CWSRF Funding Process Virtual Workshop Series: Analyzing and Adjusting Rates to Manage SRF Debt Service
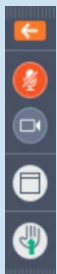
Thursday, October 19, 2023

Logistics

Using the control panel

Opening the control panel

Show your control panel

All phones/microphones are muted for the duration of the webinar

Toggle between full screen/window screen view

Audio: please choose between computer audio or phone call

If you do not hear audio right now, please check your speaker volume or enter #[your Audio PIN]# if using phone

Click ▶ to open in Control Panel

Submit **questions** in the Questions box at any time, and press [Send]
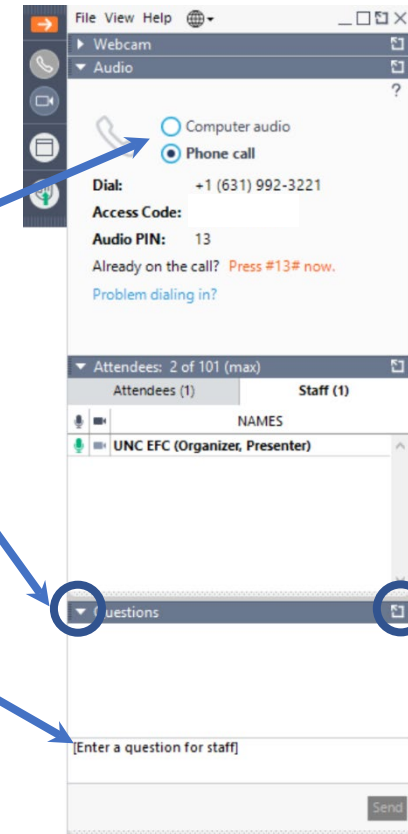
Click ↗ to open in separate box and resize

Certificate of Completion

This session has NOT been submitted for pre-approval of Continuing Education Credits, but eligible attendees will receive a certificate of attendance for their personal record.

To receive a certificate:

- You must attend the entire session
- You must register and attend using your real name and unique email address - group viewing credit will not be acceptable
- You must participate in polls
- Certificates will be sent via email within 30 days

If you have questions or need assistance, please contact smallsystems@syr.edu.

About Us

The Environmental Finance Center Network (EFCN) is a university- and non-profit-based organization creating innovative solutions to the difficult how-to-pay issues of environmental protection and environmental infrastructure.

The EFCN works collectively and as individual centers to address these issues across the entire U.S, including the 5 territories and the Navajo Nation. The EFCN aims to assist public and private sectors through training, direct professional assistance, production of durable resources, and innovative policy ideas.

EFCN
environmental finance center network

UNC SCHOOL OF GOVERNMENT
Environmental Finance Center

Supporting fair, effective, and financially sustainable delivery of environmental programs through:

- Applied Research
- Program Design and Evaluation
- Teaching and Outreach
- Advising
- Policy Analysis

Hi! I'm Hope.

- Project Director at the UNC EFC
- Focused on technical assistance, training and financial analysis for utilities
- Trained in public health and environmental financial risk; background in science communication & chemistry
- Born & raised in Durham, North Carolina – but Go Heels!

POLL: WHO IS IN THE ROOM?

A. Wastewater operator

B. Local official or staff member (mayor, clerk, etc.)

C. State government

D. Consultant and/or researcher

E. Technical assistance provider

F. Other

Poll: Where are you from?

A. West
B. Midwest
C. South
D. Northeast

Source: CDC, https://www.cdc.gov/nchs/hus/sources-definitions/geographic-region.htm
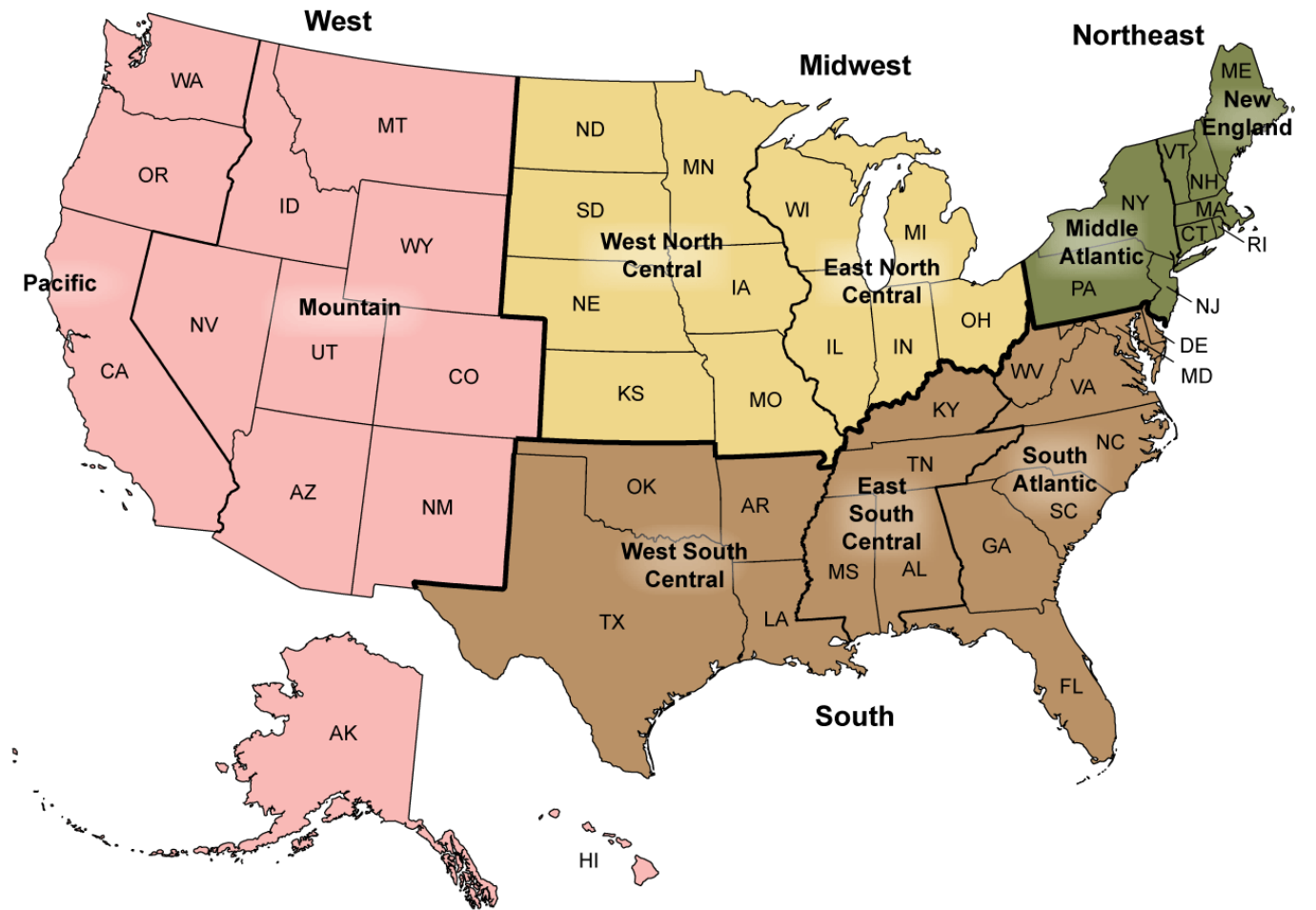
Agenda – Managing debt service

- Debt service coverage ratio – what is it and how do we calculate?
- Debt payments – how much and when?
    - Subsidized Loan Calculator
- Debt service covenants – what are they?
- Managing debt via sufficient revenues
    - Rates analysis
    - Affordability

Main Takeaways

1 Rates should cover the debt service from an SRF loan

2 There's no silver bullet – your community's solution will be unique.

3 There are tools to help figure this out!

Steps to determining Debt service management

1. Determine $$ for infrastructure project
2. Calculate estimated loan amount & payments (ignoring principal forgiveness, for now)
3. Calculate debt service coverage ratio & needed revenues to meet covenants
4. Examine rates & affordability; adjust rates

Steps to determining Debt service management

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Poll – where are you in your debt management planning?

A. Determine $$ for infrastructure project

B. Calculate estimated loan amount & payments (ignoring principal forgiveness, for now)

C. Calculate debt service coverage ratio & needed revenues to meet covenants

D. Examine rates & affordability; adjust rates

ANNUAL LOAN PAYMENTS (SUBSIDIZED)

Let's Calculate!

Formula

$$P = \frac{r(PV)}{1 - (1 + r)^{-n}}$$

$$P = \frac{0.02(\$2,800,000)}{1 - (1 + 0.02)^{-30\ yr}}$$

$$P = \$125,020/yr$$

Excel PMT() Formula

$$P = PMT(r, n, PV)$$

$$P = PMT(0.02, 30, \$2800000)$$

$$P = \$125,020/yr$$

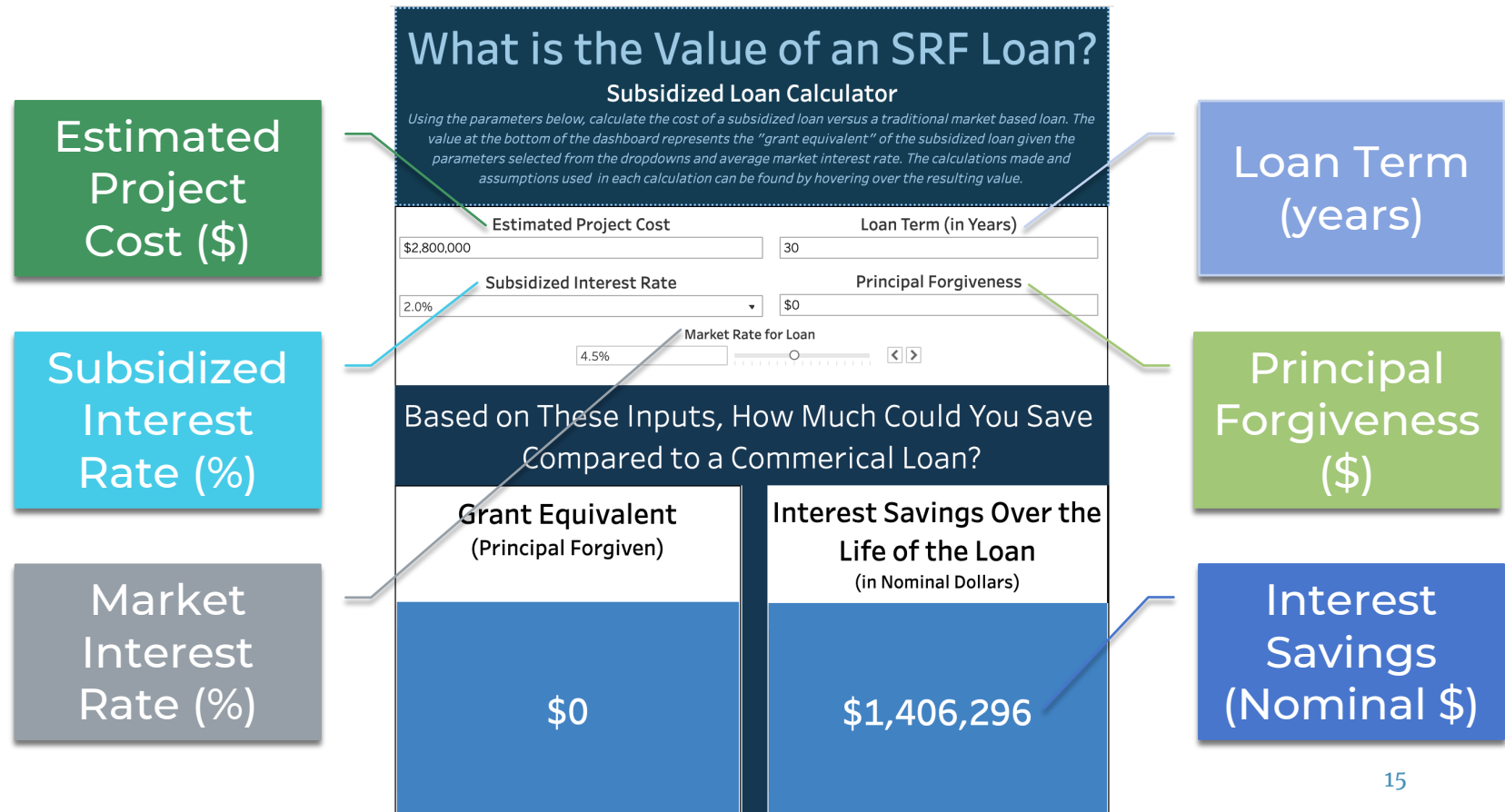P = Payment (i.e., principal + interest annual payment)
PV = Present Value (i.e., principal) = $2,800,000
r = rate per period (i.e., interest rate) = 2% = 0.02
n = number of periods (i.e., loan term in years) = 30 years
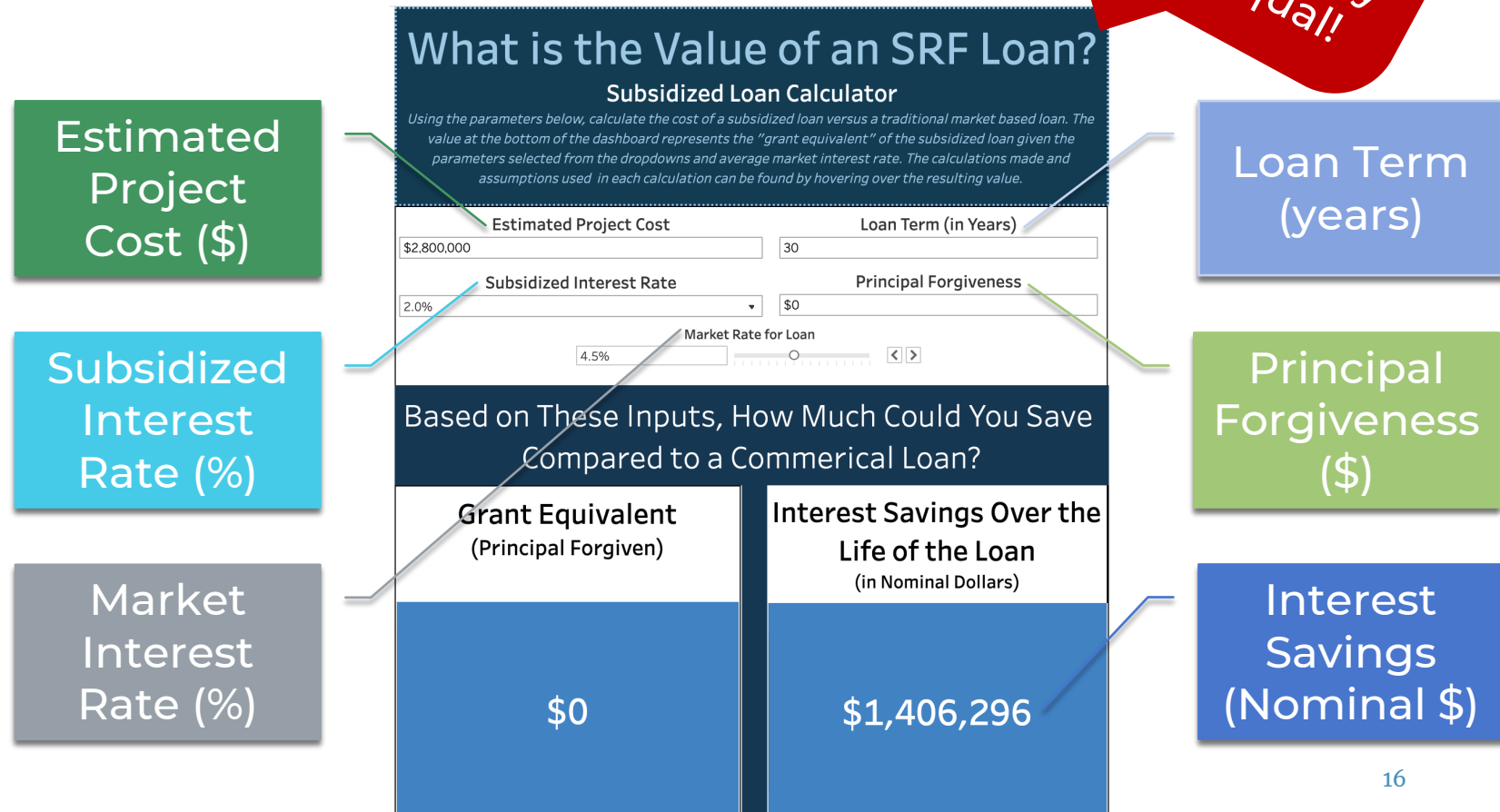
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UNC EFC Subsidized Loan Calculator

- Subsidized Loan Calculator tool can help to:
  - determine principal and interest payments over the course of the loan agreement
  - compare interest rates from different financing options
- Mount Anytown estimates:
  - Project costs: $2.8M
  - Interest rates: 2.0% vs. 4.5%
  - Loan term: 30 years

Estimated Project Cost ($)

Subsidized Interest Rate (%)

Market Interest Rate (%)

Loan Term (years)

Principal Forgiveness ($)

Interest Savings (Nominal $)

What is the Value of an SRF Loan?

Subsidized Loan Calculator

Using the parameters below, calculate the cost of a subsidized loan versus a traditional market based loan. The value at the bottom of the dashboard represents the "grant equivalent" of the subsidized loan given the parameters selected from the dropdowns and average market interest rate. The calculations made and assumptions used in each calculation can be found by hovering over the resulting value.

Estimated Project Cost	Loan Term (in Years)
$2,800,000	30

Subsidized Interest Rate	Principal Forgiveness
2.0%	$0

Market Rate for Loan
4.5%

Based on These Inputs, How Much Could You Save Compared to a Commerical Loan?

Grant Equivalent (Principal Forgiven)	Interest Savings Over the Life of the Loan (in Nominal Dollars)
$0	$1,406,296

UNC EFC Subsidized Loan Calculator

Equal loan lengths (yrs) assumed, but total lifetime costs will vary if not equal!

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Loan Term (years)

Principal Forgiveness ($)

Interest Savings (Nominal $)

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Estimated Project Cost	Loan Term (in Years)	Subsidized Interest Rate	Principal Forgiveness
$2,800,000	30	2.0% ▾	$0

*Market Rate Represents an Interest Rate of 4.5%

Approximate Schedule of Loan Payments

Subsidized

Year of Loan	
15	$125,020
16	$125,020
17	$125,020
18	$125,020
	$125,020
	$125,020
	$125,020
	$125,020
	$125,020
	$125,020
	$125,020
	$125,020
	$125,020
27	$125,020
28	$125,020
29	$125,020
30	$125,020
31	

Unsubsidized

Year of Loan	
15	$171,896
16	$171,896
17	$171,896
18	$171,896
19	
20	
21	
22	
23	
24	
25	
26	
27	$171,896
28	$171,896
29	$171,896
30	$171,896
31	

Subsidized Annual Payments: $125,020/yr

Unsubsidized Annual Payments: $171,896/yr

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What is the Value of an SRF Loan?

Market Rate (4.5%) vs. SRF (2%) Loan
Subsidy (Nominal $): $1.41M
Subsidy (Real $): $1.05M

*Market Rate Represents an Interest Rate of 4.5%

Approximate Loan Payment Streams in **Real Dollars**

Subsidized		Unsubsidized	
Year of Loan		Year of Loan	
21	$82,485	21	$113,413
22	$80,868	22	$111,189
23	$79,282	23	$109,009
24	$77,727	24	$106,872
25	$76,203	25	$104,776
26	$74,709	26	$102,722
27	$73,244	27	$100,708
28	$71,808	28	$98,733
29	$70,400	29	$96,797
30	$69,020	30	$94,899
31		31	
Net Present Value		**Net Present Value**	
$2,800,000		$3,849,868	

Subsidy in Real Dollars

$1,049,868

Page 3

Debt Service Coverage Ratio

$$Debt\ Service\ Coverage\ Ratio =$$
$$\frac{Operating\ Revenues - Operating\ Expenditures\ (excludes\ depreciation)}{Principal + Interest\ Payments\ on\ Long-term\ Debt}$$

- A measure of the ability to pay debt service with operating revenue after covering day-to-day expenditures
- Inputs
  - Operating Revenues
  - Operating Expenditures (excludes depreciation)
  - Principal + Interest Payments on Long-term Debt (annual)

Natural Benchmark: > 1
Recommended: ≥1.2

STATEMENT OF REVENUES, EXPENSES, AND CHANGES IN NET ASSETS
PROPRIETARY FUNDS
FOR THE YEAR ENDED DECEMBER 31, 2010

Enterprise Funds
Water and Sewer

OPERATING REVENUES
  Charges for services $ 444,231
  Grants   0
    Total operating revenues   444,231 ─①

OPERATING EXPENSES
  Personnel services   178,885
  Contractural services   63,898
  Other supplies and expense   126,202 ─③
  Depreciation   142,463
    Total operating expenses   511,448 ─②
      Operating income (loss)   (67,217)

STATEMENT OF CASH FLOWS
PROPRIETARY FUNDS
FOR THE YEAR ENDED DECEMBER 31, 2010

Page 1 of 2

	Enterprise Funds Water and Sewer
CASH FLOWS FROM OPERATING ACTIVITIES	
Receipts from customers	$ 437,947
Payments to suppliers	(187,296)
Payments to employees	(178,885)
Net cash provided by operating activities	71,766
CASH FLOWS FROM NONCAPITAL FINANCING ACTIVITIES	
Transfers in (out)	(60,000)
Net cash (used) by noncapital financing activities	(60,000)
CASH FLOWS FROM CAPITAL AND RELATED FINANCING ACTIVITIES	
Loan proceeds	0
Purchases of capital assets	(39,841)
Principal paid on capital debt	(49,655)
Interest paid on capital debt	(35,128) ④
Net cash (used) by capital and related financing activities	(124,624)

Debt Service Coverage Ratio

Let's Calculate!

Debt Service Coverage Ratio = $$\dfrac{\text{Operating Revenues (1)} - \text{Operating Expenses (2-3) (excluding depreciation)}}{\text{Principal \& Interest on Long-Term Debt (4)}}$$ =

Natural Benchmark: > 1
Recommended: ≥1.2

Debt Service Coverage Ratio

Let's Calculate!

OE $511,448
- Dep $142,463

Debt Service Coverage Ratio =

$$\frac{\boxed{\$444,231} - \boxed{\$368,985}}{\boxed{\$36,783}} = \boxed{2.06}$$

Operating Revenues **(1)**

Operating Expenses **(2-3)** (excluding depreciation)

Principal & Interest on Long-Term Debt **(4)**

P: $29,655
+ I: $7,128

Natural Benchmark: > 1
Recommended: ≥1.2

Debt Service Covenants

➤ Extra requirements agreed to by the utility before funds can be accepted or distributed

➤ Examples
- Debt Service Reserved Funds
- 1.20 Debt Service Coverage Ratio
- **Adoption of Revised Rate Structures**

Debt Service Covenants

(3) The covenant that requires 1.20x debt service coverage to net revenues has been met for the most recent fiscal year;

• Set rates at levels sufficient to produce **net revenues** with a minimum specified ratio to debt service (e.g., Net revenues must equal at least 1.25 times debt service). This is known as a "rate covenant."

Applicants must demonstrate the financial capacity to repay the loan and that complete financing of the project is in place. Borrowers must issue a general obligation bond to the PFA as security for the loan.

Debt Service Covenants

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Debt Service Ratio – Why this matters

- Your rates may be able to cover the debt payments – but can they meet your covenant?
  1. Consider *your state's* specific debt covenant requirements
  2. Consider your utility's current financial health
  3. What rate changes may be necessary?

POLL – WHO HAS AN EXISTING DEBT COVENANT AND FEELS FAMILIAR WITH ITS TERMS?

A. Yes, we have one – but don't know the terms

B. Yes, we have one – but we should review the terms and make sure we're meeting them

C. Yes, we have one – and I **know** we're meeting the terms!

D. We don't have a covenant/agreement/debt

E. Unsure/Not applicable

PROJECTED DEBT SERVICE COVERAGE RATIO

Let's Calculate!

Subsidized Annual Payments: +$125,020/yr

OE $511,448
- Dep $142,463

Debt Service Coverage Ratio =

$$\frac{\$444,231 - \$368,985}{\$36,783 + \$125,020} = 0.47$$

$444,231 — Operating Revenues (1)

$368,985 — Operating Expenses (2-3) (excluding depreciation)

$36,783 + $125,020 — Principal & Interest on Long-Term Debt (4)

See Financial Health Checkup Tool

P: $29,655
+ I: $7,128

Natural Benchmark: > 1
Recommended: ≥1.2

Revenue Need Projected for Debt Service Coverage

Let's Calculate!

$$\text{Debt Service Coverage Ratio} = \frac{\overbrace{\$444,231 + X}^{\text{Operating Revenues (1)}} - \overbrace{\$368,985}^{\substack{\text{Operating Expenses (2-3)} \\ \text{(excluding depreciation)}}}}{\underbrace{\$36,783 + \$125,020}_{\text{Principal \& Interest on Long-Term Debt (4)}}} = \boxed{1.2}$$

(solve for x below)

Additional revenue for debt service coverage = $X = 1.2\,(\$161,803) + \$368,985 - \$444,231 = +\$118,918 / yr$

Revenue Need Projected for Debt Service Coverage

Let's Calculate!

$$\text{Debt Service Coverage Ratio} = \frac{\$444,231 + X - \$368,985}{\$36,783 + \$125,020} = 1.2$$

Operating Revenues **(1)**

Operating Expenses **(2-3)** (excluding depreciation)

Principal & Interest on Long-Term Debt **(4)**

(solve for x below)

Additional revenue for debt service coverage = $X = 1.2\,(\$161,803) + \$368,985 - \$444,231 = +\$118,918\,/\,yr$

Monthly bill increase per household = (rough estimate*)

$$\frac{\$118,918\,/\,yr}{12\,mo\,/\,yr \times 1145\,households} = +\$8.65\,/\,mo\,/\,connection$$

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*more accurate rate changes can be modeled with a rates study or the rates analysis tool

Let's Calculate!

$444,231 + X   - $368,985

Debt Service Coverage

(solve

1. Infrastructure changes ultimately benefit customers
2. Utilities want to be sustainable into the future
3. Infrastructure updates have to be covered by revenues (fees, rates, etc.)

Additi
debt s

Monthly bill increase
per household =
(rough estimate*)

$$\frac{\$118,918 \text{ / yr}}{12 \text{ mo / yr X } 1145 \text{ households}} = +\$8.65 \text{ / mo / connection}$$

32

*more accurate rate changes can be modeled with a rates study or the rates analysis tool

Finding that $8.65

➢ Knowing the revenue requirement, there are options:
  ➢ Increase the base rate? The volumetric?
  ➢ Apply to specific customer classes?
  ➢ Institute temporary infrastructure fees?

Analyze rates → Consider affordability
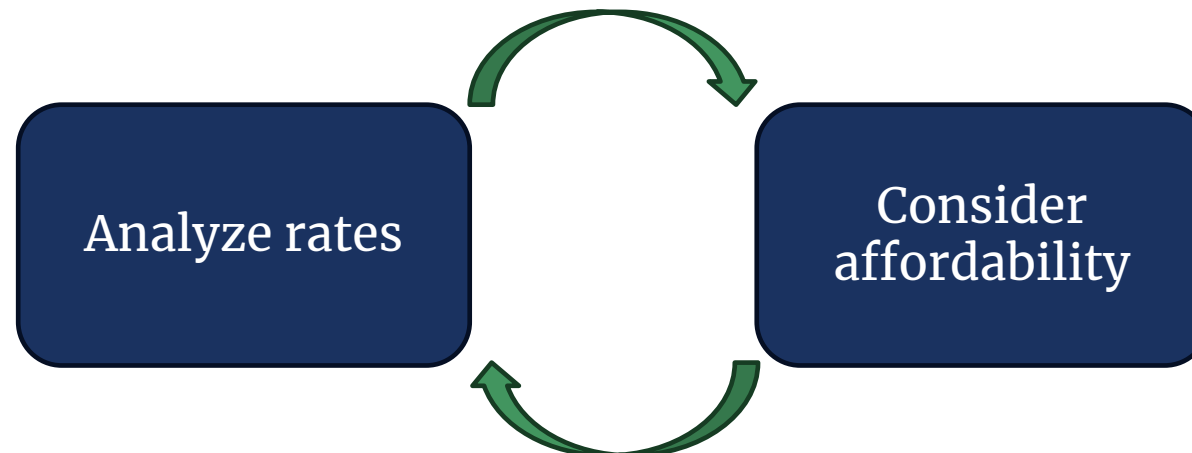
FINDING THAT $8.65

➢ Knowing the revenue requirement, there are options:

   ➢ Increase the base rate? The volumetric
   ➢ Apply to specific customer classes?
   ➢ Institute temporary infrastructure fees?

Technical Assistance is available!

Analyze rates

Consider affordability
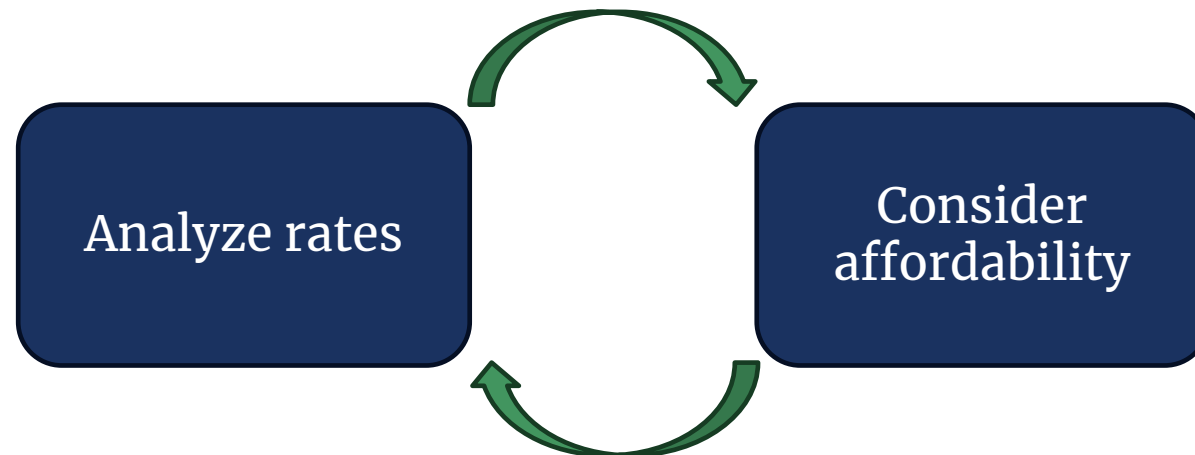
RATES ANALYSIS – WHAT DOES IT DO?

➢ Summarizes & compares expenditures and revenue streams (future and current)

➢ Provides a flexible modeling framework for considering rate changes over time
  ➢ Changes to structures; base versus volumetric
  ➢ One-time jumps versus gradual

➢ Analyzes bills for customers under current and modelled conditions

Rates analysis – data needs

Expenses

- Budget
- Existing debt service schedule
- Potential debt service or capital improvement plan

Revenues

- Current rates sheets/schedules
- # of accounts per rate structure
- Monthly consumption *by customer*

Rates analysis – Outputs, Cost recovery

- Are you covering costs, today and into the future?

- Creativity required to meet the revenue target

Projected Total Annual Revenues in the Next Five Fiscal Years

Legend: Staying with existing rates · Using new rates · Expenses
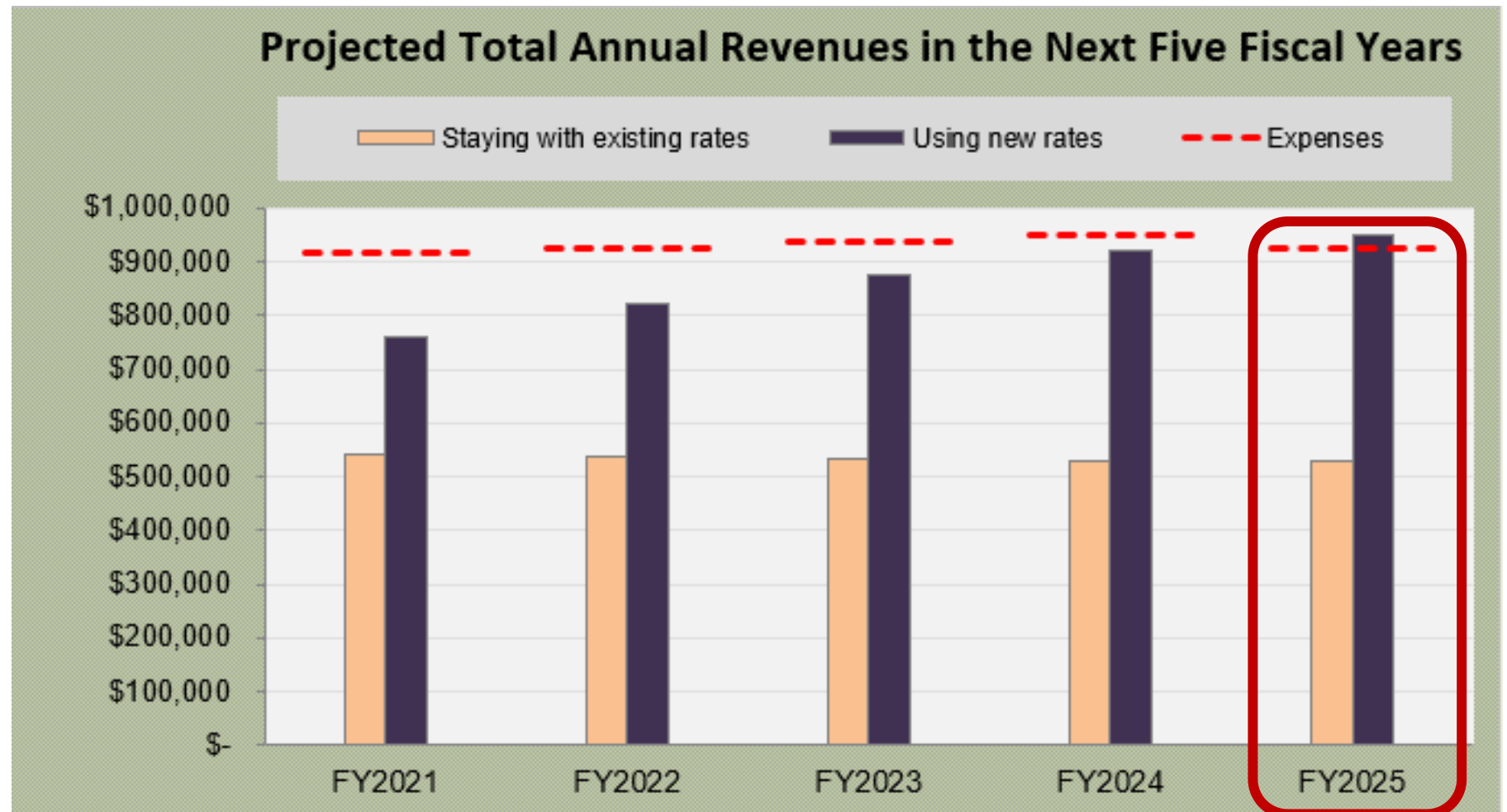
Rates analysis – Outputs, Fixed versus variables revenues

- Old versus new revenues

- Resilience to revenue shocks: do your fixed revenues cover your fixed costs?

Base Charge Revenue versus Volumetric Revenue
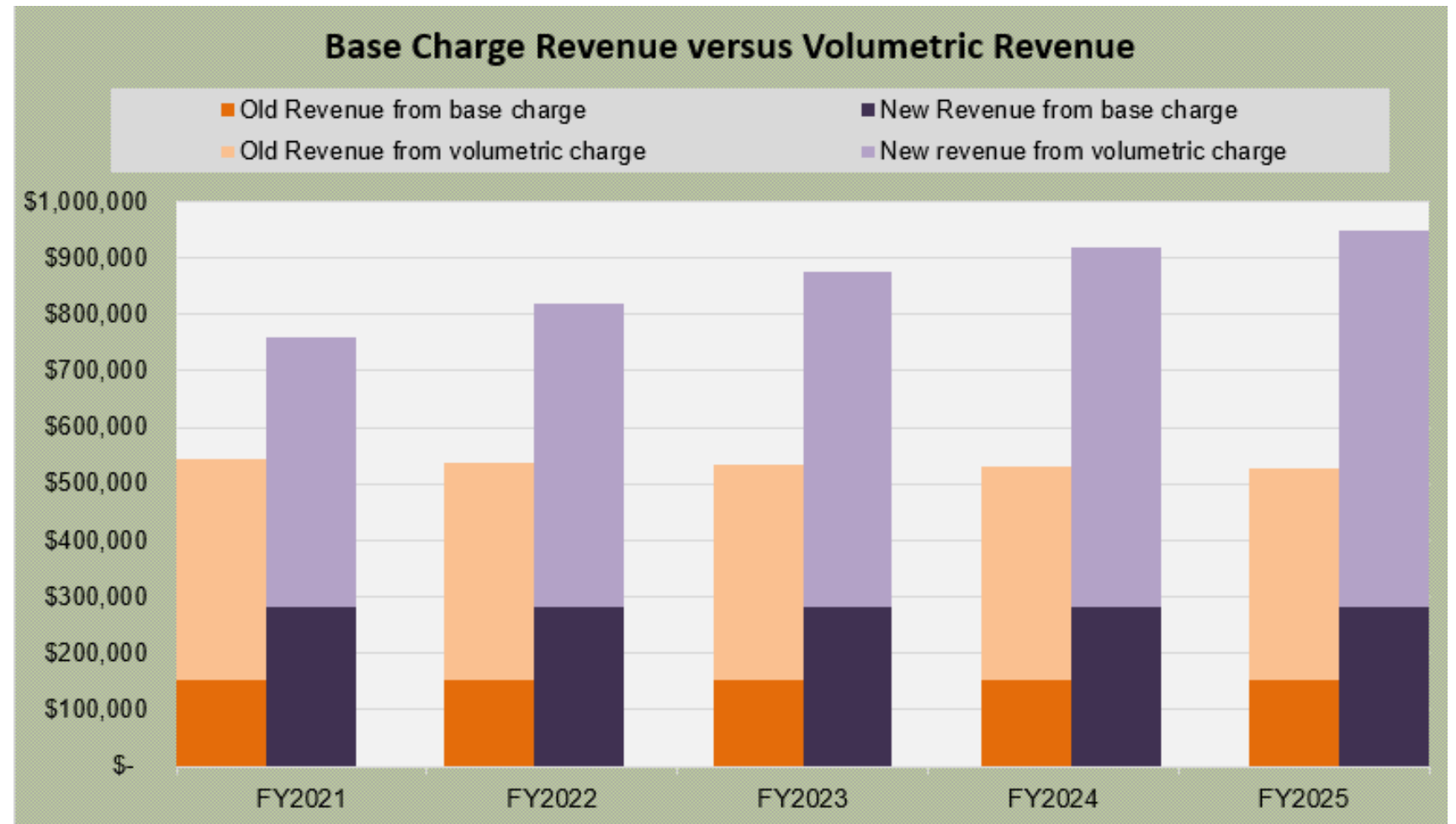
Rates analysis – Outputs, customer bills
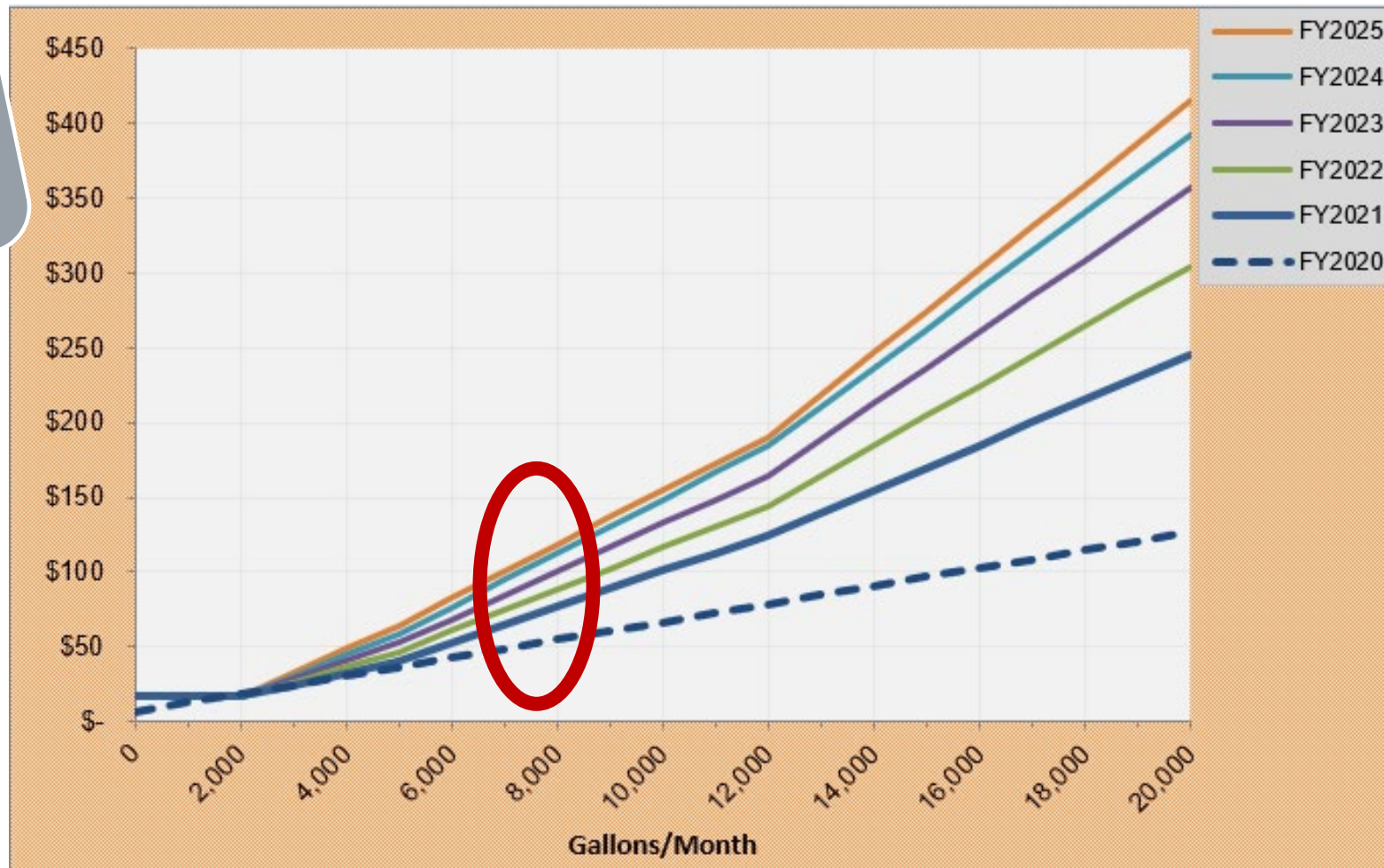
Rates Analysis – Considering Principal Forgiveness

Total Project Needs	Principal Forgiveness (%)	SRF Loan Repayment Scenerios		Yearly Payment	Monthly Payment per Customer (added to existing water bill)
		Loan Amount			
$12,500,000	65	$	4,375,000.00	$195,343.41	$81.39
	70	$	3,750,000.00	$167,437.21	$69.77
	75	**$**	**3,125,000.00**	**$139,531.01**	**$58.14**
	80	$	2,500,000.00	$111,624.81	$46.51
	85	$	1,875,000.00	$83,718.60	$34.88
	90	$	1,250,000.00	$55,812.40	$23.26
	95	$	625,000.00	$27,906.20	$11.63
	100	$	-	$0.00	$0.00

RATES ANALYSIS – GETTING STARTED

- Explore on your own
- UNC EFC Youtube Channel
  - @efcunc
- Request technical assistance!

UNC EFC Affordability Tool – Location

Click on a county
Find your county on the map below. If you want to return to the full map, first click twice outside of the state, then click (All) from the dropdown menu. If the map is stuck in place, click the unpin button on the left.

Find your census place
Click on a census block. Click anywhere else on the tile to pan back to all census blocks within the county. "Unknown" MHI refers to when the Census does not have enough data to provide a number for a specific area. If the screen is not where expected push the home button.

Stout city
Dike city
Wellsburg city
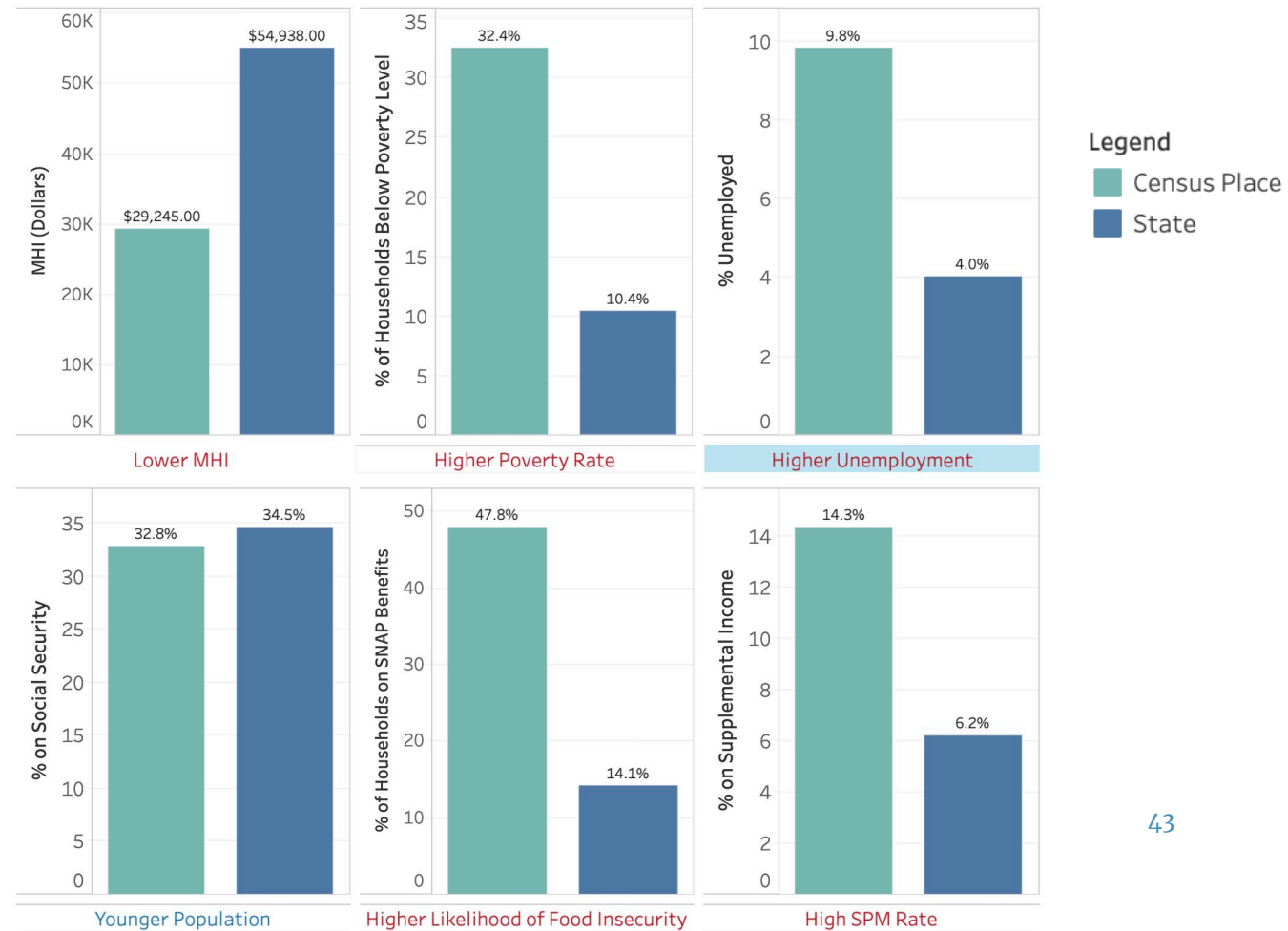Holland city
Grundy Center city
Morrison city
Reinbeck city

© 2023 Mapbox © OpenStreetMap

Select census place

Select state

Enter charges at 4,000 gallons of consumption

County MHI Range
52,500 — 78,485

© 2023 Mapbox © OpenStreetMap

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UNC EFC Affordability Assessment Tool: Sociodemographics

- Compares Census Place vs. State:
  - MHI ($)
  - % below Poverty Rate
  - % Unemployed
  - % on Social Security
  - % on SNAP Benefits
  - % on Supplemental income
- Provides nuance to "ability to pay"
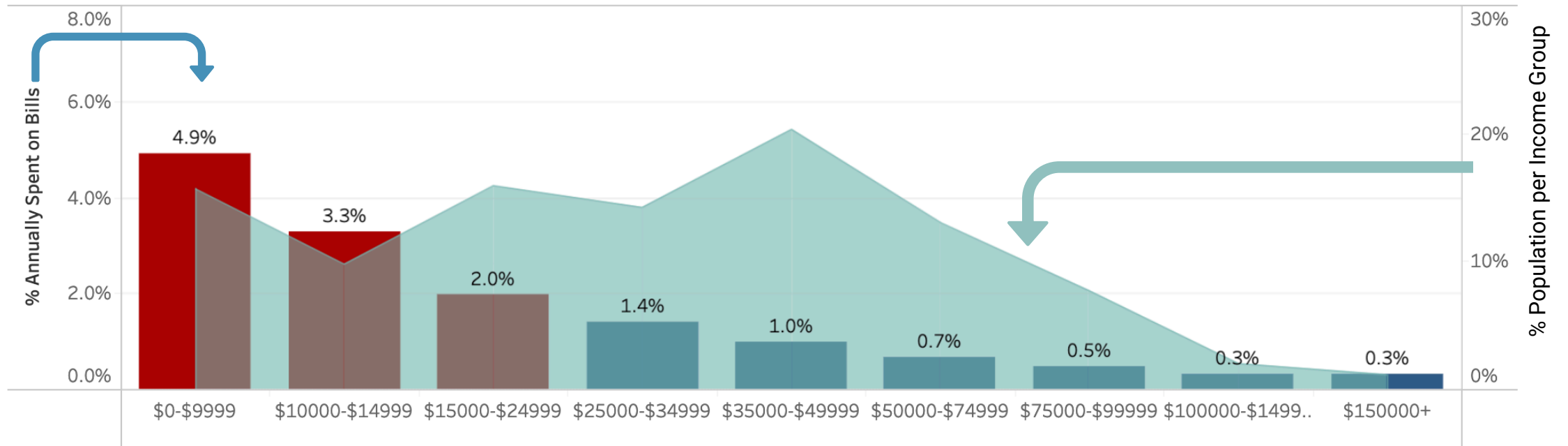
https://public.tableau.com/app/profile/efcatunc
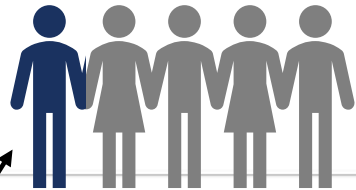/viz/AffordabilityAssessmentTool/Input

Income Group

Affordability of Alternative Water/Wastewater Rates for Mount Anytown at 2019 Income Levels

The green area graph represents the distribution of the population across the income groups. The percentage of annual income that is spent on bills is represented by the red (low-income customers) or blue columns.

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AFFORDABILITY ASSESSMENT TOOL: ORIGINAL VS. NEW RATES

The green area graph represents the distribution of the population across the income groups. The percentage of annual income that is spent on bills is represented by the red (low-income customers) or blue columns.

Income Group

Analyze rates

Consider affordability

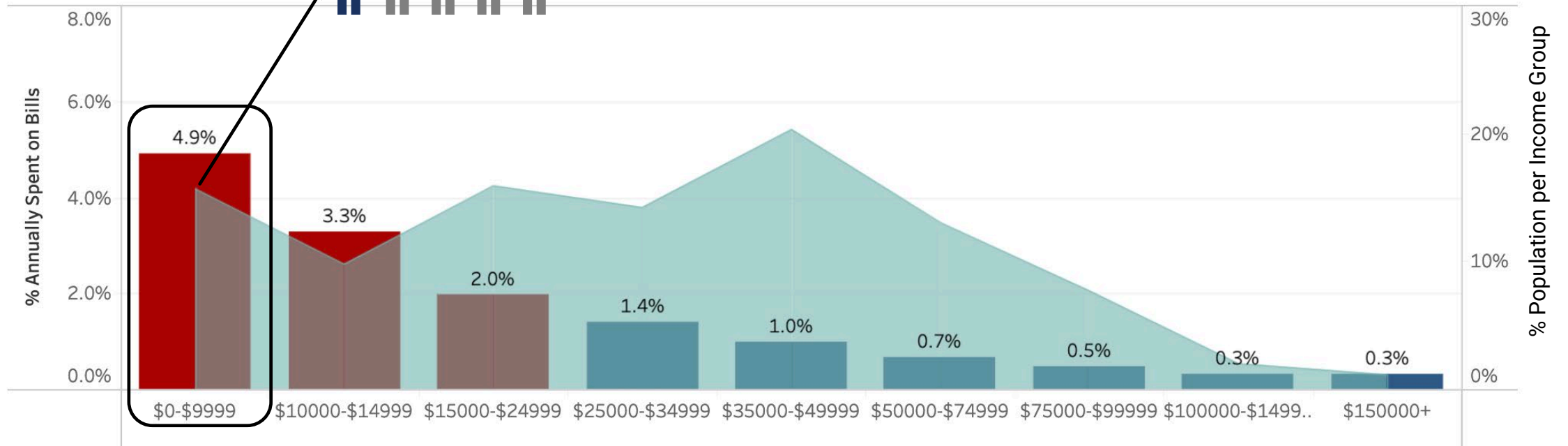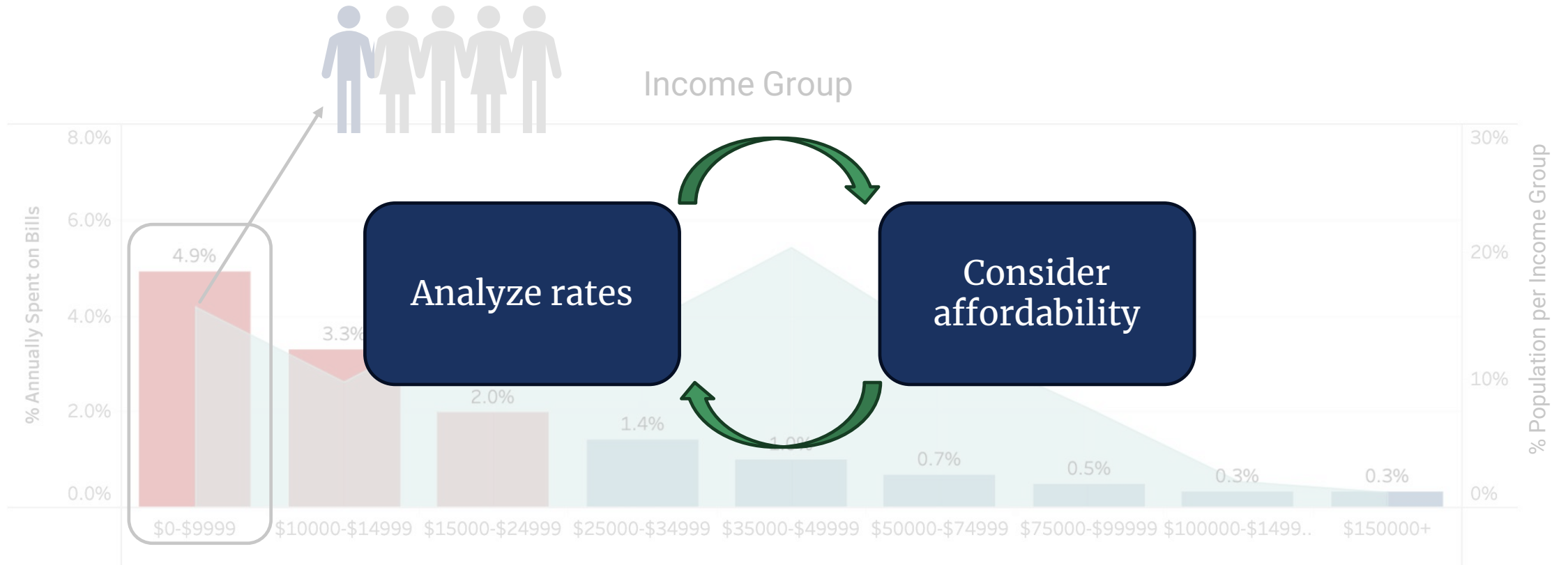|	$0-$9999	$10000-$14999	$15000-$24999	$25000-$34999	$35000-$49999	$50000-$74999	$75000-$99999	$100000-$1499..	$150000+
% Annually Spent on Bills	4.9%	3.3%	2.0%	1.4%	1.0%	0.7%	0.5%	0.3%	0.3%

The green area graph represents the distribution of the population across the income groups. The percentage of annual income that is spent on bills is represented by the red (low-income customers) or blue columns.

What happens Next?

➢ Is the utility ready for the new infrastructure? For managing the construction project?

➢ What outreach or education is needed around potential rate increases?

➢ Are there other changing expenses associated with new infrastructure that should be budgeted for?

Workforce Development & Other Costs

➢ Are there sufficient staff? Do they need additional training?

    ➢ Consider both field & office staff

➢ Are accompanying infrastructure changes needed? Do budgets for materials or labor need updates? What about emergency/contingency/reserve needs?

➢ Depreciation expense – how will the utility plan to replace the new infrastructure down the road?

Communicating the need for rate increases

➢ Bring in a third party
➢ Present multiple options – and *context*
➢ Proactively engage customers!

Change is Cyclical
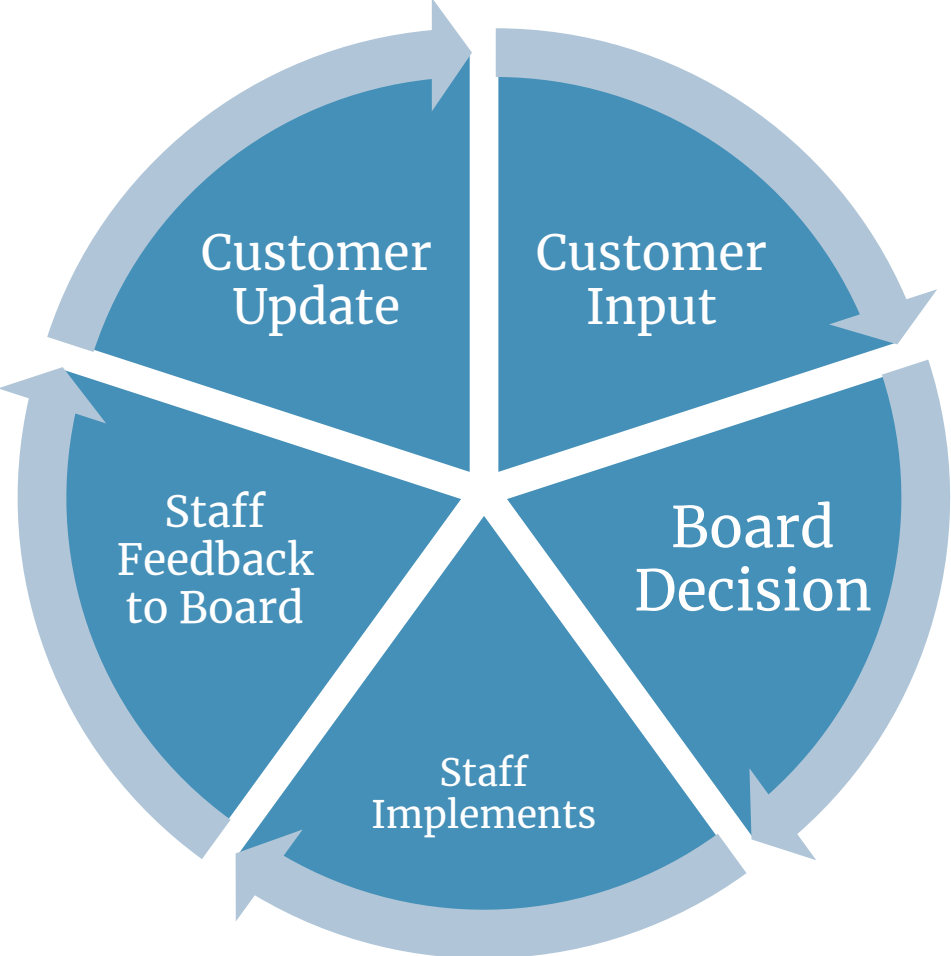
What is the projected debt coverage ratio with a loan?

Do rates need to increase to cover the debt service?

Subsidized Loan Calculator

Affordability Tool

- Calculate financial benchmarks based on audits
  - Debt coverage ratio
  - Operating ratio
  - Days cash-on-hand

Financial Health Checkup

- Compare subsidized & unsubsidized loans
- Calculate annual debt service payments

- Estimate revenues with current usage and rate structure
- Estimate potential rate increase to cover cost of loan

Rates Analysis Tool

- Compare affordability of current & new rates
- Enter costs at 4k gal/mo
- % of income spent on W/WW bills & % population per income group

What is the current debt coverage ratio?

How much would monthly household (HH) bills increase?

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Tools available at: https://efc.sog.unc.edu/tools/
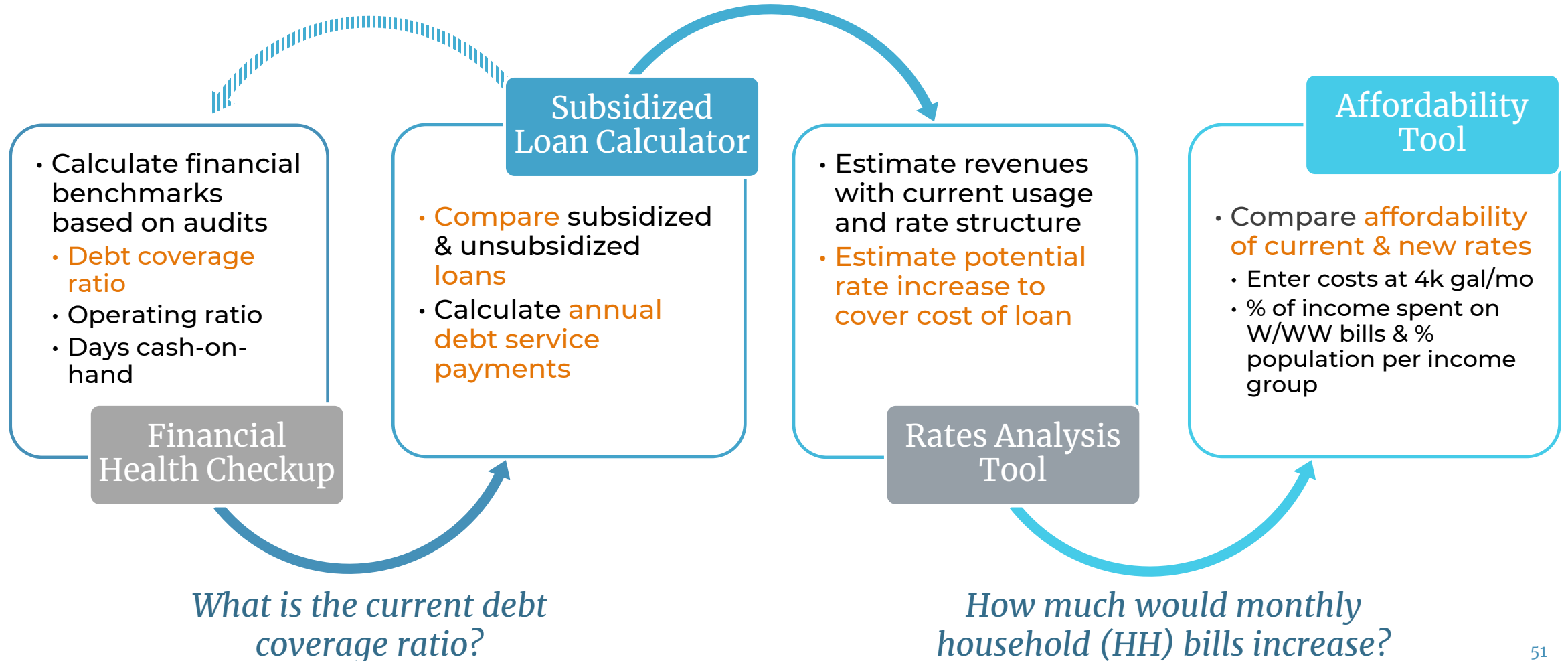
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Do rates need to increase to cover the debt service?

Updates in progress!

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Financial Health Checkup

- Compare subsidized & unsubsidized loans
- Calculate annual debt service payments

- Estimate revenues with current usage and rate structure
- Estimate potential rate increase to cover cost of loan

Rates Analysis Tool

- Compare affordability of current & new rates
- Enter costs at 4k gal/mo
- % of income spent on W/WW bills & % population per income group

What is the current debt coverage ratio?

How much would monthly household (HH) bills increase?

52

Tools available at: https://efc.sog.unc.edu/tools/

THANK YOU!

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https://efcnetwork.org/get-help/
https://efc.sog.unc.edu/technical-assistance/

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