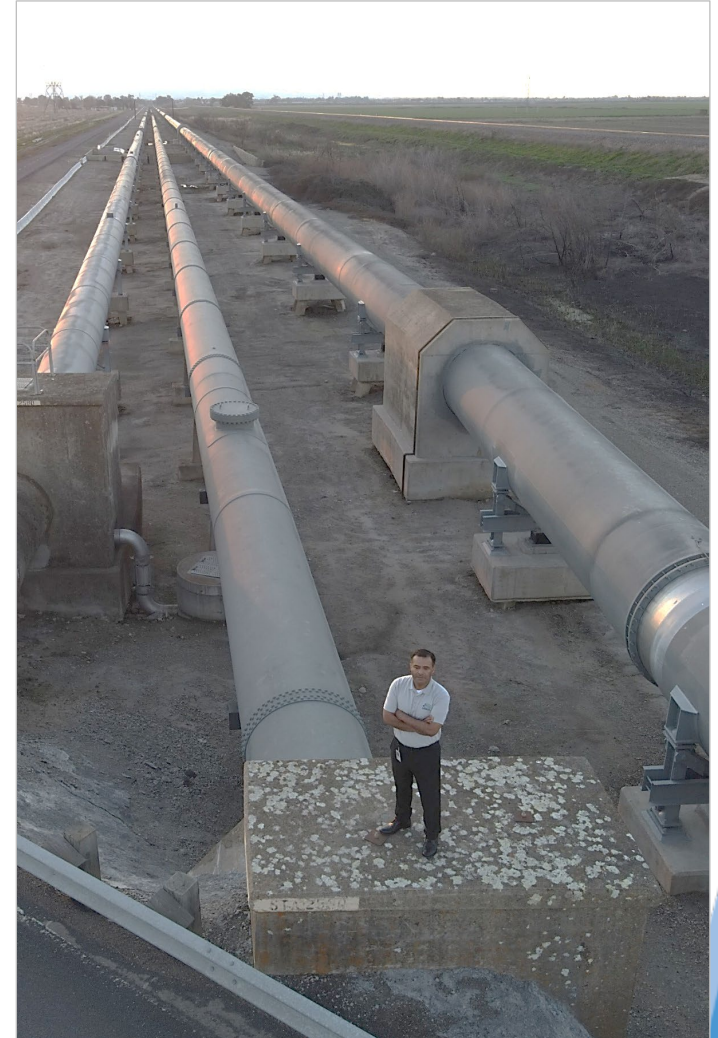
Case for Projecting Out 10, 20, 30+ Years

- All agencies have 1- or 2-year budgets
- Many forecast out a few years further (e.g., rate planning)
- Even with budgets/plans balanced, financial metrics could fall short of policy goals
 - Debt levels (DSC, % debt funded capital)
 - Rates (affordability metrics)
 - Future capital investment capacity
- Longer range projections help steer agency in a sustainable direction
- Helps preserves flexibility in an uncertain world



Challenges with Long Range Projections

- Uncertainty increases the further out you go
- Highly sensitive to assumptions
- Models can easily get out-of-date if not maintained
- Spreadsheets can be complex, difficult to update
- Requires agency buy-in for projections to be useful



Communication Tool

- With agency buy-in, projections can become a tool for internal and external communication
- Presentations to
 - Management
 - Capital plan committees
 - Council / Board Members
 - The public
 - Employee groups
- Helps explain financial sustainability and trade-offs



Long Range Modeling at EBMUD

- For years we updated a 5 year rate model (while informally projecting out 10 years)
- Desire to better understand use of debt, future debt burden, longer-term rates, and capacity for future uncertainties
- Over last two years, internally modeling out 10, 20, and 50 years
- Results helped guide recent capital improvement development
- For FY26-FY27 budget, formally projecting 10 years

Use of Debt in Financial Planning

Use of Debt in Financial Planning

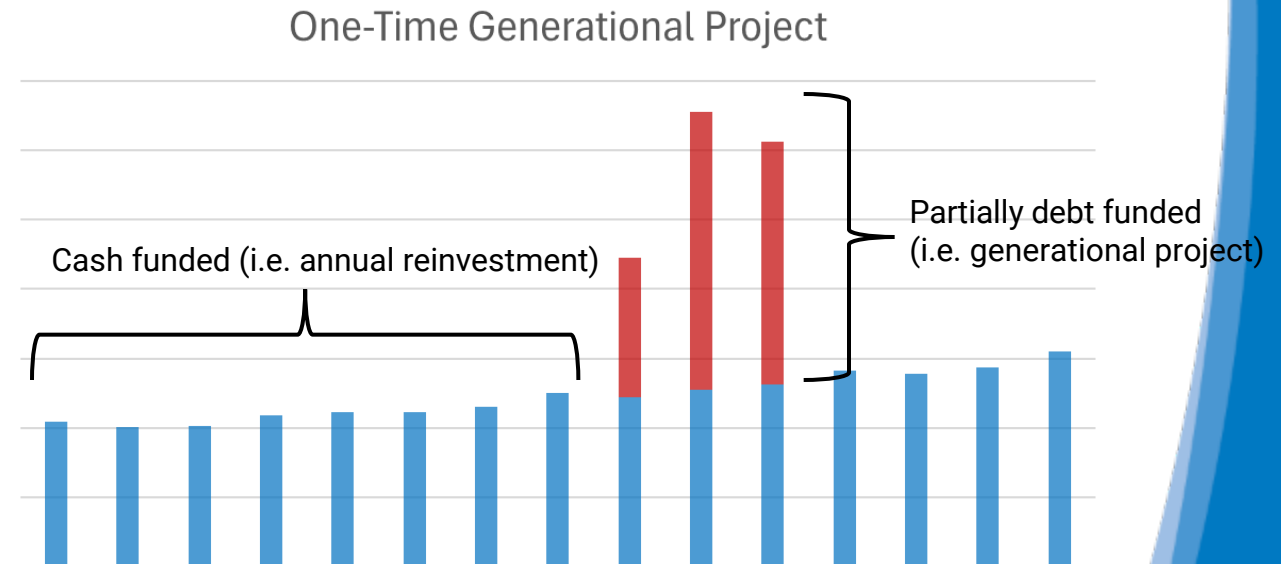
- Many capital-intensive agencies have debt in their capital structure
- Financial planning is particularly important for agencies with debt
 - Signing up for 30 years of fixed obligations
- Credit ratings must be monitored
 - Future financial metrics are important
- If debt is part of future capital, capacity to issue more debt must be maintained



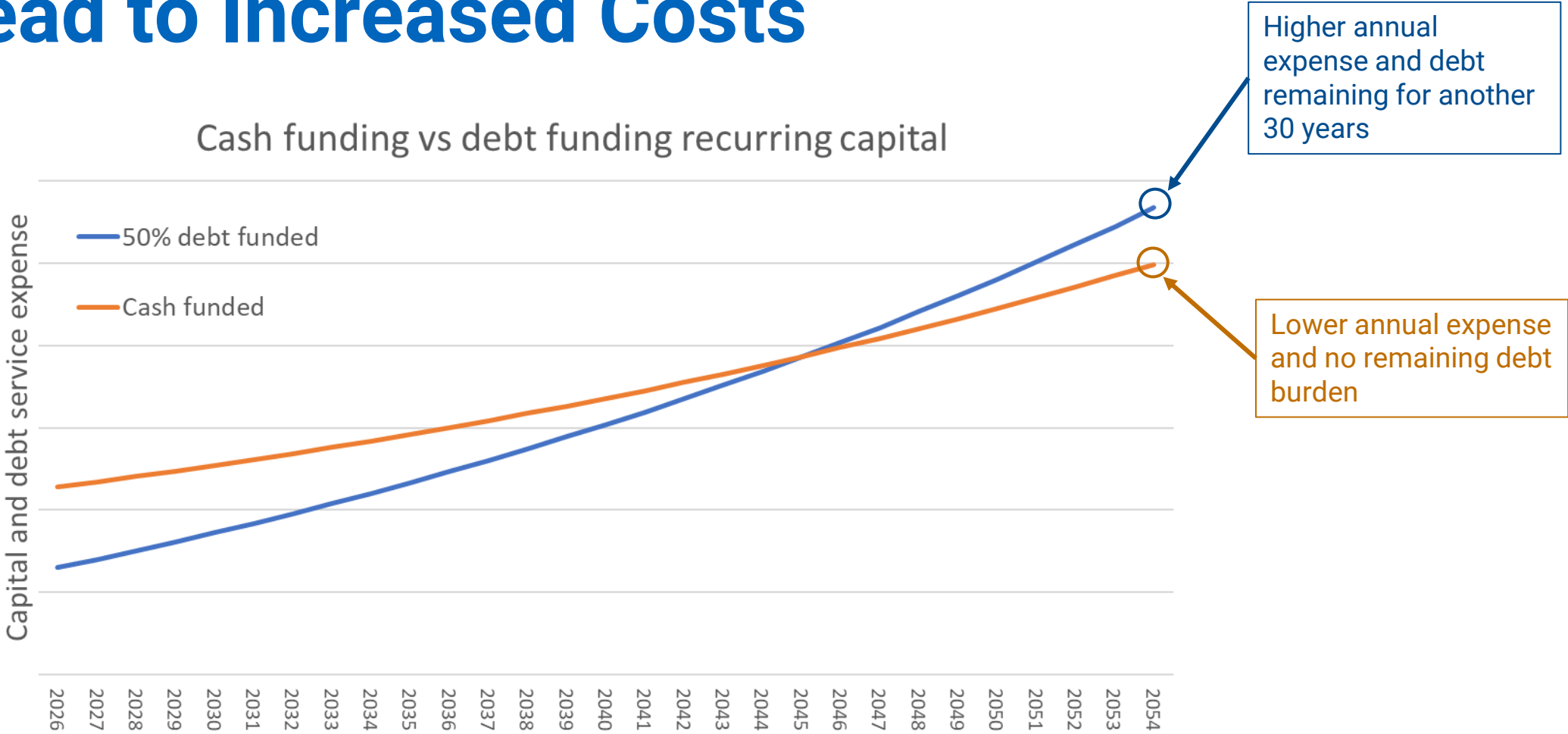
Strategic Use of Debt in Capital Planning

- Consider the nature of the capital project
 - Is it part of continual reinvestment, or a one-time generational project?
- Cash funding ongoing renewal work rather than issuing debt is a more sustainable approach
 - The capital needs are annual
 - Interest costs are avoided
 - No reliance on capital markets (market access, interest rates, etc.)
- For once-in-a-generation project, debt funding may be appropriate

Capital spending that favors some debt funding



Debt Reduces Pressure in Early Years, but Can Lead to Increased Costs



Example for illustrative purposes only

More Debt Can Lead to More Debt

- Interest payments on debt crowd out future capital spending
- More debt today may mean more debt tomorrow
- In this example 10-year plan, every \$1 of debt provides 77¢ of capital



Modeling Debt in Excel

- Accurate debt sizing for a bond issue is complex (coupons, yields, COI, TIC)
 - Specific software usually used by advisors and bankers
- However, simple Excel formulas can be used for long-term planning at a high level
 - =pmt () for debt service payments
 - =ipmt () and =ppmt () even better to track debt outstanding
- Debt issue sizes are key inputs in EBMUD's models

Bond Issue Year	2026		
Par	100,000,000		
Interest Rate	5.00%		
Term	30		
Year	Principal	Interest	Total
2026	1,505,144	5,000,000	6,505,144
2027	1,580,401	4,924,743	6,505,144
2028	1,659,421	4,845,723	6,505,144
2029	1,742,392	4,762,752	6,505,144
2030	1,829,511	4,675,632	6,505,144
2031	1,920,987	4,584,157	6,505,144
2032	2,017,036	4,488,107	6,505,144
2033	2,117,888	4,387,255	6,505,144
2034	2,223,782	4,281,361	6,505,144
2035	2,334,972	4,170,172	6,505,144
2036	2,451,720	4,053,423	6,505,144
2037	2,574,306	3,930,837	6,505,144
2038	2,703,021	3,802,122	6,505,144
2039	2,838,173	3,666,971	6,505,144
2040	2,980,081	3,525,062	6,505,144
2041	3,129,085	3,376,058	6,505,144
2042	3,285,540	3,219,604	6,505,144
2043	3,449,816	3,055,327	6,505,144
2044	3,622,307	2,882,836	6,505,144
2045	3,803,423	2,701,721	6,505,144
2046	3,993,594	2,511,550	6,505,144
2047	4,193,274	2,311,870	6,505,144
2048	4,402,937	2,102,206	6,505,144
2049	4,623,084	1,882,059	6,505,144
2050	4,854,238	1,650,905	6,505,144
2051	5,096,950	1,408,193	6,505,144
2052	5,351,798	1,153,346	6,505,144
2053	5,619,388	885,756	6,505,144
2054	5,900,357	604,787	6,505,144
2055	6,195,375	309,769	6,505,144
2056	-	-	-
2057	-	-	-
Total	100,000,000	95,154,305	195,154,305

Building a Financial Model

Approaches to Building Financial Models

- Many (likely most) models are built in Excel
- Third party software is also available
- There are many examples of both models built in-house and models built by consultants
- Ongoing support by consultants varies
- Frequency of updating the model varies

There is no one-size-fits-all



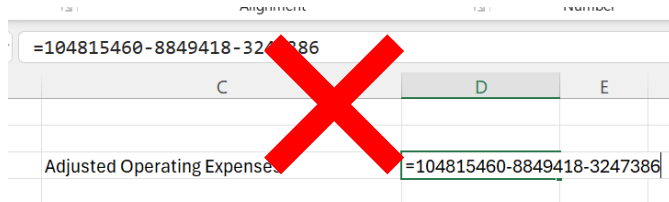
Build a Model for the Next You

- Common issues:
 - Only one staff member can update model
 - Complexity = Fragility
 - Version control!
(`"...vfinal_2a_final.xlsx"`)
- Impractical to have many users, but model should outlast the creator
- Some Excel modeling best practices can help



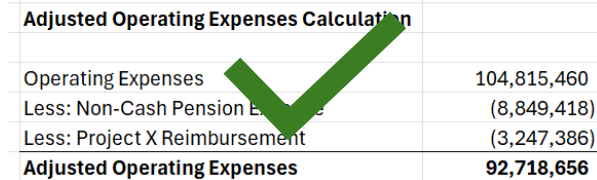
Seek Out Excel Best Practices

Clear Calculations



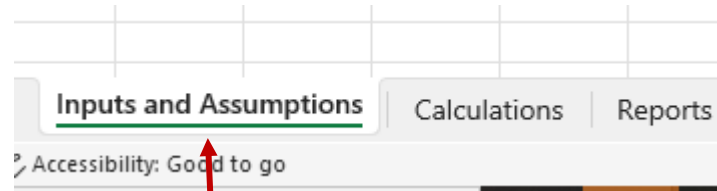
=104815460-8849418-3247386

C	D	E
Adjusted Operating Expenses	=104815460-8849418-3247386	



Adjusted Operating Expenses Calculation		
Operating Expenses		104,815,460
Less: Non-Cash Pension Expenses		(8,849,418)
Less: Project X Reimbursement		(3,247,386)
Adjusted Operating Expenses		92,718,656

Intuitive Design



Obvious where
to find hardcoded
assumptions

Intuitive inputs

Inflation Rate	2.75%
Borrowing Cost	5.00%
Override Debt Sizing	
	Yes
	No

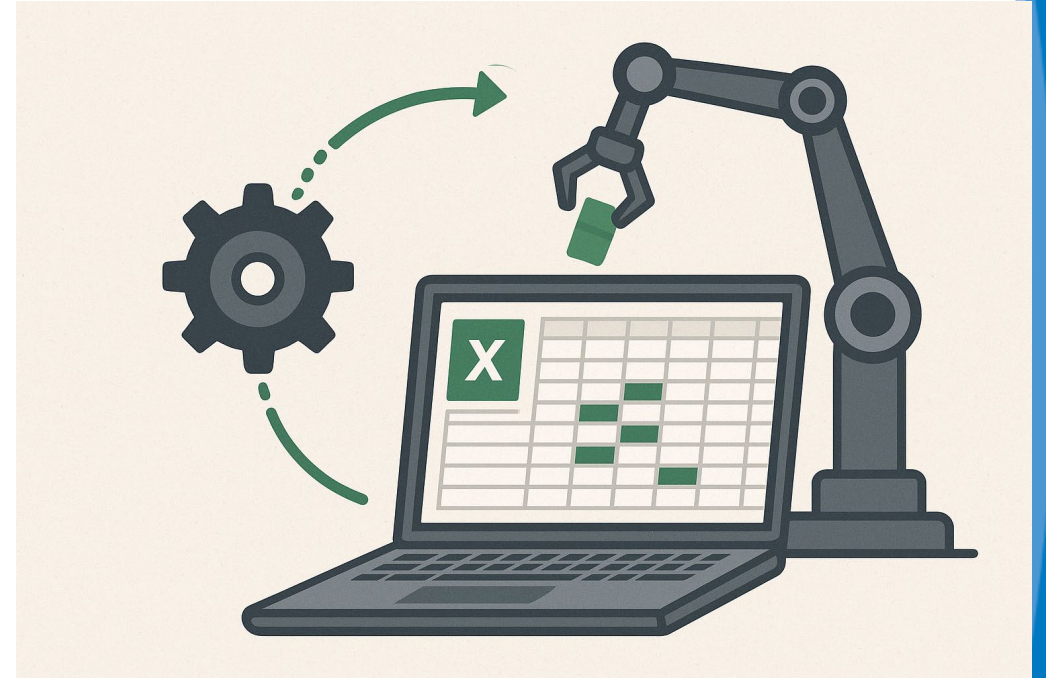
Built in Error Checks

(with conditional formatting)

RECONCILIATION		
Net Revenues After Debt Service	80,360,156	80,452,832
Less: Capital Expenses	(67,491,840)	(70,191,514)
Add: Capital Reimbursements	6,740,005	8,091,919
Less: Commercial Paper Pay Down	(10,000,000)	(10,000,000)
Change in Cash	9,608,321	8,353,238
Change in Cash (Cash Flows)	9,608,321	15,000,000
Difference (check)	-	(6,646,762)

Excel Macros: Use with Caution

- Excel VBA macros can be powerful, but are risky
 - Introduces hidden logic
 - Hard to audit, test, troubleshoot
 - Can break silently, particularly after a spreadsheet update
- Avoid macros if possible (just my opinion)
- But targeted application can be helpful
 - Debt sizing
 - PowerPoint Slide Generation
- AI tools like ChatGPT can assist with coding macros



Example: Automate Slide Generation

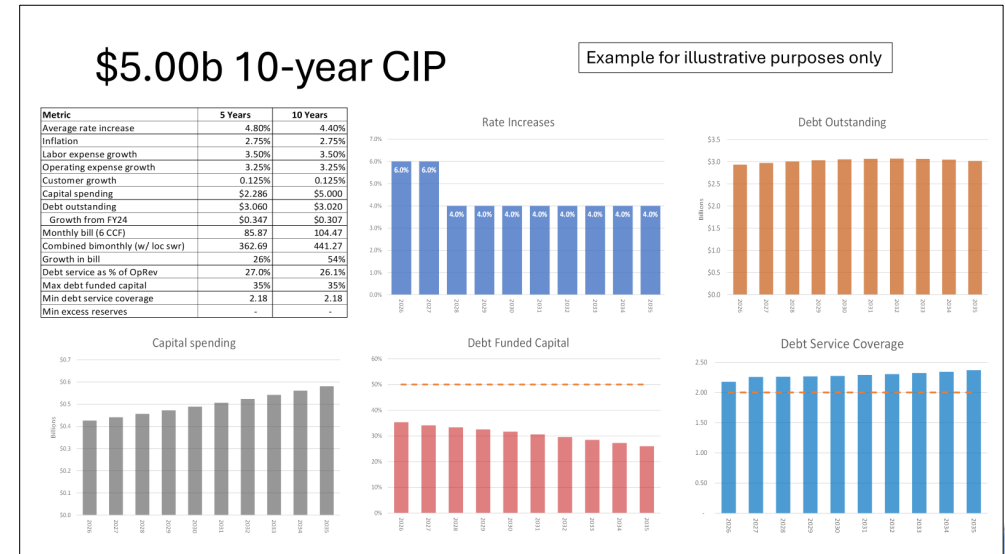
- At EBMUD, we were continually copying and pasting Excel charts into slides for different scenarios
- With help from ChatGPT, we wrote a macro to automate slide creation within Excel

```
Sub CreatePowerPointSlide(number_of_years As Integer)
    Dim pptApp As Powerpoint.Application
    Dim pptPres As Powerpoint.Presentation
    Dim pptSlide As Powerpoint.Slide
    Dim pptTitle As Powerpoint.Shape
    Dim pptShape As Powerpoint.Shape
    Dim chartObj As ChartObject
    Dim ChartCollection As Collection
    Dim slideIndex As Integer
    Dim rng As Range
    Dim CHART_WIDTH, CHART_HEIGHT As Integer

    ' check if this is a slide we create (10, 20 or 30 years)
    If number_of_years <> 10 And number_of_years <> 20 And number_of_years <> 30 Then
        Err.Raise vbObjectError + 513, , "Slide type not valid: "
    End If

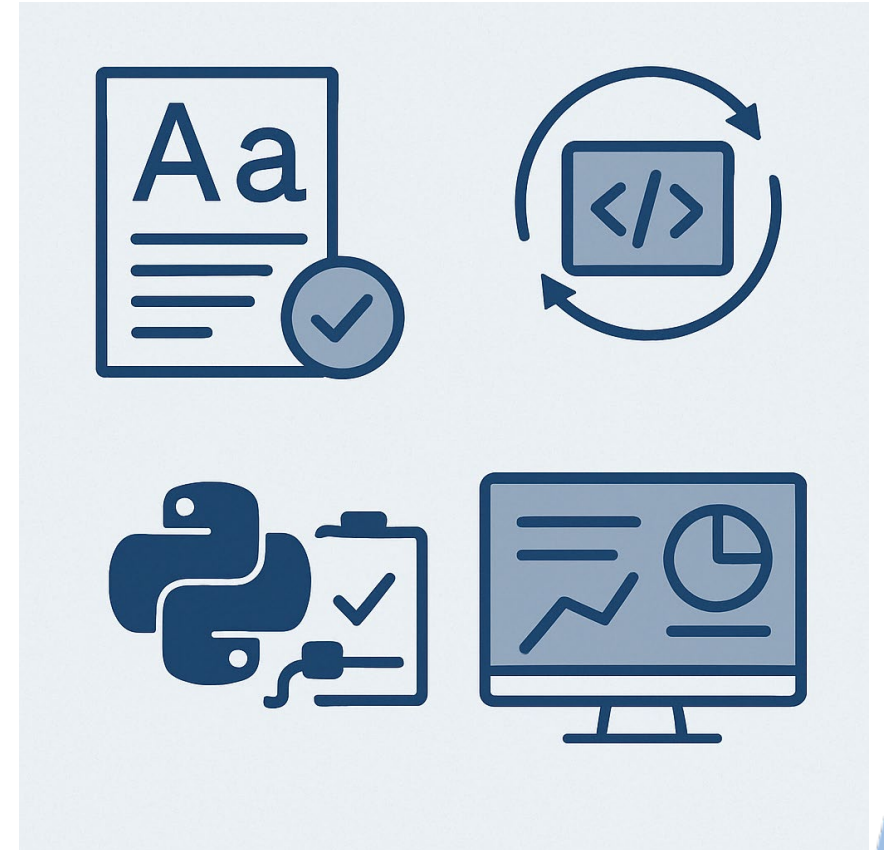
    ' set chart height and width
    CHART_WIDTH = (960 - 20 - 10 - 10 - 20) / 3
    CHART_HEIGHT = (540 - 100 - 10 - 20) / 2

    ' Get the Excel chart (update the sheet and chart name accordingly)
    Set ChartCollection = New Collection
    Set chartObj = ThisWorkbook.Sheets("Output").ChartObjects(number_of_years & "_year_rate_increases")
    ChartCollection.Add chartObj
```



Future Areas of Exploration at EBMUD

- Documenting our plans so they live on
- Standardizing approach to spreadsheets
- Enhancing version control
- Incorporating Python programming
- BI Tools
- Dashboards





Questions?

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