



SEWER SYSTEM COSTS PRIMER

BEND OPTIMIZED COLLECTION SYSTEM MASTER PLAN

March 13, 2014

DRAFT RESULTS – SUBJECT TO CHANGE

MSA Murray, Smith & Associates, Inc.
Engineers/Planners

PRESENTATION CONTENTS

- ◆ Layers of the cake
- ◆ Flexibility to defer
- ◆ Ongoing replacement funding levels
- ◆ Financial overview
- ◆ Flow monitoring update
- ◆ Schedule

LAYERS OF THE CAKE

- ◆ Ongoing Operations and Maintenance
- ◆ Collection System Capacity CIP (Optimization)
- ◆ Water Reclamation Facility CIP
- ◆ Collection System Condition CIP
- ◆ Collection System Ongoing Replacement CIP

Note: Local area improvement costs are not included



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ONGOING OPERATIONS & MAINTENANCE

💧 Example Costs

- Staff Salary and Overhead
- Electricity to run WRF and Lift Stations
- Materials for WRF and Lift Stations
- Chemicals for WRF
- Vehicles and Equipment

COLLECTION SYSTEM CAPACITY CIP (OPTIMIZATION)

◆ Example Projects

- SE Interceptor
- Colorado LS and Force Main
- NE Interceptor
- North Area Force Main
- Other specific projects

WATER RECLAMATION FACILITY CIP

💧 Example Projects

- Secondary Treatment Expansion
- Digester Upgrade
- Other Projects

COLLECTION SYSTEM CONDITION CIP

💧 Example Projects

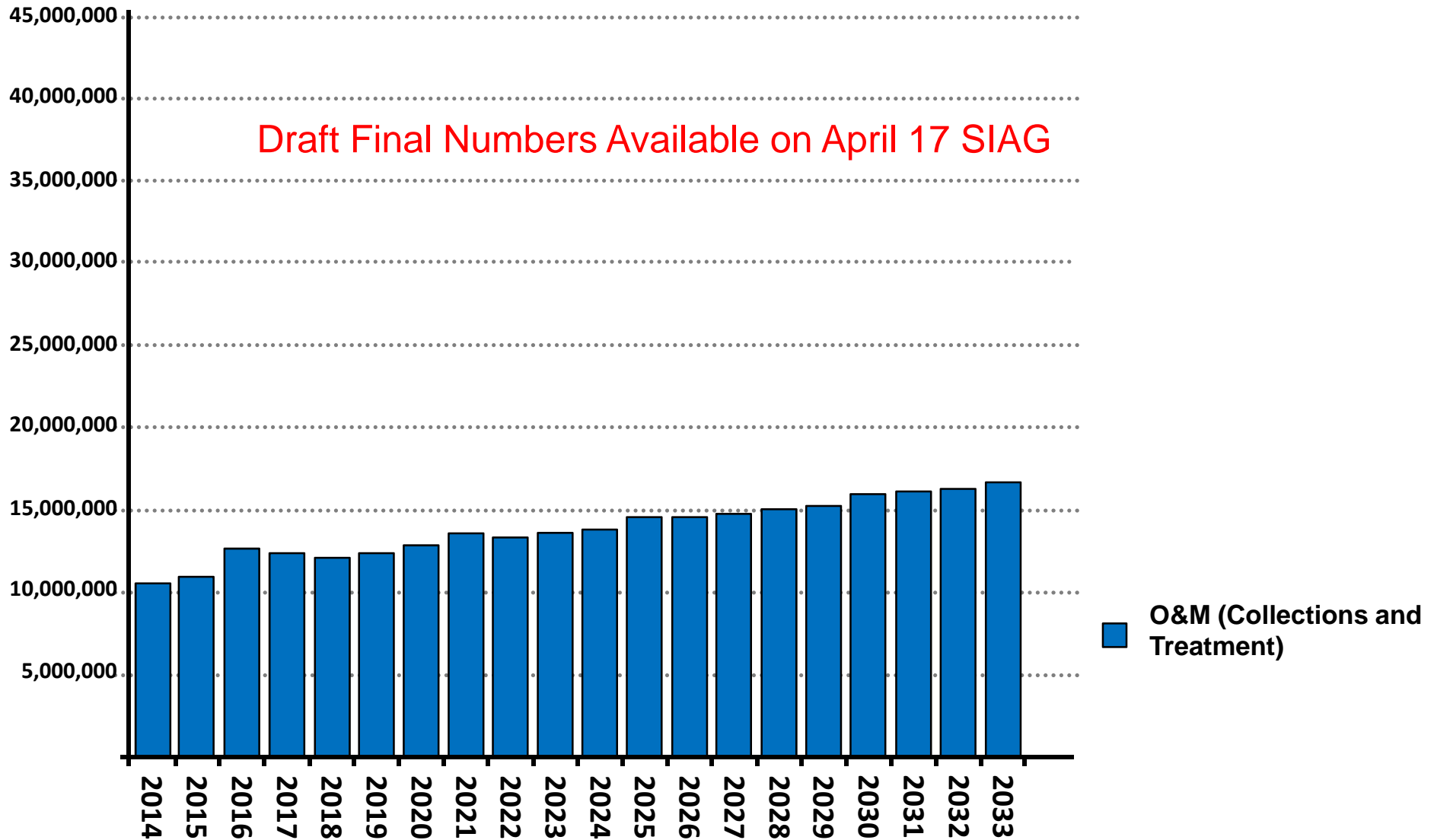
- Awbrey Glen Lift Station and Valhalla Odor improvements
- Specific Lift Station improvements
- Plant Interceptor condition improvements
- Other specific pipe condition improvements

COLLECTION SYSTEM ONGOING REPLACEMENT CIP

💧 Example Projects

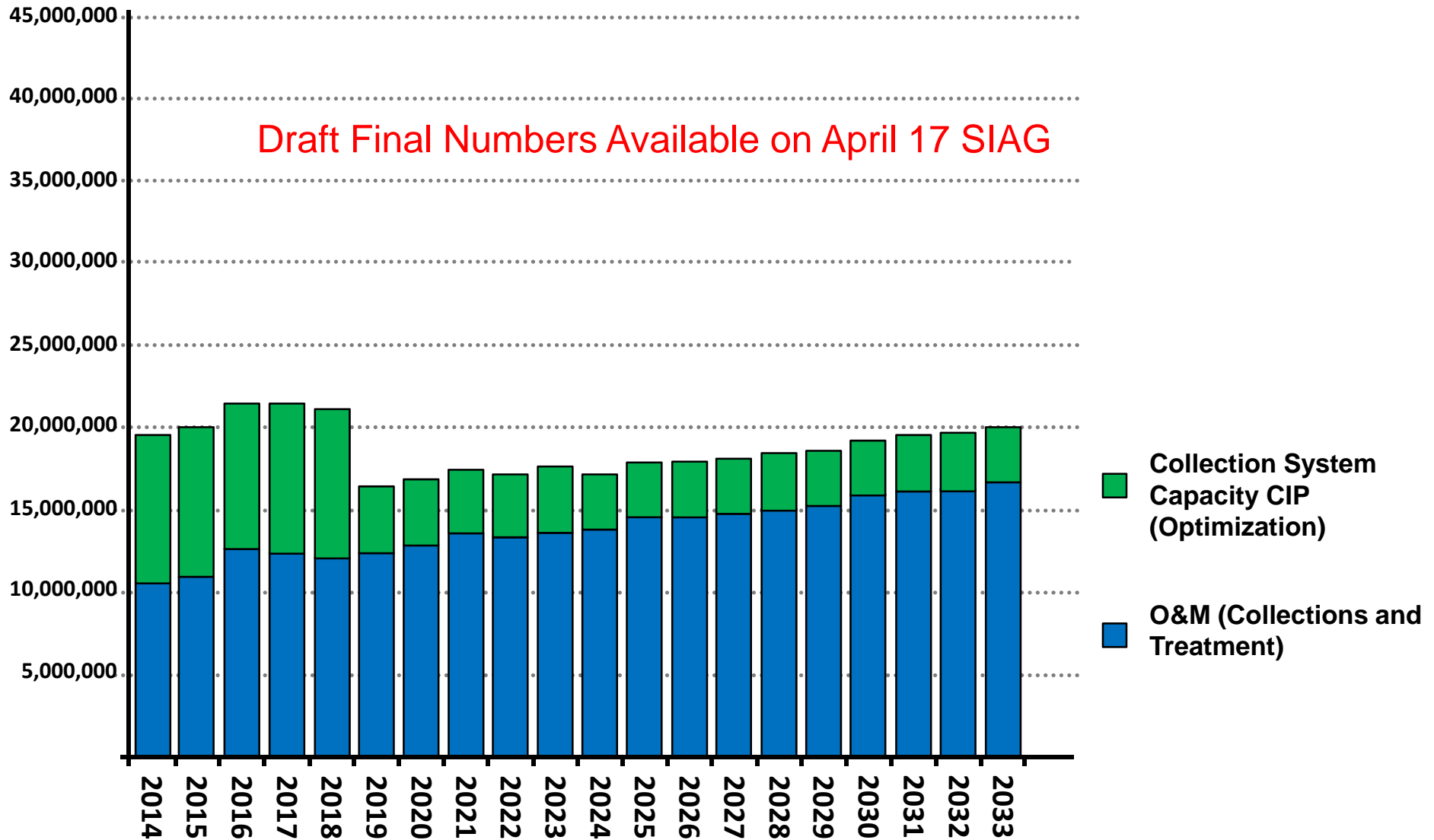
- Ongoing pipe replacement/rehabilitation
 - Gravity – including manholes
 - Force Main
 - Common Pressure Main
 - Vacuum Main
- Ongoing lift station replacement/rehabilitation

FORECAST ANNUAL EXPENDITURES



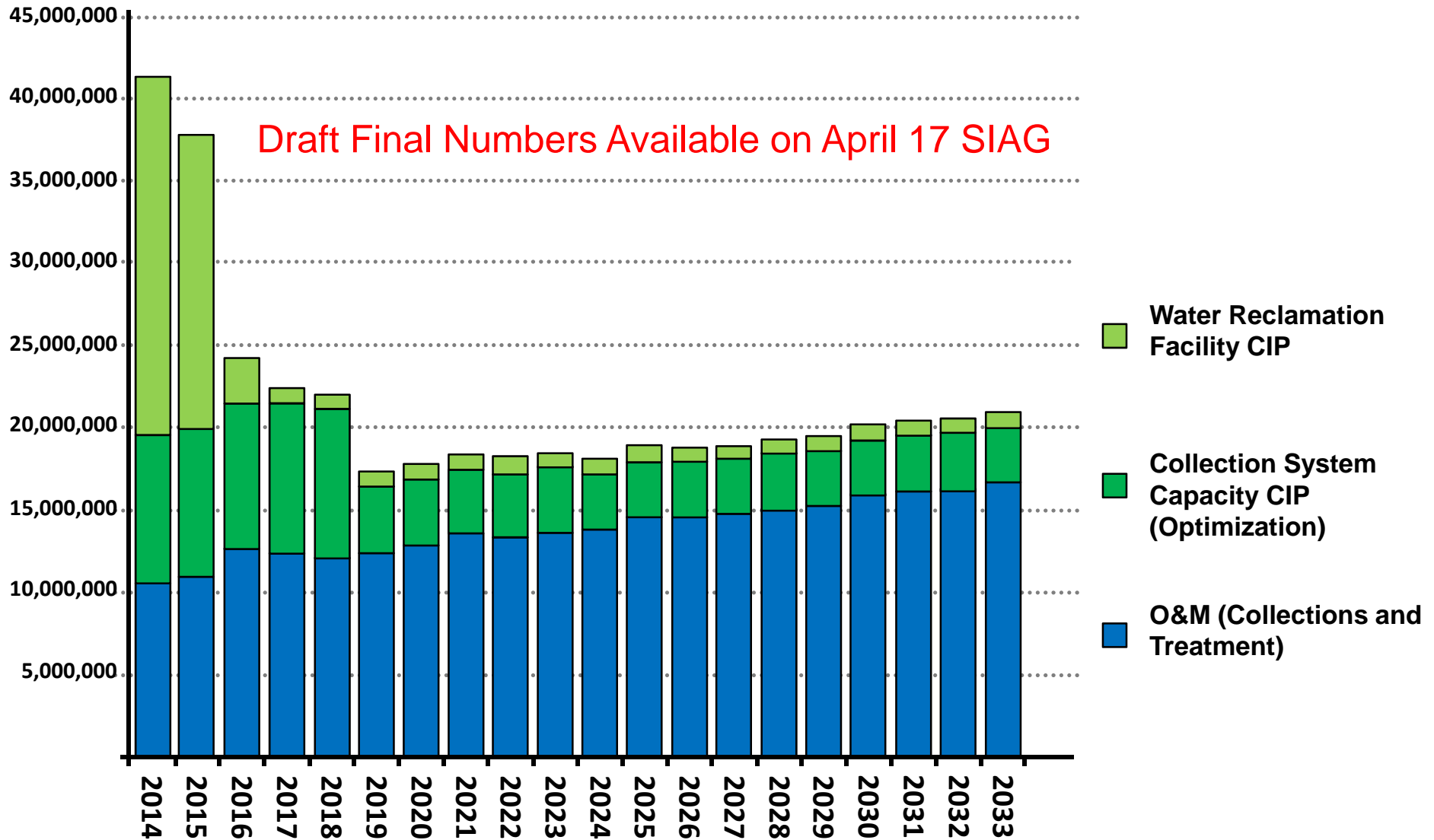
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FORECAST ANNUAL EXPENDITURES



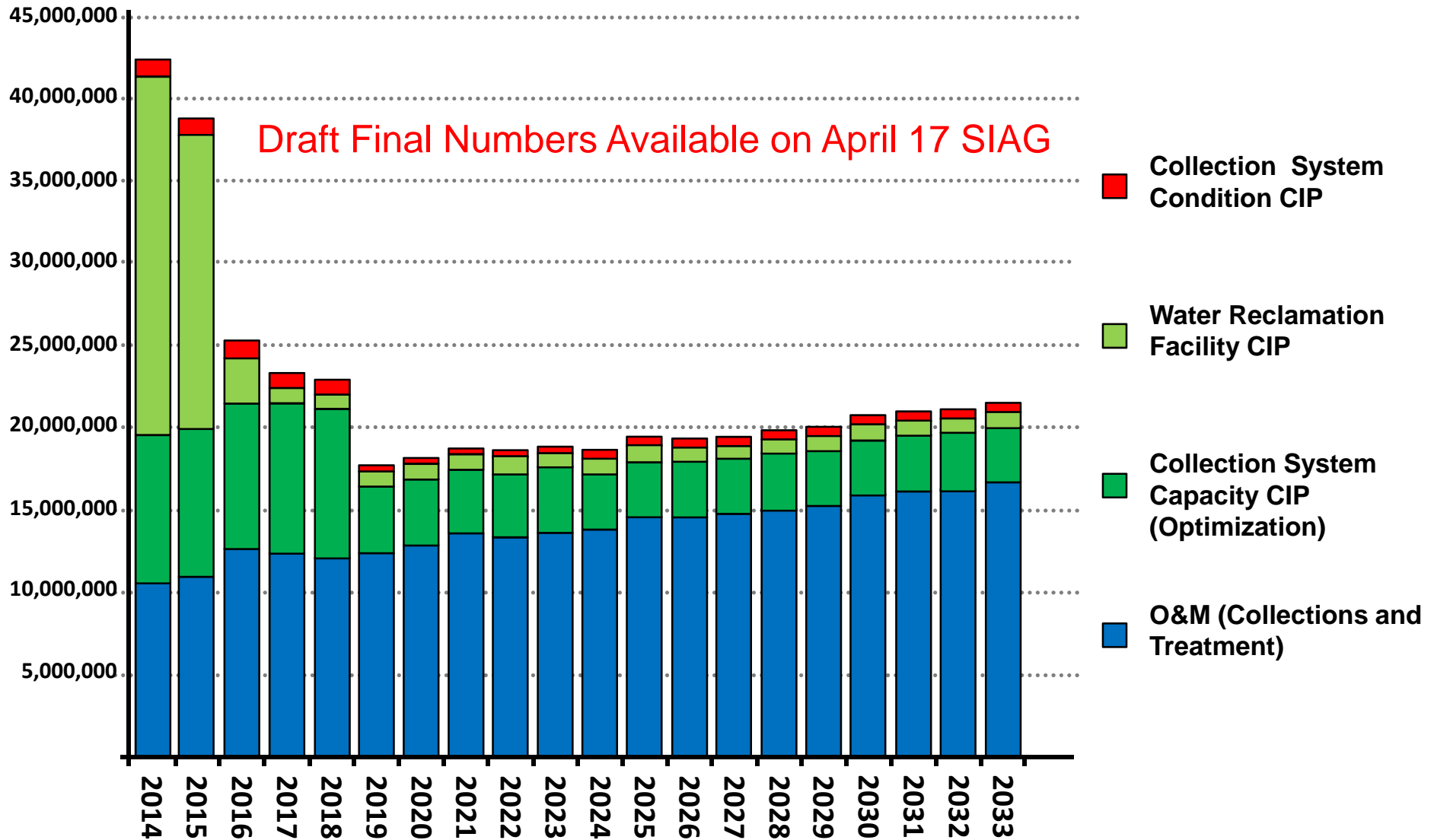
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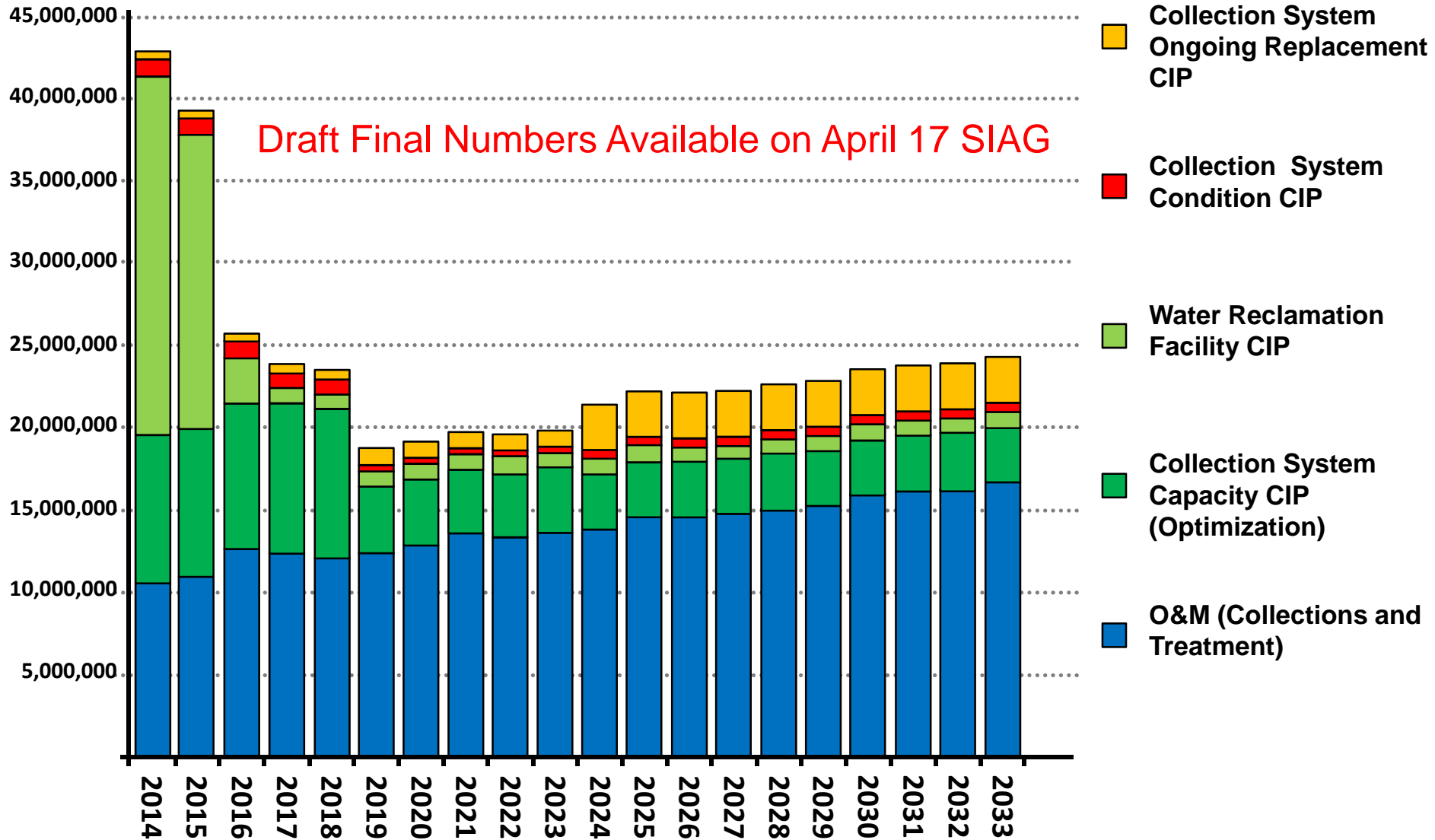
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FORECAST ANNUAL EXPENDITURES



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FORECAST ANNUAL EXPENDITURES



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WHAT CAN BE DEFERRED?

◆ Why defer?

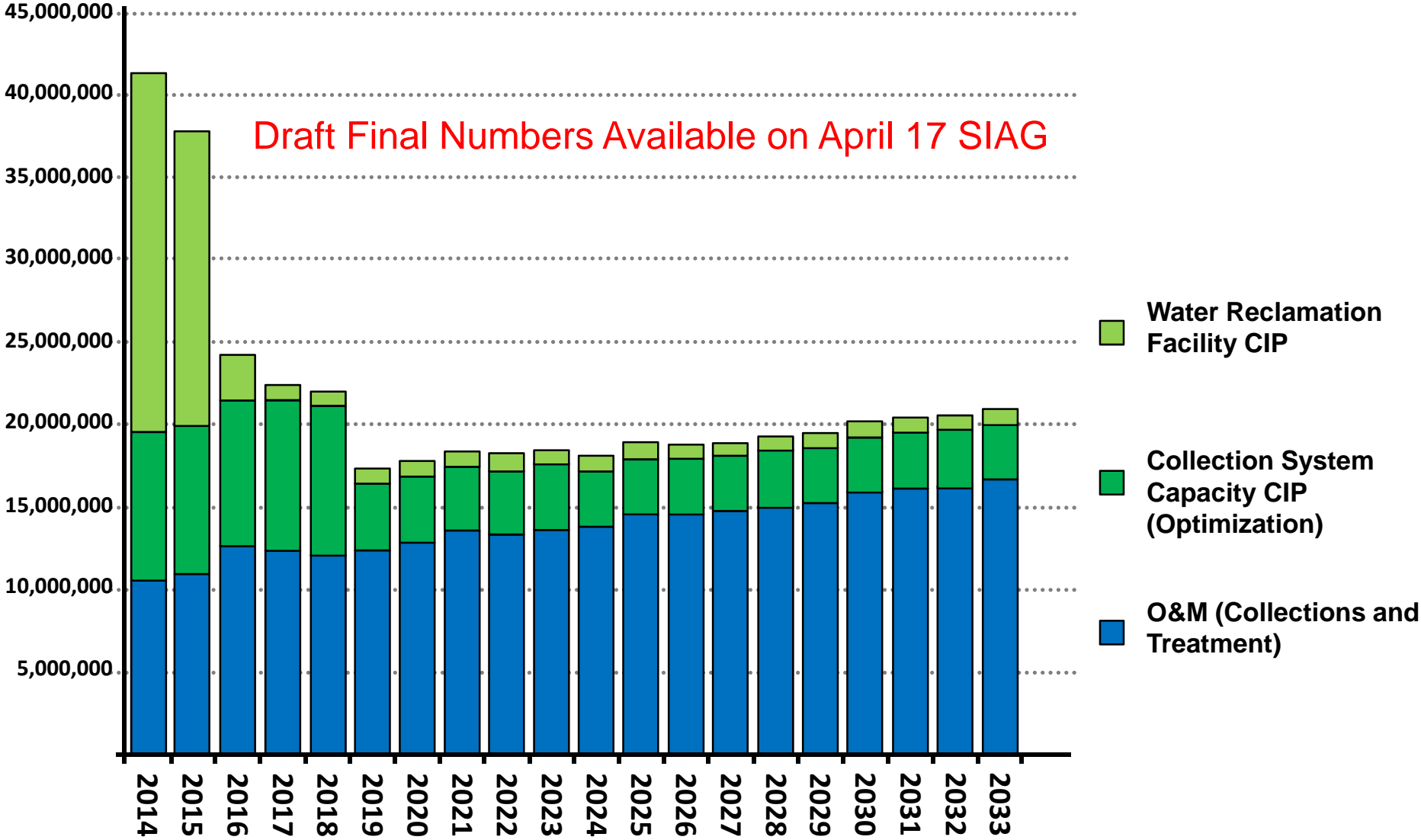
- Potentially decreases how fast rates may change
- Potentially decreases how much rates may increase

◆ Why not defer?

- Stakeholder interests including Operations, Community Development, Rate Payers, Jobs and the Economy, Public Health Risks

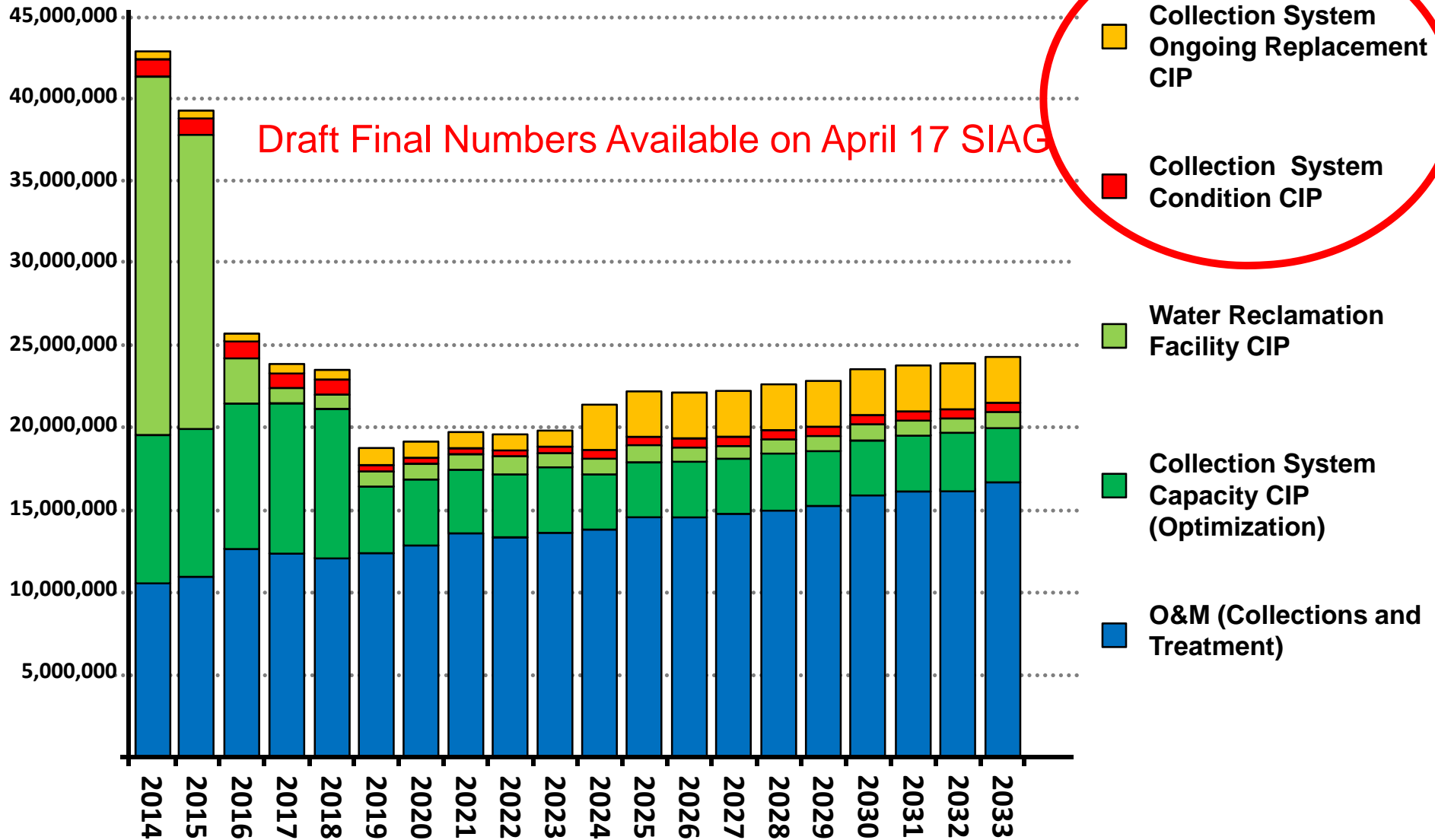
◆ What can be deferred ...

LITTLE TO NO FLEXIBILITY



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MORE FLEXIBILITY



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POTENTIAL FUNDING LEVELS FOR ONGOING REPLACEMENT

Example 1

Sewer Collection System Infrastructure Full Replacement Cost				
Component	Type of Improvement	Useful Life (years)	Replacement Cost	Required Investment
Gravity	Replacement	80	\$700,000,000	\$8,800,000
Force Main	Replacement	50	\$20,000,000	\$400,000
Common Pressure Main	Replacement	50	\$56,000,000	\$1,100,000
Vacuum Main	Replacement	50	\$3,000,000	\$60,000
Lift Station	Replacement	35	\$80,000,000	-
Residential Lift Station	Replacement	20	\$2,000,000	\$100,000
Total			\$861,000,000	\$10,000,000

POTENTIAL FUNDING LEVELS FOR ONGOING REPLACEMENT

Example 2

Sewer Collection System Infrastructure Repair and Rehabilitation Cost				
Component	Type of Improvement	Useful Life (years)	Rehabilitation/Replacement Cost	Required Investment
Gravity	CIPP Rehabilitation	80	\$297,000,000	\$3,700,000
Force Main	Pipe Bursting	50	\$13,000,000	\$260,000
Common Pressure Main	Pipe Bursting	50	\$37,000,000	\$740,000
Vacuum Main	Pipe Bursting	50	\$2,000,000	\$40,000
Lift Station	Rehabilitation	35	\$28,000,000	-
Residential Lift Station	Rehabilitation	20	\$2,000,000	\$100,000
Total			\$379,000,000	\$5,000,000

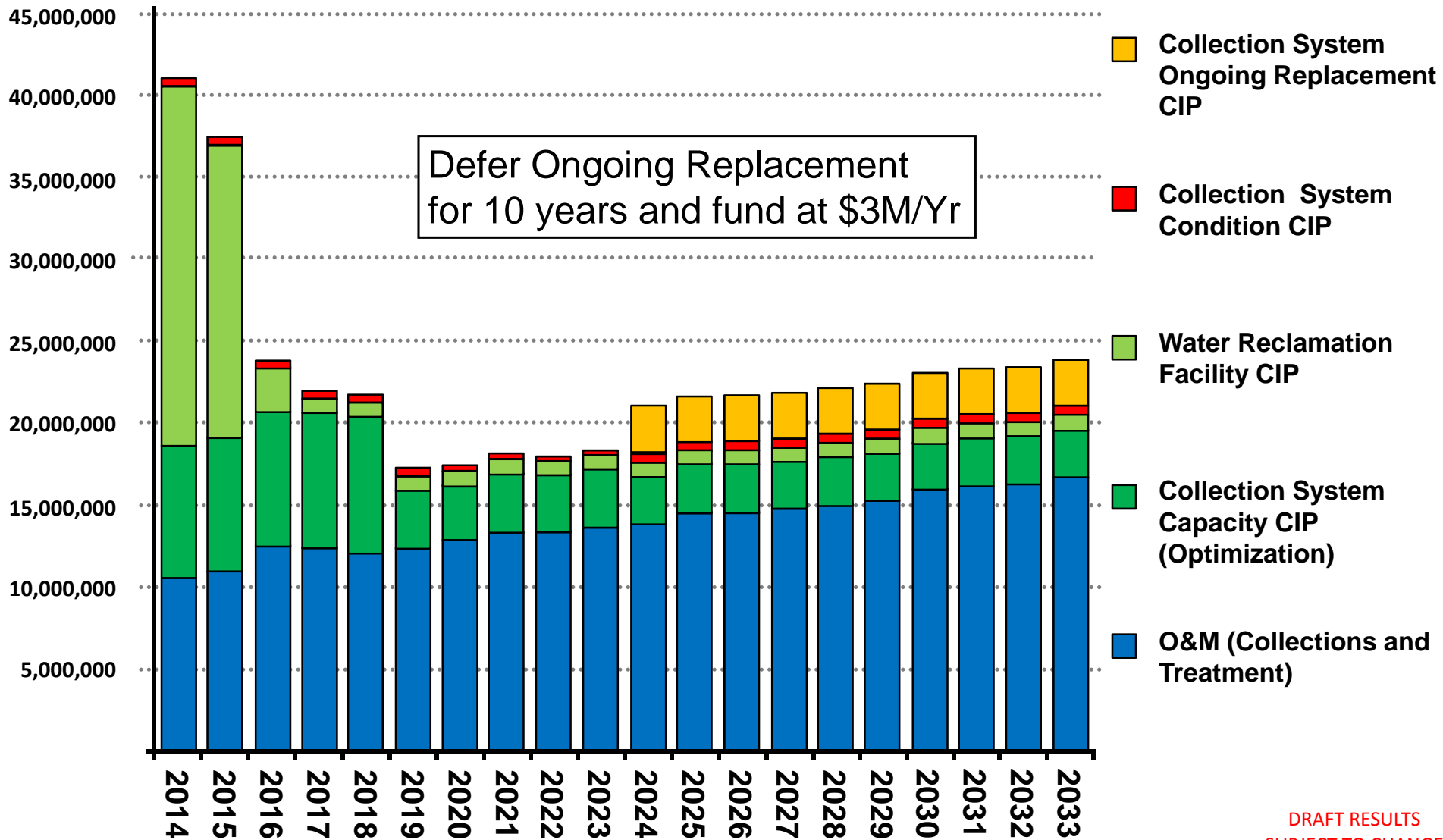
POTENTIAL FUNDING LEVELS FOR ONGOING REPLACEMENT

Example 3

Sewer Collection System Infrastructure Repair and Rehabilitation Cost				
Component	Type of Improvement	Useful Life (years)	Rehabilitation/ Replacement Cost	Required Investment
Gravity	CIPP Rehabilitation	160	\$297,000,000	\$1,900,000
Force Main	Pipe Bursting	50	\$13,000,000	\$260,000
Common Pressure Main	Pipe Bursting	50	\$37,000,000	\$740,000
Vacuum Main	Pipe Bursting	50	\$2,000,000	\$40,000
Lift Station	Rehabilitation	35	\$28,000,000	-
Residential Lift Station	Rehabilitation	20	\$2,000,000	\$100,000
Total			\$379,000,000	\$3,000,000

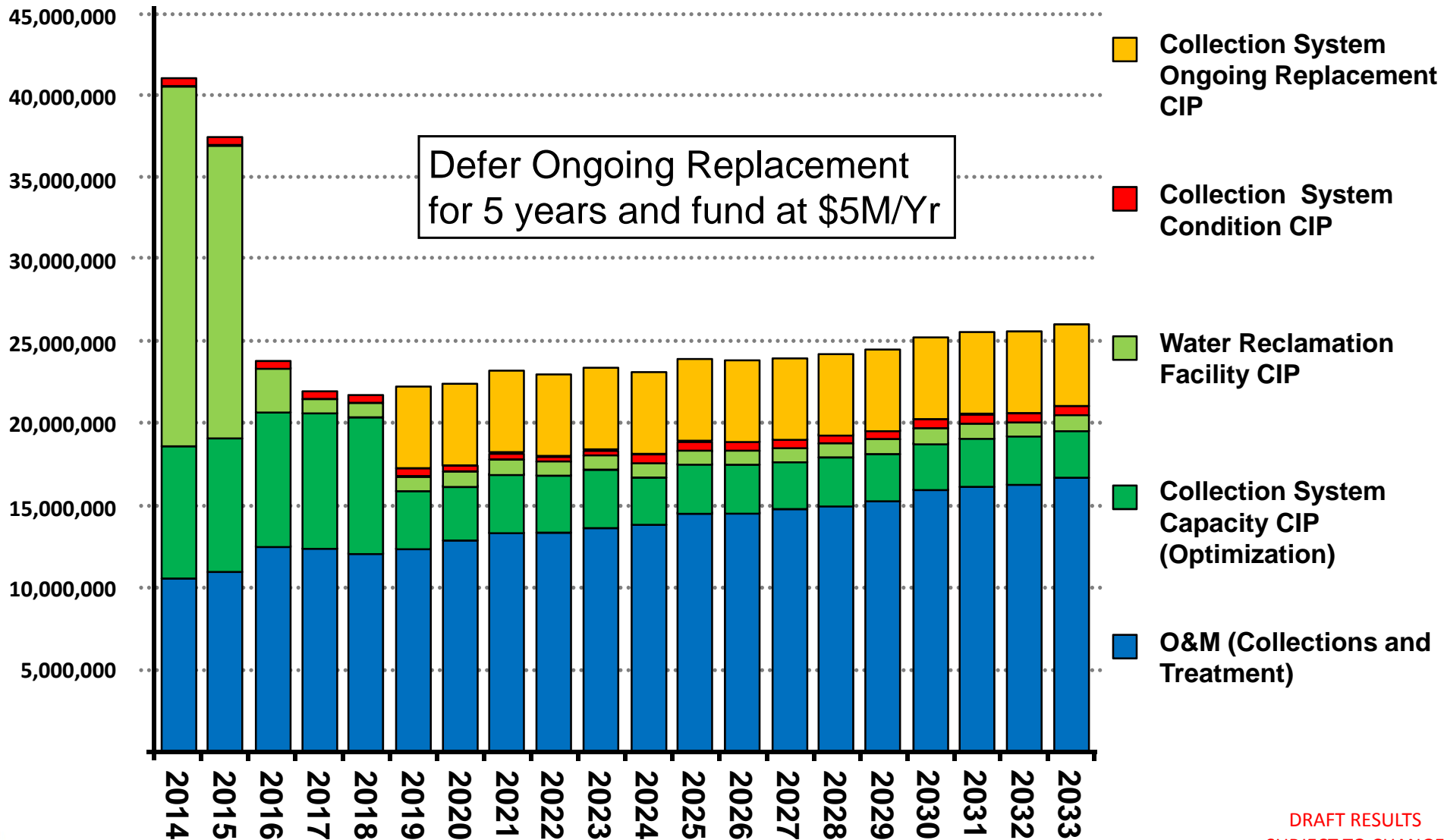
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DEFERRAL AND FUNDING LEVEL OPTIONS



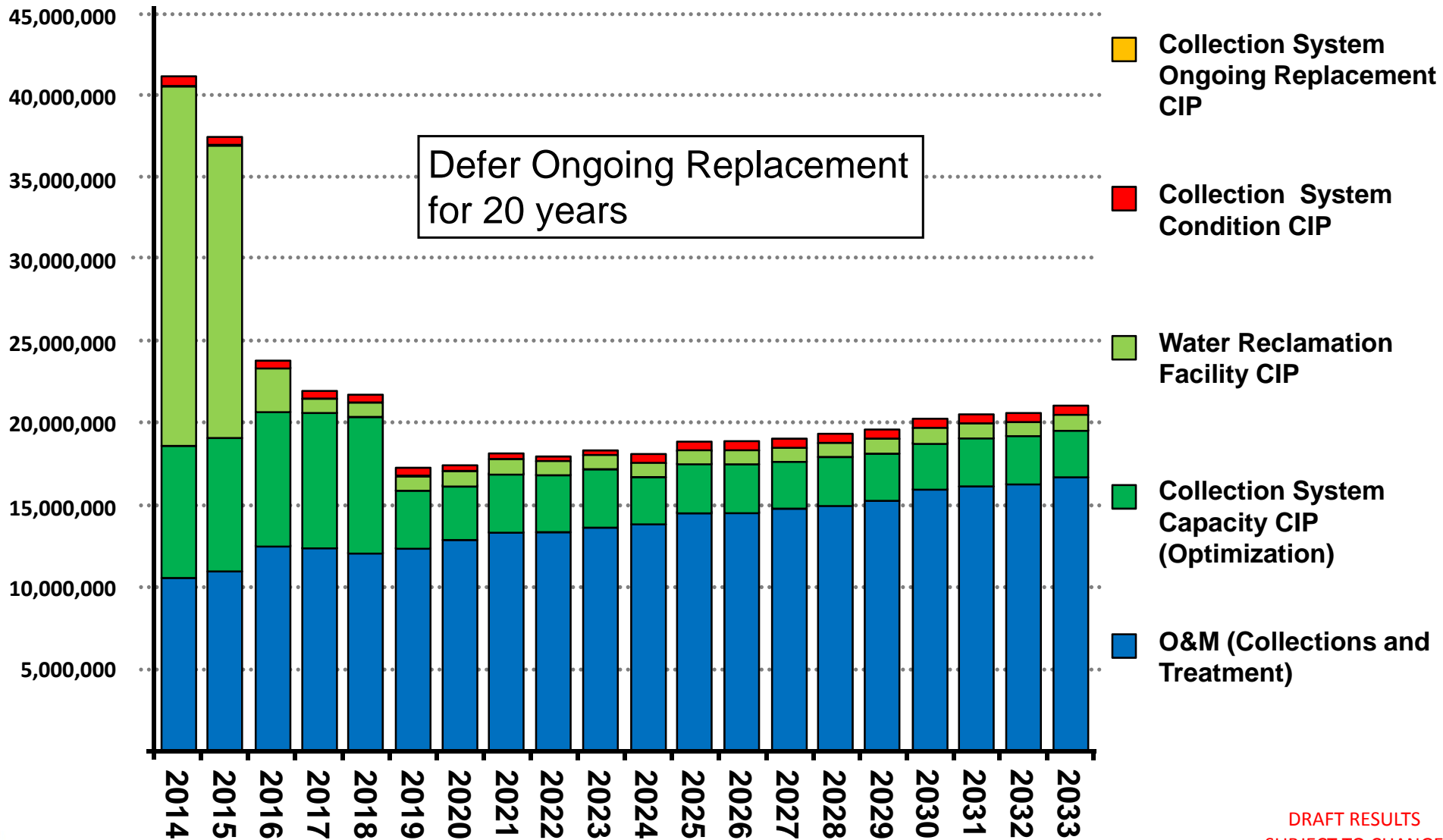
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DEFERRAL AND FUNDING LEVEL OPTIONS



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DEFERRAL AND FUNDING LEVEL OPTIONS



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RATE MODEL KEY ASSUMPTIONS

- ◆ No significant change (0.2% per year) in customer accounts
- ◆ SDC revenue included at current charges
- ◆ Bonds 20-year term, 4.25% interest rate
- ◆ Minimum operating reserve met (90 days of operating expenditures)
- ◆ Minimum debt service coverage 1.5

WHAT'S INCLUDED?

(MINIMUM NEEDED FOR FUNCTIONING SYSTEM)

 **Water Reclamation
Facility CIP**

 **Collection System
Capacity CIP
(Optimization)**

 **O&M (Collections and
Treatment)**

WHAT'S NOT INCLUDED (YET)?

(TO BE CONSIDERED BY SIAG AT APRIL & MAY MEETINGS)

 **Collection System
Ongoing Replacement
CIP**

 **Collection System
Condition CIP**

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AS A REMINDER:



Collection System Ongoing Replacement CIP

- ◆ Example 1 (Full Replacement) **\$10M**
- ◆ Example 2 (Repair & Rehab-Medium) **\$5M**
- ◆ Example 3 (Repair & Rehab-Minimum) **\$3M**

HOW MUCH WILL THE REVENUES SUPPORT?

Costs = ■ Water Reclamation Facility CIP + ■ Collection System Capacity CIP (Optimization) + ■ O&M (Collections & Treatment)

Year	Current Rate \$44.37
2014	(\$2.1 million)
2015	(\$3.6 million)
2016	(\$3.7 million)
2017	(\$3.8 million)
2018	(\$3.6 million)
2019	\$0
2020	\$0
2021	\$0
2022	\$0
2023	\$0
2024	\$0

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HOW MUCH IS LEFT TO PAY FOR:

■ Collection System Ongoing Replacement CIP Options:

Example 1 **\$10M**

Example 2 **\$5M**

Example 3 **\$3M**

HOW MUCH WILL THE REVENUES SUPPORT?

Costs = ■ Water Reclamation Facility CIP + ■ Collection System Capacity CIP (Optimization) + ■ O&M (Collections & Treatment)

Year	Current Rate \$44.37	Phase-In to \$55.00
2014	(\$2.1 million)	\$0
2015	(\$3.6 million)	\$0
2016	(\$3.7 million)	\$0
2017	(\$3.8 million)	\$0
2018	(\$3.6 million)	\$0
2019	\$0	\$1.3 million
2020	\$0	\$1.3 million
2021	\$0	\$1.3 million
2022	\$0	\$1.4 million
2023	\$0	\$1.4 million
2024	\$0	\$4.7 million

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HOW MUCH IS LEFT TO PAY FOR:

■ Collection System Ongoing Replacement CIP Options:
Example 1 \$10M **Example 2 \$5M** **Example 3 \$3M**

HOW MUCH WILL THE REVENUES SUPPORT?

Costs = ■ Water Reclamation Facility CIP + ■ Collection System Capacity CIP (Optimization) + ■ O&M (Collections & Treatment)

Year	Current Rate \$44.37	Phase-In to \$55.00	Phase-In to \$65.00
2014	(\$2.1 million)	\$0	\$0.3 million
2015	(\$3.6 million)	\$0	\$0.3 million
2016	(\$3.7 million)	\$0	\$0.3 million
2017	(\$3.8 million)	\$0	\$0.4 million
2018	(\$3.6 million)	\$0	\$0.4 million
2019	\$0	\$1.3 million	\$5.7 million
2020	\$0	\$1.3 million	\$5.9 million
2021	\$0	\$1.3 million	\$6.0 million
2022	\$0	\$1.4 million	\$6.1 million
2023	\$0	\$1.4 million	\$6.2 million
2024	\$0	\$4.7 million	\$6.3 million

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HOW MUCH IS LEFT TO PAY FOR:

■ Collection System Ongoing Replacement CIP Options:

Example 1 **\$10M**

Example 2 **\$5M**

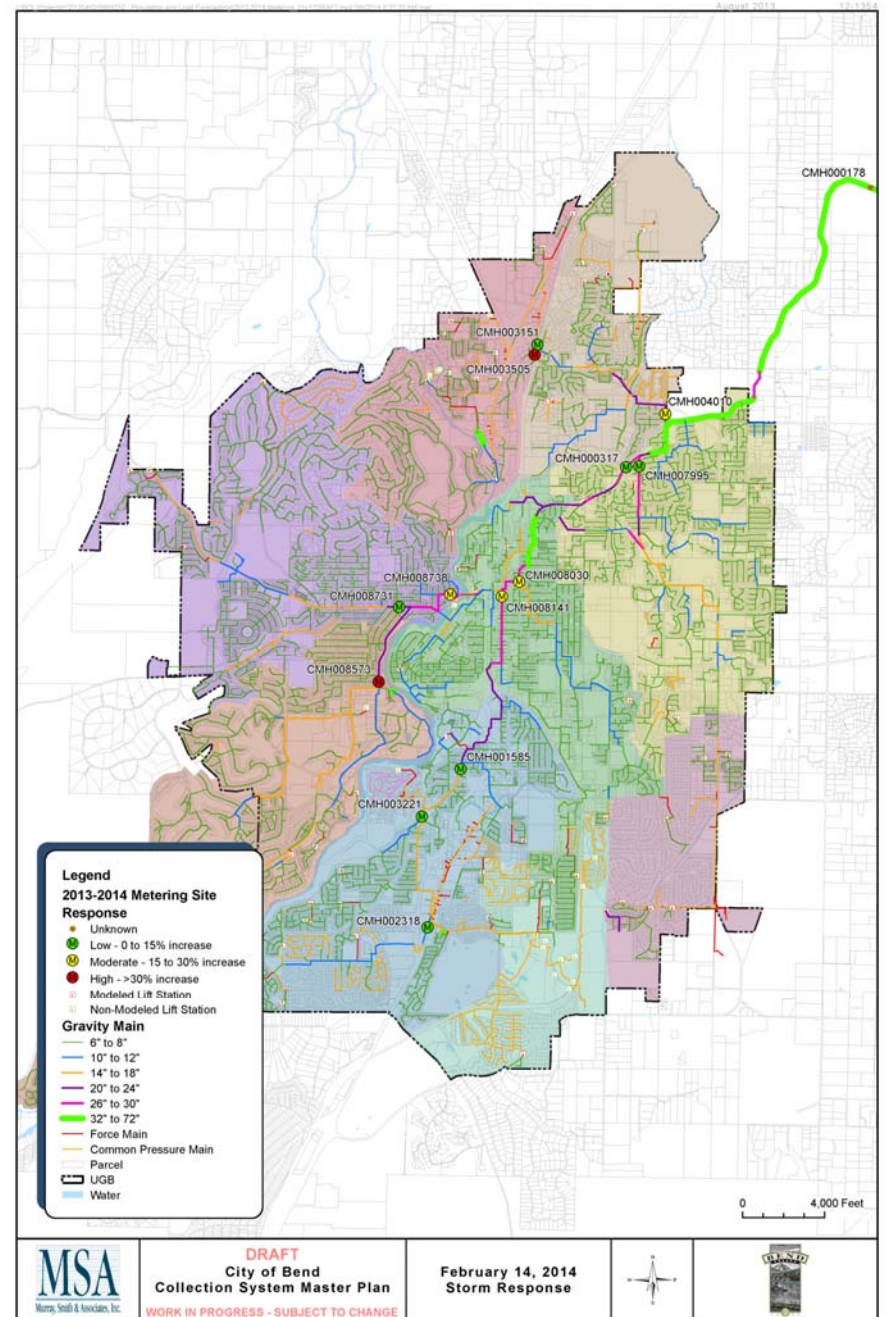
Example 3 **\$3M**



What questions do you have for the
finance team?

(to be answered at the
May 1 SIAG meeting)

FLOW MONITORING



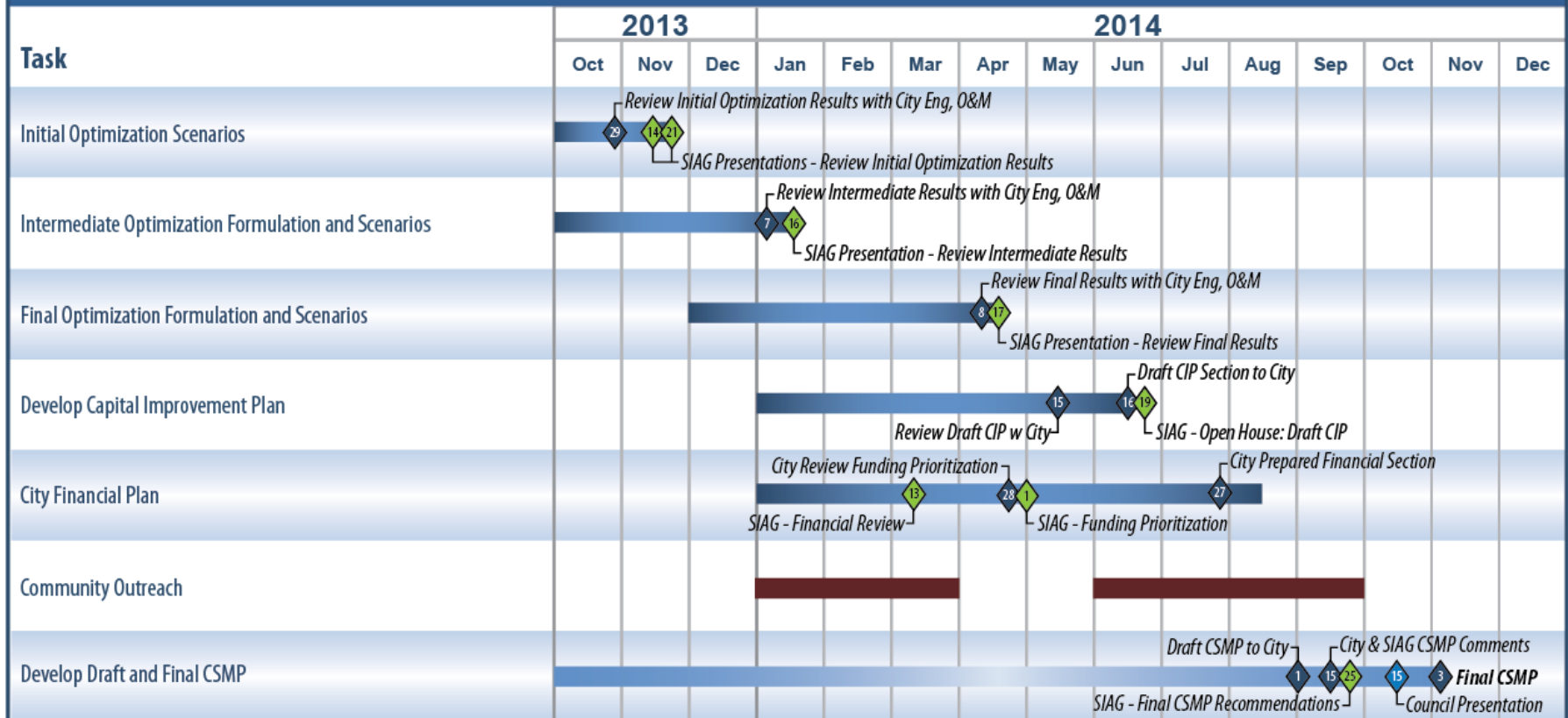
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SCHEDULE



DRAFT CONDENSED PROJECT SCHEDULE (AS OF FEBRUARY 25, 2014)

CITY OF BEND OPTIMIZED SEWER COLLECTION SYSTEM MASTER PLAN



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February 25, 2014