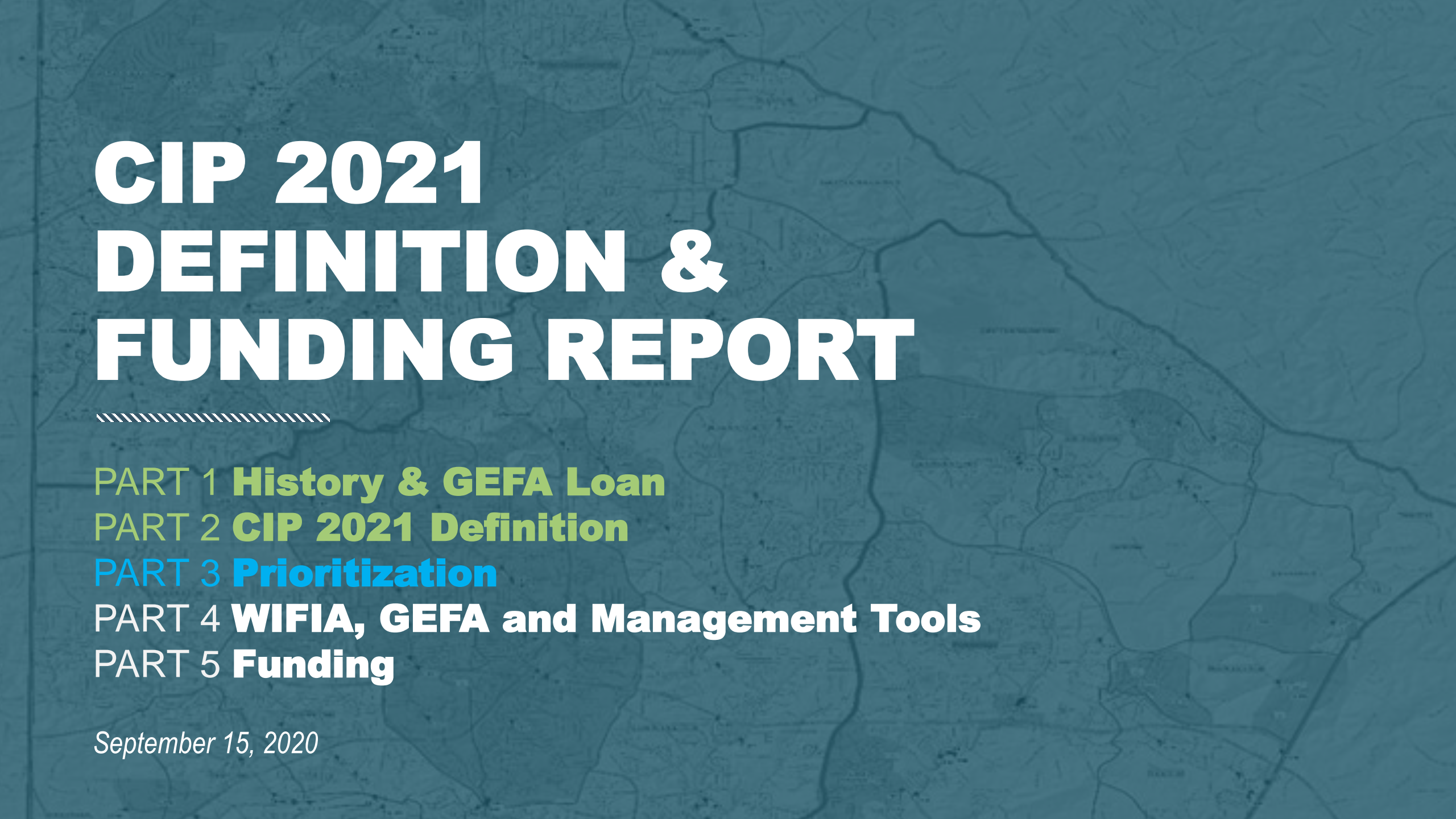


CIP 2021 DEFINITION & FUNDING REPORT



PART 1 **History & GEFA Loan**

PART 2 **CIP 2021 Definition**

PART 3 **Prioritization**

PART 4 **WIFIA, GEFA and Management Tools**

PART 5 **Funding**

September 15, 2020

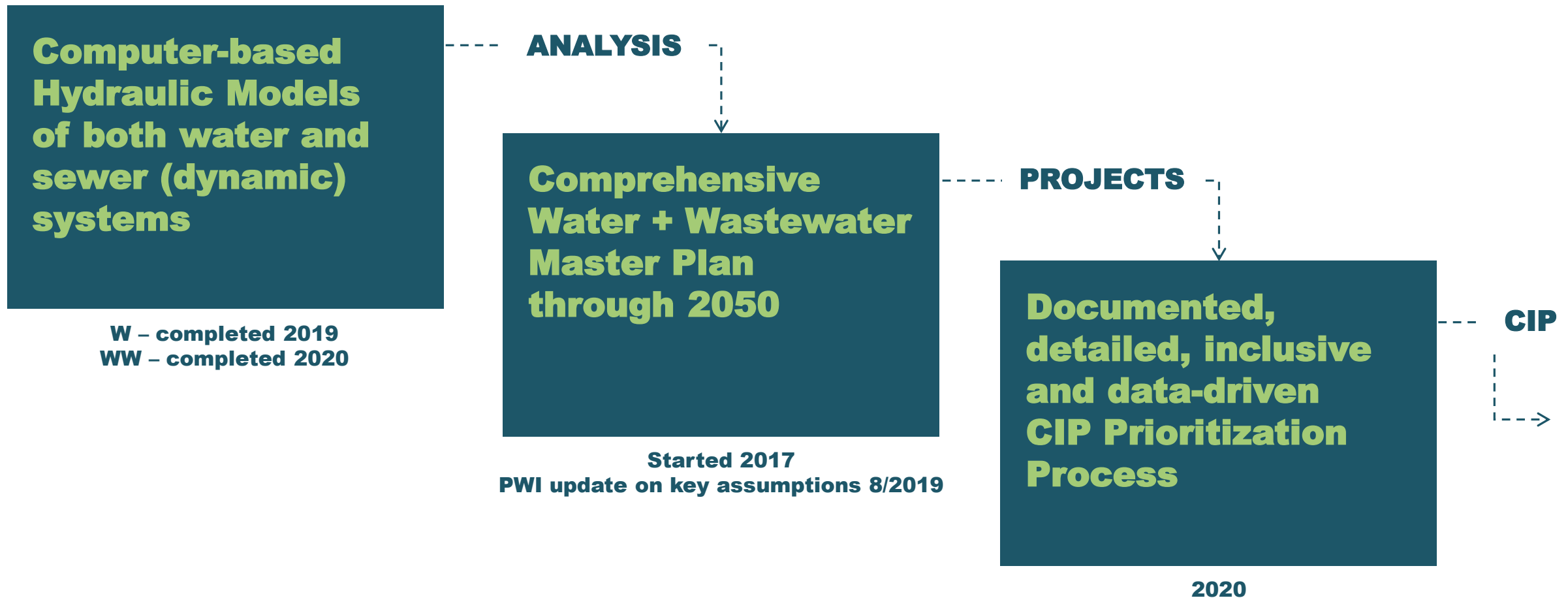


RECAP

////////////////////

PIVOT TO NEW PROCESSES FOR CIP 2021

*State-of-the-art Tools Allow
Best-practice Planning & Prioritization*



CIPs 2010 & 2021 COMPARED

PERIOD

CIP 2010 – 5 yrs
CIP 2021 – 10 yrs ⁽¹⁾

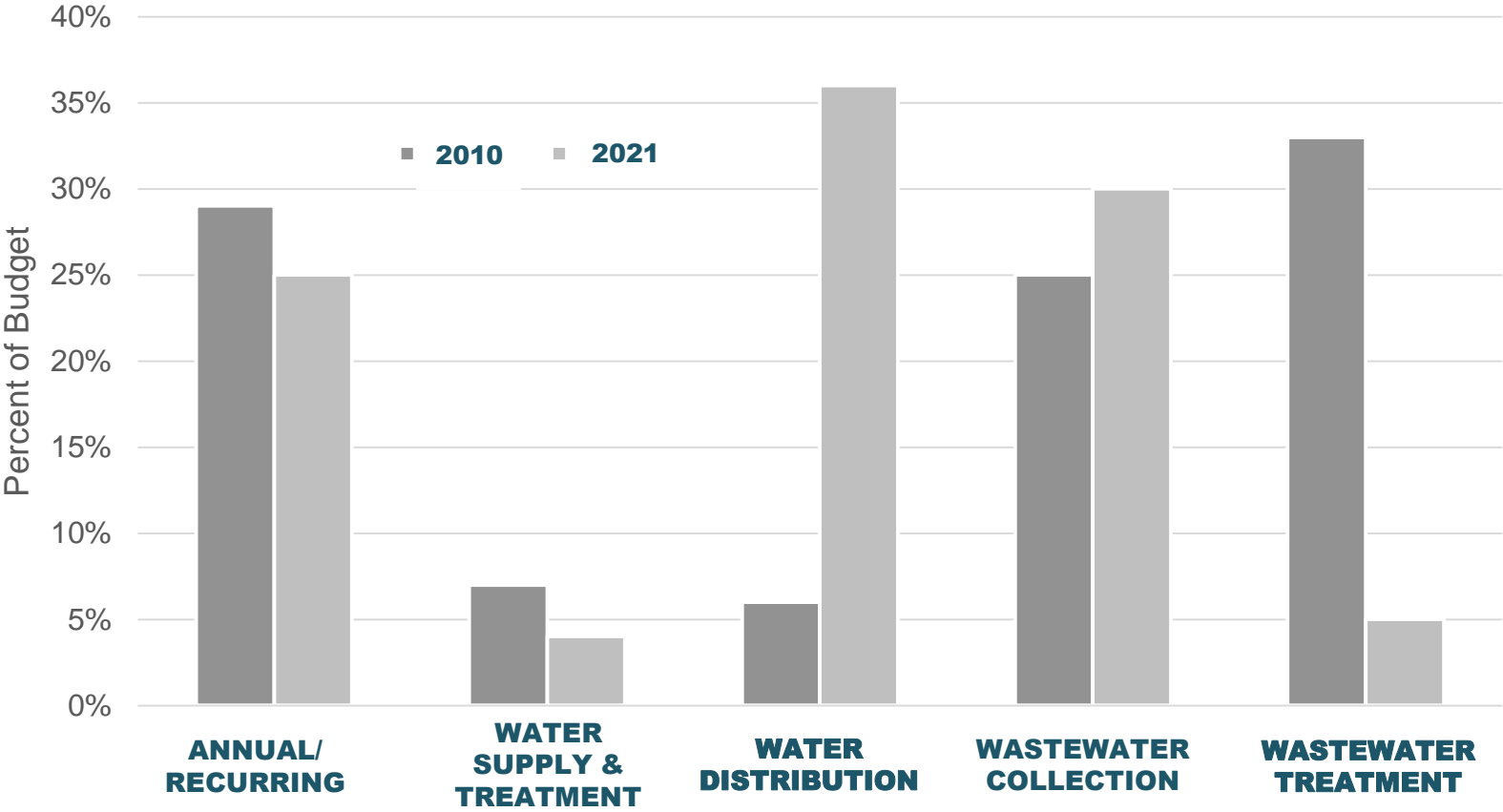
INVESTMENT

CIP 2010 – \$1.3B
CIP 2021 – \$2.4B

ANNUAL SPEND ⁽²⁾

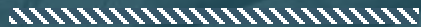
CIP 2010 – \$269M/yr
CIP 2021 – \$235M/yr

Staff is proposing:
(1) 10 year period, but with annual review process
(2) Lower annual spend than CIP 2010

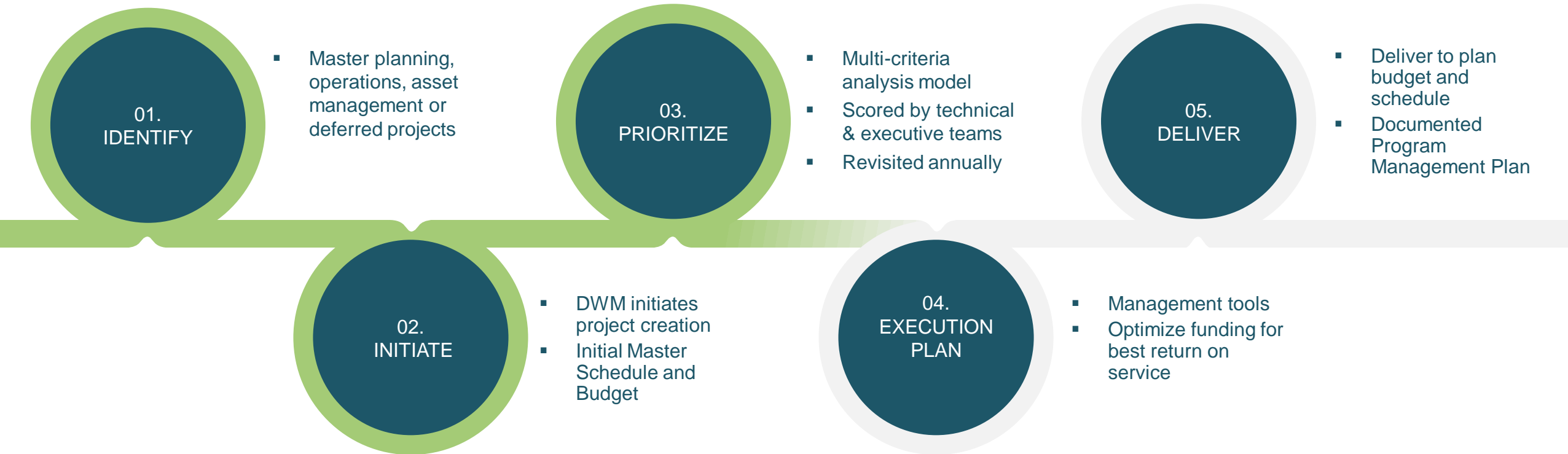


CIP LIFECYCLE

Documented, Detailed, Inclusive & Data-driven



CIP LIFECYCLE



PROJECT IDENTIFICATION - WATER

LEVEL OF SERVICE (LOS) REQUIRED IN 2050

- ▶ Resiliency - Intake, treatment, storage and pumping
- ▶ System performance:
 - ▶ Pressures
 - ▶ Velocities
 - ▶ Fire flows
 - ▶ Water age
- ▶ Maintenance, including 1% rule – stretch goal 2-3%

GAP BETWEEN REQUIRED FACILITIES & CURRENT

Key projects:

- ▶ WTP resiliency
- ▶ Pressure zones added/modified
- ▶ New/relocated tanks
- ▶ Major transmission mains – new and looped

PROJECTS SIZED & SEQUENCED

- ▶ Constructible package sizes
- ▶ Balanced spend over time

KEY SIGNS OF A WATER SYSTEM

Historically Stressed (1)

CAUSE	EFFECT	DETAIL
Aging pipe	Breaks (~900 in 2019 – 3 per day and increasing) & leaks	600 miles of pipe (20%) will be past its service life in next 10 years
Water level pressure too high	Breaks (~900 in 2019 – 3 per day and increasing) & leaks	2018 averaged 3 breaks per day
Emergency storage LOS not met	Loss of resiliency	Some tanks are hydraulically "submerged", in the wrong place or the wrong size
Fire flow deficiencies	Loss of resiliency	Related to topography (higher elevations) and local system hydraulic limitations

KEY SIGNS OF A WATER

System Historically Stressed (2)

CAUSE	EFFECT	DETAIL
Maximum velocity criteria	Higher pressures, breaks, leaks and increased operating costs for extra pumping	1/3 of large diameter transmission mains exceed the maximum velocity criteria
Lost Water	Increased costs/lost revenue	Non-Revenue Water (NRW), discussed on next page, is 29%, best practice is 10%

We did not create these challenges ... they have evolved over decades, but we must, now in this CIP horizon, begin the work to solve them.

MOVING TO BEST PRACTICES

Reducing Losses

NON – REVENUE WATER

Non-Revenue Water (NRW) is water that has been produced and is “lost” before it reaches the customer.

Unbilled Authorized Consumption	Water for Firefighting Flushing Water Mains Watering Municipal Gardens Public Water Fountains
Apparent Losses	Unauthorized Consumption Metering Inaccuracies System Data Handling
Real Losses	Leakage or Overflows

IMPORTANCE OF REDUCING NRW

- Reduce water treatment costs
- Increase revenue
- Improve operation efficiency
- Increase resiliency
- Environmental stewardship

CIP Projects to reduce NRW

- Customer Meter Replacement Program
- WTP Meter Replacement and Calibration
- Pressure Management
- Water Main/Pipe Replacement and Rehabilitation

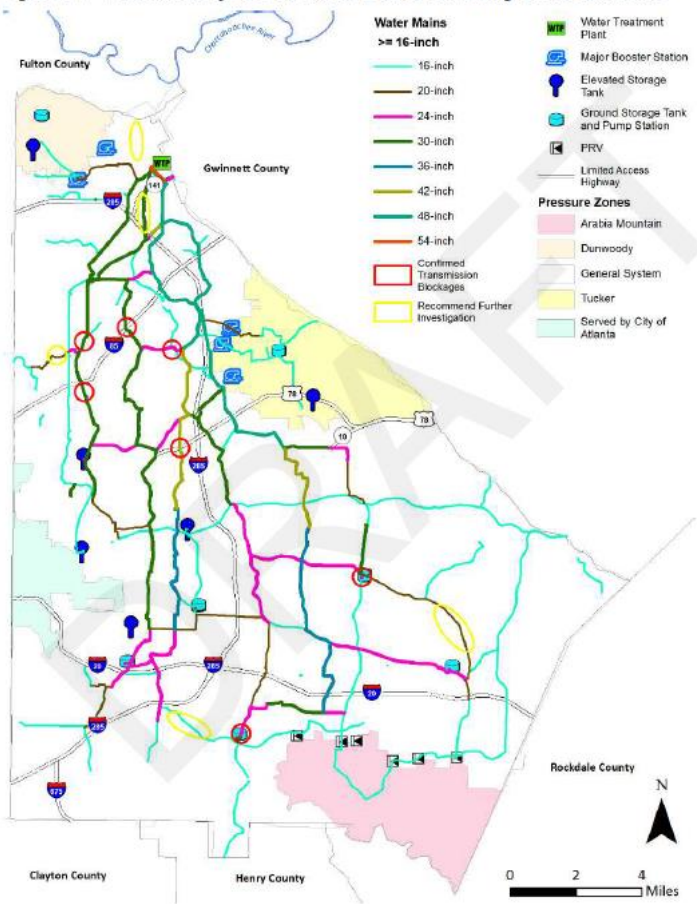


MOVING TO BEST PRACTICES

Efficiencies, Resiliency, Future Options

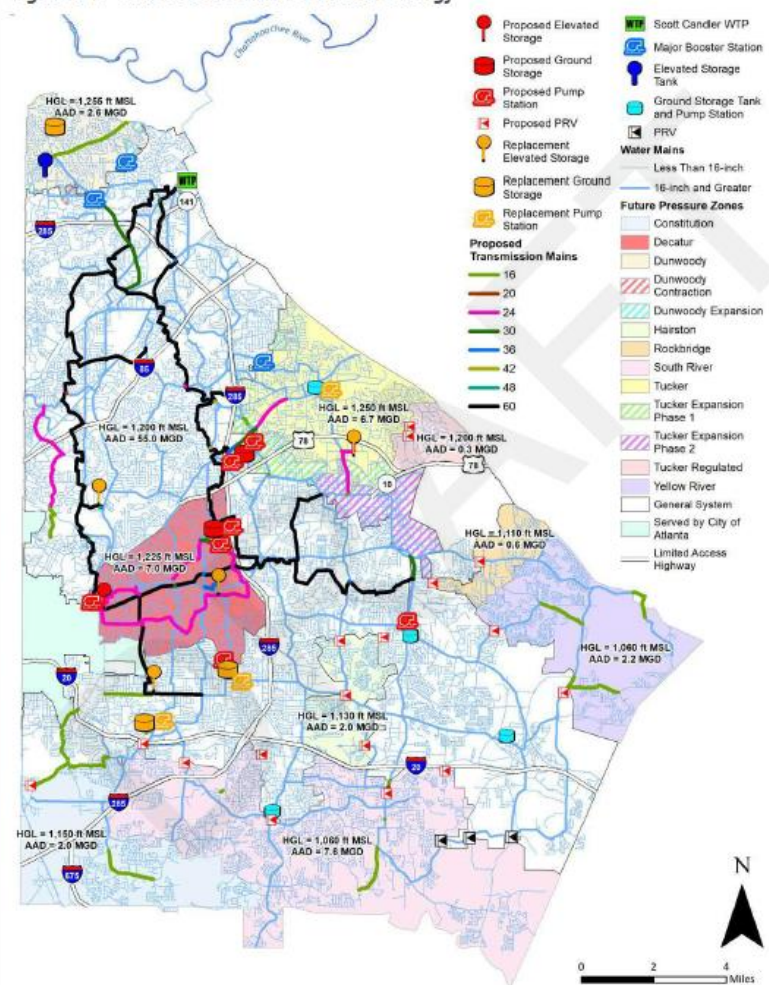
From

Figure 7-1: Transmission System Obstructions Identified During Model Calibration



To

Figure 9-1: Overview of Preferred Service Strategy



BENEFITS

- ▶ Increased main capacity
- ▶ Resiliency from looping
- ▶ Optimal pressures
- ▶ Compatible with potential future resiliency scenarios

PROJECT IDENTIFICATION - WASTEWATER

LEVEL OF SERVICE (LOS) REQUIRED IN 2050

- ▶ AWTF loading
- ▶ IGA limits
- ▶ Inter-basin transfer limit
- ▶ I/I
- ▶ Trunk sewer surcharging

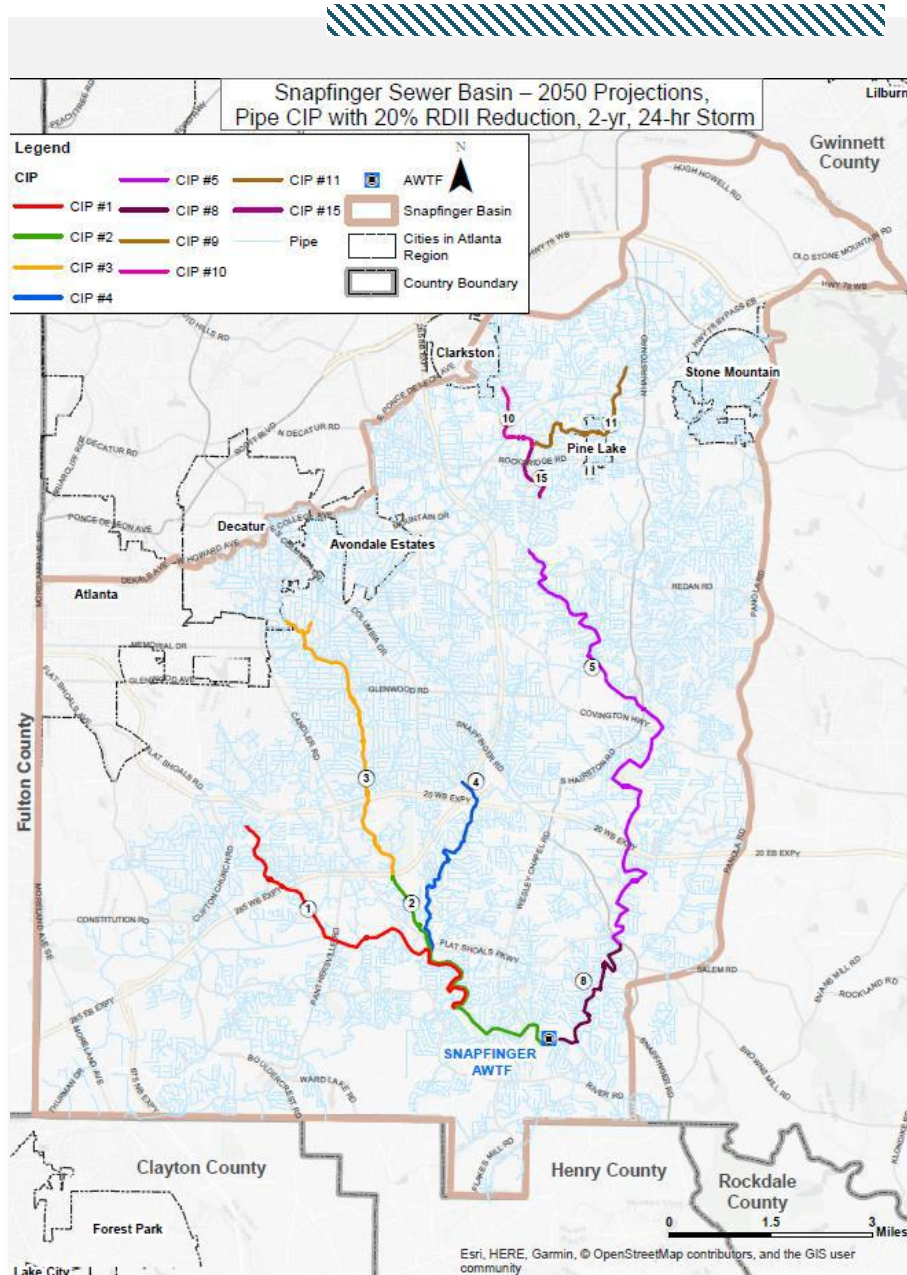
GAP BETWEEN REQUIRED FACILITIES & CURRENT

Key projects:

- ▶ AWTF projects
- ▶ Collection system assessment and rehab
- ▶ CD – Repeat SSOs
- ▶ Trunk sewer capacity projects

PROJECTS SIZED & SEQUENCED

- ▶ CD commitments
- ▶ Constructible package sizes
- ▶ Balanced spend over time



CONSENT DECREE

Required Projects

- ▶ Priority Area Sewer Assessment and Rehabilitation Program (PASARP) began in CIP 2010 and will be completed in CIP 2021
- ▶ Ongoing Sewer Assessment and Rehabilitation Program (OSARP) rehabilitation and upsizing
- ▶ Key focus of CD extension addresses trunk sewer projects, particularly in the Snapfinger Basin

◀ Key trunks in Snapfinger Basin

MOVING TO BEST PRACTICES

ONGOING MAINTENANCE REDUCING I/I



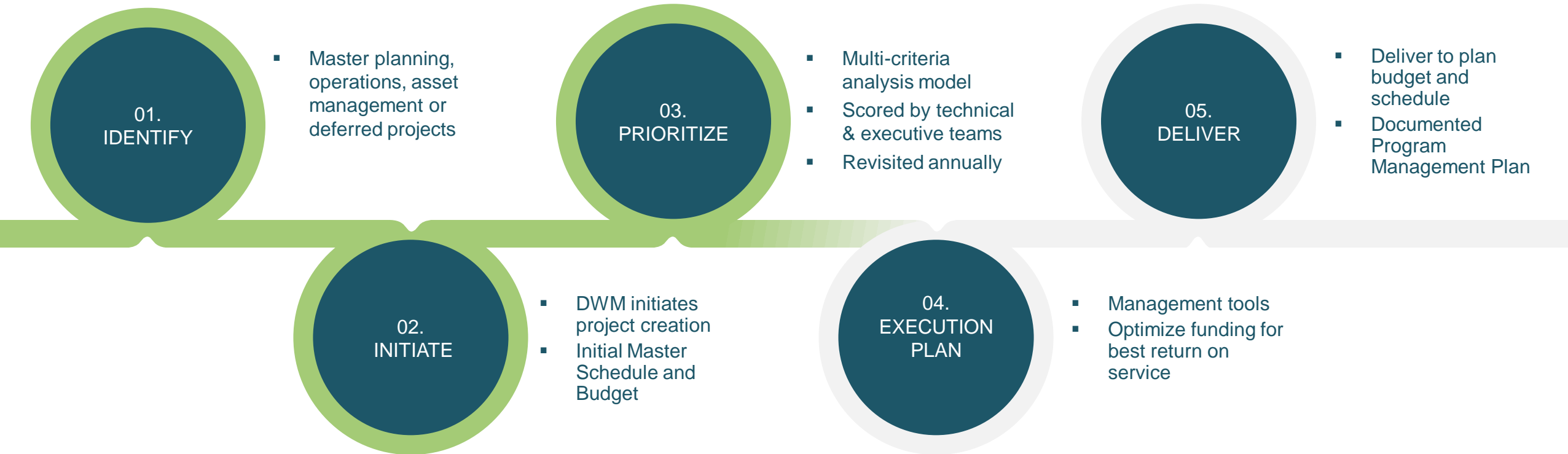
PROTECTING ENVIRONMENT



PLANNED CAPACITY INCREASES



CIP Lifecycle



PROJECTS INITIATED FROM MASTER PLAN

DWM CIP Program - Project Information

Project Manager:

Project Name	Project Number	Proposed Planning Budget	Date Created	Commissioner District	Project Manager
Dunwoody Ground Tank Replacement	W - DS GT01	\$6,733,000		XXXXX	

Design Schedule (anticipated)

Duration

100% Design Submittal

Bid Document to P&C

Procurement Schedule (anticipated)

Advertisement

Pre-Proposal Conference

Proposal Openig

BOC Date

NTP

Design Schedule (anticipated)

Duration Days

Substantial Completion

Final Completion

Description

10 ft of 8-inch Water Main
8-inch FCV and valve vault
Dunwoody Existing Ground Tank Decommission
Dunwoody Ground Storage Tank - 1 x 3 MG GST

Implementation Considerations

implementation Considerations test

Details

details test

Benefits

benefits test

Legend

Project Location

Existing Water Main

<= 12 inch Diameter

> 12 inch Diameter

Dunwoody Ground Storage Tank

DeKalb County

GEORGIA

DWM Project Prioritization

CIP Program

Project Name

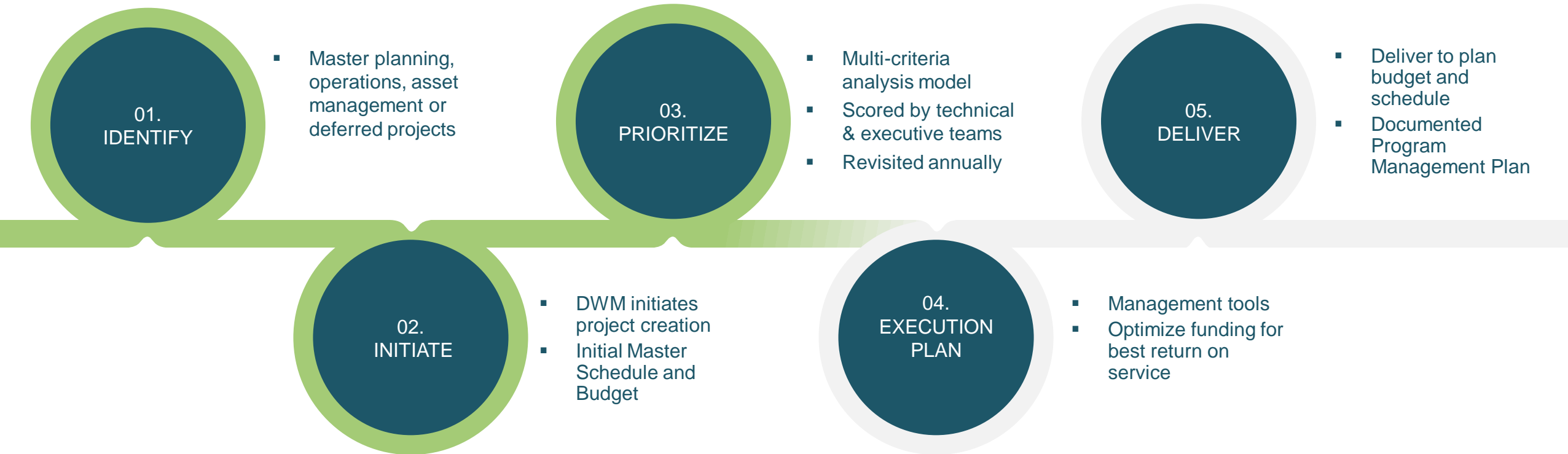
Dunwoody Ground Tank Replacement

Overall Score

3.3/5

Class	Criteria	Score	Justification
Environmental	Drinking Water Quality	Low	
	Leak Reduction	Medium	
	Energy Efficiency	Medium	
	Impact to Natural Resources	Medium	
	Permittability/ Regulatory Complexity	Medium	
Financial	Revenue Generation	Medium	
	Reduction of Operational Cost	Medium	
	Concurrence with Other CIP Projects	Medium	
Social	Employment (Job Creation)	Medium	
	Supporting Growth & Development	Medium	
	Quality of Life/Customer Satisfaction /Resilience	High	
	Public Health/Safety (Fire Protection)	High	

CIP Lifecycle



PROJECT PRIORITIZATION

- ▶ Multi-criteria tool allows competing priorities to be systematically evaluated by a broad group of stakeholders
- ▶ Goal is a process that is both defensible and reproducible
- ▶ **NOTE** Required both Master Plan and hydraulic models to accurately score projects!

FACTORS	FACTOR WEIGHT	CRITERIA	CRITERIA WEIGHT
COMPLIANCE	50%	Water Quality / Surface Water Quality	5%
		Tighten of System	5%
		Public Health & Safety	30%
		Regulatory Compliance	30%
		Resilience	30%
FINANCIAL	20%	Cost Recovery	25%
		Reduction of Operational Cost	25%
		Concurrence w/ Other CIP Projects	25%
		Life Extension of Asset	25%
SOCIAL & ENVIRONMENTAL STEWARDSHIP	30%	Employment (More Jobs)	10%
		Economic Growth / Development (Social Justice)	30%
		Quality of Life / Customer Satisfaction	30%
		Impacts to Natural Resources	10%
		Energy Efficiency Lower Carbon Footprint	20%

Wastewater scoring

INDUSTRY STANDARD PRACTICE

- ▶ Multi-criteria decision analysis tools are industry best-practice for the evaluation and ranking of projects

PROMOTED BY AGENCIES SUCH AS

- ▶ U.S. Environmental Protection Agency (EPA) as part of their “Integrated Planning Framework”
- ▶ The World Bank’s “Infrastructure Prioritization Framework” recommends a multi criteria approach with social-environmental and financial-economic criteria considered

Renewal and replacement of aging infrastructure has been the #1 issue facing the water industry for eight years running.

American Water Works Association, 2020

THE RIGHT PRIORITIES

Compliance (E.G. Water)

Financial	Factor Weight	Criteria	Criteria Weight	Ratings			Data Source	Examples/Analyses
				High	Medium	Low		
Compliance	50%	C1 Water Quality/Surface Water Quality	5%	Project will improve water quality significantly (decrease water age or improve tank turnover)	No impact on water quality	Project will compromise water quality significantly (increase water age, decrease tank turnover)	distribution system modeling results or WTP assessment	The project improves the water age or tank turnover (prevent stagnant water) or improves disinfection credits at the WTP
		C2 Tightness of System	5%	Project will reduce water loss/NRW significantly	No impact on water loss/NRW	Project will increase water loss/NRW significantly	project type	Pressure management projects reduce maximum pressure in pipes (in turn reducing water loss); meter replacement or leak detection programs designed to reduce NRW
		C3 Public Health and Safety	30%	Project significantly increases public safety (fire flow protection) and minimize occurrence of boiled water advisory	Project slightly improves public safety (fire flow protection) and minimize occurrence of boiled water advisory	Project does not improve public safety (fire flow protection) and minimize occurrence of boiled water advisory	modeling simulation - projects to meet fire flow targets; projects that will minimize system disruption	Fire flow projects and hydraulic projects to improve capacity; resilience projects (to avoid BWA)
		C4 Regulatory Compliance	30%	Project is needed to meet Federal or State drinking water regulations such as disinfection credits, DBP limits, minimum pressure requirements	Project moderately improves DWM's ability to meet Federal or State drinking water regulations such as disinfection credits, DBP limits, minimum pressure requirements	Project slightly improves DWM's ability to meet Federal or State drinking water regulations such as disinfection credits, DBP limits, minimum pressure requirements	Federal and State drinking water regulations or standards	projects designed to meet min. pressure requirements in the distribution system, projects to meet DBP rules, projects to meet disinfection credits or Lead and Copper Rules, etc.
		C5 Resilience	30%	Project significantly increases system resilience and redundancy	Project moderately increases system resilience and redundancy	Project does not increase system resilience and redundancy	Level of Service criteria used in Master Plan and approved by DWM. Modeling simulation and WTP assessment - resilience/redundancy projects to avoid system disruptions and to allow longer hours of operations during emergencies (major main breaks, power outage, etc.)	60-inch transmission main, quarry reservoir and 2nd STP, 2nd power feed to WTP, WTP clearwell upgrade, SCADA upgrade. Additional system storage to provide services during emergencies

THE RIGHT PRIORITIES

Compliance (Wastewater)

Factors	Factor Weight	Indicators	Criteria Weight	Ratings			Data Source	Examples/Analyses
				High	Medium	Low		
Financial	20%	F1 Cost Recovery	30%	CS-Lots of development/growth anticipated upstream/lots of pending SCRs AWTF-Initial equipment investment pay back period is short/Project is expected to prevent potential large spending	CS-Project necessary to provide capacity for moderate projected growth AWTF-Initial equipment investment pay back period is moderate/Project is expected to offset some spending	CS-Project not required to facilitate growth or little to no growth anticipated upstream AWTF-Initial equipment investment pay back period is long/Project does not offset any spending	growth projections, land use, SCRs, typical equipment cost and pay back period, equipment specifications	CS-Project that will allow growth and/or allow pending SCRs to gain capacity would rank higher than projects that address capacity issues without growth. AWTF-Addition of new aerators will be ranked high. Studies would be ranked low.
		F2 Reduction of Operational Cost	20%	Project likely to reduce asset operating and maintenance costs	Project may reduce asset operating and maintenance costs	Project not likely to reduce asset operating and maintenance costs	project components	CS-A storage tank could lead to increase in O&M cost (would have to balance with ability to detain flows going to WRF), I/I reduction would rate highest AWTF-Addition of new sludge dewatering equipment would lead to increase in O&M cost. Replacement of obsolete aerators with newest technology would reduce O&M cost.
		F3 Concurrence with other CIP Projects	20%	CS-Project is in area with little to no prior or upcoming planned projects AWTF-Project will need to occur for more than one other succeeding projects to occur/Project will greatly impact succeeding projects	CS-Project is in area with a few prior and upcoming planned projects AWTF-Project will need to occur for one other project to occur/Project will moderately impact succeeding projects	CS-Project is in proximity to a number of other prior and upcoming planned projects AWTF-Project is not interdependent on any other CIP/Project will not impact succeeding projects	CIP, Commission districts	CS-Will need to balance with overall need for project. AWTF-Evaluation of long-term sludge management options will rank high as it greatly impacts the implementation of long-term sludge management. Addition of new aerators will rank low, as it does not impact succeeding projects.
		F4 Life Extension of Asset	30%	CS-High number of assets replaced or rehabilitated relative to project cost AWTF-Project increases life of asset considerably	CS-Moderate number of assets replaced or rehabilitated relative to project cost AWTF-Project increases life of asset moderately	CS-Low number of assets replaced or rehabilitated relative to project cost AWTF-Project does not increase life of asset	project components	New infrastructure is anticipated to have longer life cycle so would rank higher than rehabbed assets

THE RIGHT PRIORITIES SOCIAL/

Environmental Stewardship (Wastewater)

Factors	Factor Weight	Indicators	Criteria Weight	Ratings			Data Source	Examples/Analyses
				High	Medium	Low		
Social and Environmental Stewardship	30%	E1 Employment (more jobs)	10%	Project provides significantly more employment opportunities	Project provides moderate level of employment opportunities	Project provides significantly less employment opportunities	Construction of project will create temporary jobs - assume proportional to project estimated construction duration and costs	Larger projects at WWTP would rank higher.
		E2 Economic Growth/Development (Social Justice)	25%	CS-Project may directly improve community conditions or project may be necessary to facilitate community revitalization AWTF-project creates opportunity for growth in basin through significant process or hydraulic capacity increase at plant	CS-Project may directly improve community conditions or project may be necessary to facilitate community revitalization AWTF-project may have potential to support growth in basin through process or hydraulic capacity increase at plant	CS-Project not required to facilitate development/redevelopment and Project not in an area in need of revitalization AWTF-project will not impact growth in basin	land use, income levels, growth projections, equipment specifications	CS-Project that allows businesses and residential to grow and revitalize areas would rank higher than project that allows industry growth (benefit is primarily jobs) AWTF-Projects that will support both residential and industrial growth in the basin by providing more hydraulic and process capacities will rank high.
		E3 Quality of Life/Customer Satisfaction	25%	CS-Projects with high public visibility AWTF-Projects that will highly improve the quality of life of communities around the AWTF	CS-Projects with moderate public visibility AWTF-Projects that will moderately improve the quality of life of communities around the AWTF	CS-Projects with low public visibility AWTF-Projects that will not impact public quality of life	SSO history, model output for surcharge, concerns of communities surrounding plant	CS-Projects that fix the SSO issue would rank higher than those that are just partial fixes. AWTF-Projects that reduce risk to communities surrounding plant such increased capacity at influent pump station to prevent upstream flooding/SSOs would rank higher
		E4 Impacts to Natural Resources	30%	CS-Project expected to significantly reduce or eliminate future reoccurrences of a previous overflow/impact on life in discharge stream AWTF-Project addresses an issue that has negative impact on natural resources	CS-Project expected to moderately reduce reoccurrence of a previous overflow or Project may prevent the addition of a new overflow site AWTF-Project addresses issue without harming natural resources	CS-Project addresses defect/issue with little to no potential to cause an overflow (which does not impact a waterway) AWTF-Project may have some negative impact on natural resources	model results, SSO history, pollution prevention project components	CS-Pipe upsizing to address dry weather capacity or potential growth would rank low, project to address repeat overflows would rank high. Main differentiator with E1 is this SSO to dry land AWTF-Any project that prevents potential wastewater or processed solids flow to water bodies would rank high.
		E5 Energy Efficiency Lower Carbon Footprint	10%	CS-Project reduces pumping significantly (energy consumption) AWTF-Project associated with significantly improved energy efficiency	No impact on energy consumption and emissions AWTF-Project has little to no increase in energy efficiency	Project increases pumping significantly (energy consumption) AWTF-Project associated with decreased energy efficiency	master plan or other engineering reports, alternatives analyses, equipment specifications	PS-Calculations showing reduced headloss, velocity, and energy usage, pumping projects, solar or alternative energy projects. AWTF-Upgrade of old aerators with newest technology will rank high. Addition of UV disinfection will rank low.

EXAMPLE HIGH/LOW SCORING PROJECTS

Water - 2025

ID	Project	Compliance					Financial				Social & Environmental Stewardship					Total	Rank
		C1 Water Quality	C2 Tightness of System	C3 Public H&S	C4 Regulatory Compliance	C5 Resilience	F1 Cost Recovery	F2 Reduce Op Costs	F3 Other CIP Projects	F4 Life of Asset	E1 Employment	E2 Economic Growth (\$)	E3 Quality of Life	E4 Natural Resources	E5 Carbon Footprint		
WTP01A	Clearwell and High Service Pump Station Upgrades - Phase A	0.15	0.15	1.50	1.50	1.50	0.75	0.75	0.25	1.25	0.50	1.50	1.50	0.50	1.00	4.50	1
WMR01	Water Main Replacement (Local Hydraulic and Risk-Based)	0.15	0.25	1.50	0.30	0.90	1.25	0.75	0.75	0.75	0.30	0.90	1.50	0.50	0.60	3.39	11

EXAMPLE HIGHER SCORERS ▲

EXAMPLE LOWER SCORERS ▼

VL01	Wesley Chapel 20-inch and 24-inch Check Valves	0.25	0.15	0.90	0.90	0.30	0.75	0.75	0.75	0.25	0.10	0.30	0.90	0.30	0.60	2.41	21
VL03	Tucker Fill Valve Replacement	0.05	0.15	1.50	1.50	0.30	0.25	1.25	0.75	0.25	0.10	0.30	0.90	0.30	1.00	3.03	17

EXAMPLE HIGH/LOW SCORING PROJECTS

Wastewater - 2025

ID	Horizon	Project	Compliance					Financial				Social & Environmental Stewardship					Total	Rank
			C1: Water Quality	C2: Tightness of System	C3: Public H&S	C4: Regulatory Compliance	C5: Resilience	F1: Cost Recovery	F2: Reduce Op Costs	F3: Other CIP Projects	F4: Life of Asset	E1: Employment	E2: Economic Growth (\$)	E3: Quality of Life	E4: Natural Resources	E5: Carbon Footprint		
CR-ITMC3	0	Intrenchment Rehab Upstream of Garden Cir	1.25	1.00	1.00	1.25	0.30	1.50	1.00	1.00	1.50	0.30	0.75	1.25	1.50	0.30	4.63	1
TR-SF1A	0	Snapfinger-CIP 1A	1.25	0.60	1.00	1.25	0.50	1.50	0.60	0.60	0.90	0.50	1.25	1.25	1.50	0.30	4.46	2
CR-5-3	0	Package 5 Component 3	1.25	1.00	1.00	1.25	0.30	0.90	1.00	0.60	1.50	0.30	0.75	1.25	1.50	0.30	4.43	3
CR-5-4	0	Package 5 Component 4	1.25	1.00	1.00	1.25	0.30	0.90	1.00	0.60	1.50	0.30	0.75	1.25	1.50	0.30	4.43	3

EXAMPLE HIGHER SCORERS

EXAMPLE LOWER SCORERS

TR-NFPC3	0	NFPC-CIP3	0.75	0.60	0.60	0.75	0.30	0.30	0.60	0.60	0.90	0.30	1.25	0.75	0.90	0.30	3.03	66
LS-16	2025	Pole Bridge Salem Road Package LS Replacement	0.75	0.60	0.60	0.75	0.30	1.50	0.60	0.60	1.50	0.10	0.25	0.75	0.90	0.30	3.03	66
LS-18	2030	Pole Bridge Windy Ridge Package LS Replacement	0.75	0.60	0.60	0.75	0.30	1.50	0.60	0.60	1.50	0.10	0.25	0.75	0.90	0.30	3.03	66
TR-NCR2 NCR3	0	Nancy-CIP2/3	0.75	0.60	0.60	0.75	0.30	1.50	0.60	0.60	0.90	0.30	0.25	0.75	0.90	0.30	2.97	69



SUMMARY

Multi-criteria tool allows competing priorities to be systematically evaluated by a broad group of stakeholders

The process is best-practice, defensible, and reproducible

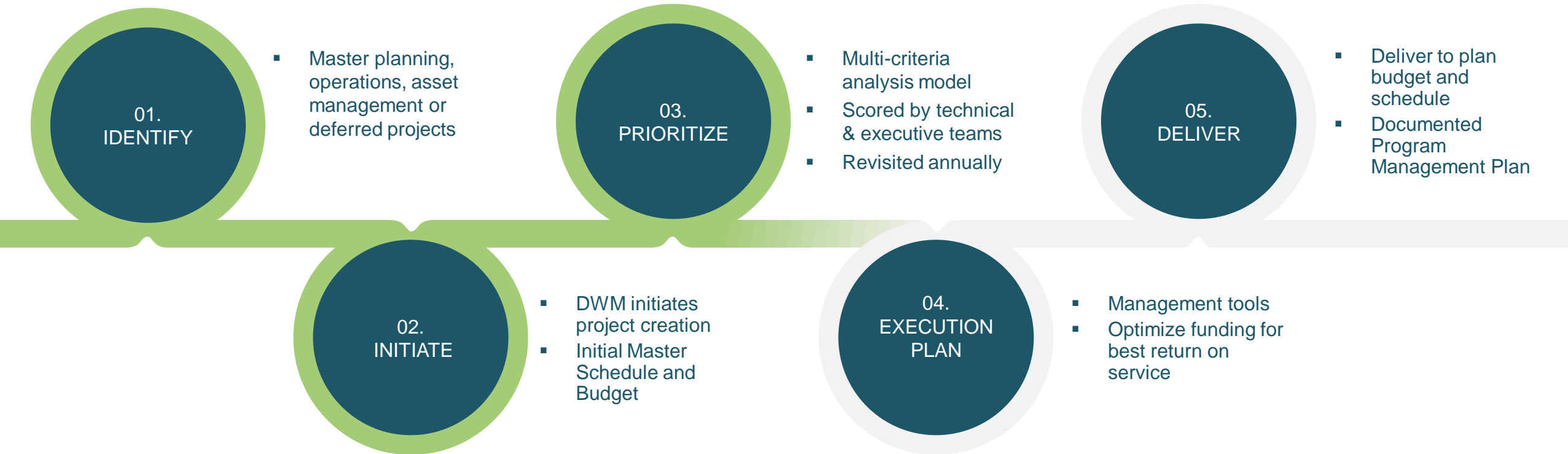
44 water and 105 wastewater projects identified, prioritized, and ranked

~80% of identified projects are in CIP 2021

Effective identification, scoring, and prioritization have been made possible with the Master Plan and hydraulic models

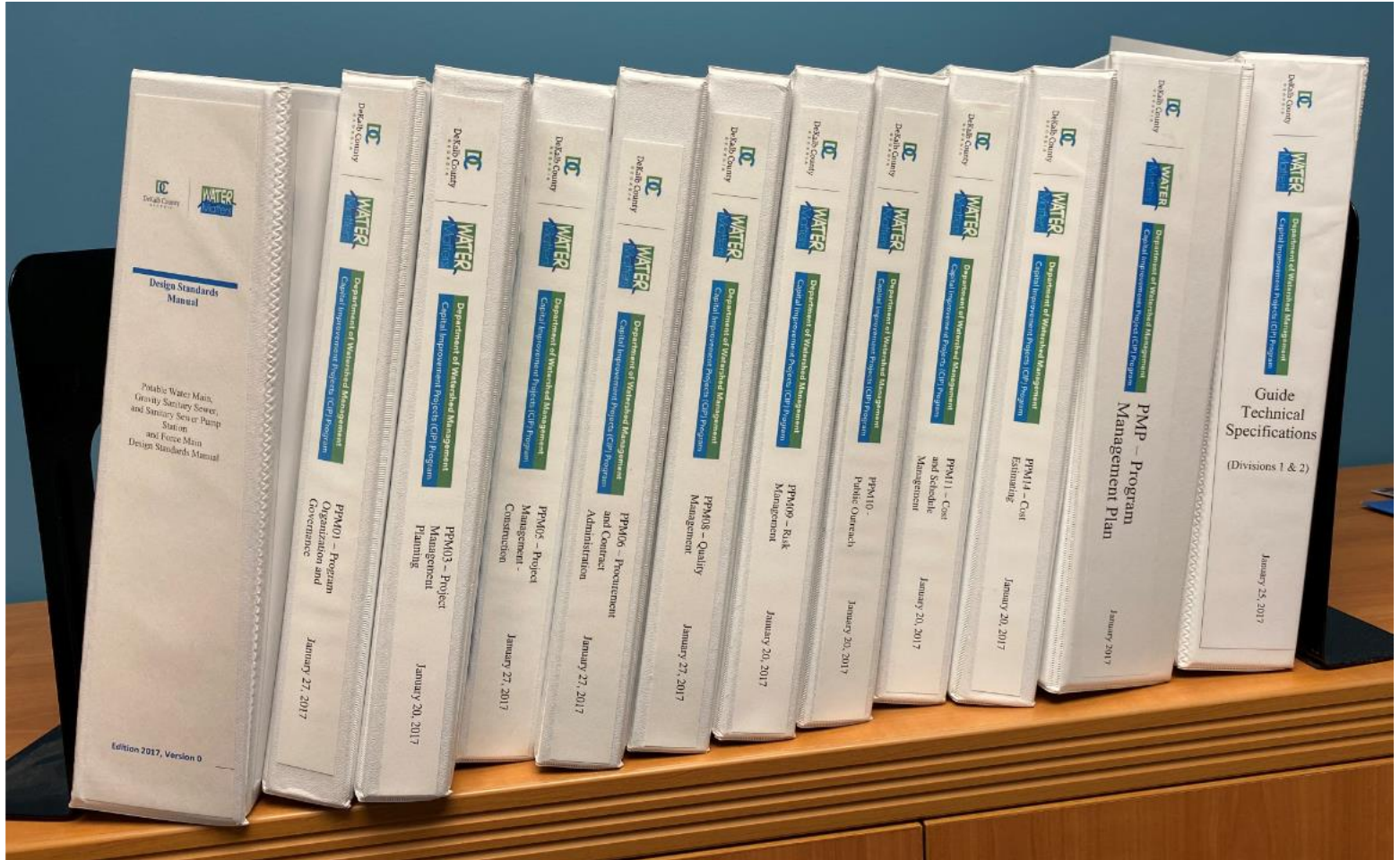
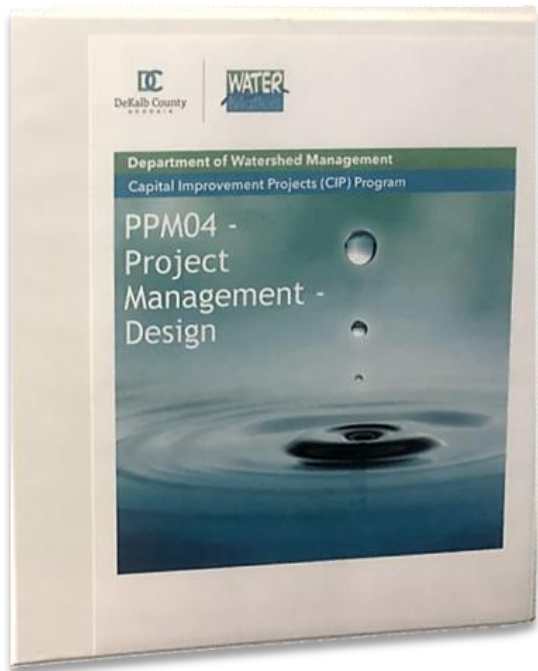
EXECUTION

Documented Management Tools



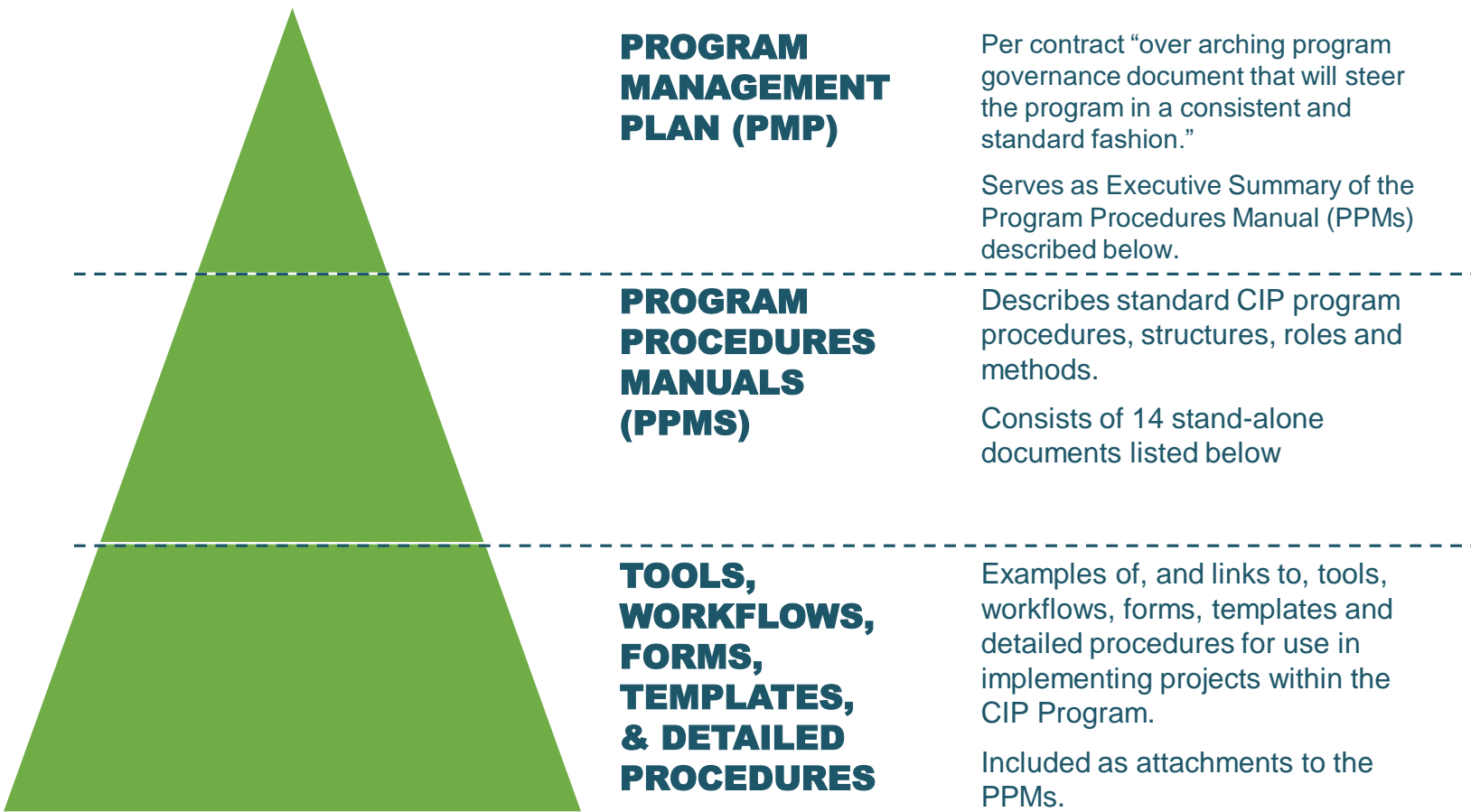
CIP PROGRAM MANAGEMENT PLAN (PMP)

Drives consistent and standard delivery of CIP Program projects



CIP PROGRAM MANAGEMENT PLAN (PMP)

PPM02 – Project Prioritization Process



PPM Listing

PPM No.	Title
PPM01	Program Organization and Governance
PPM02	Project Prioritization
PPM03	Project Management - Planning
PPM04	Project Management - Design
PPM05	Project Management - Construction
PPM06	Procurement and Contract Management
PPM07	Safety, Health & Environment
PPM08	Quality Management
PPM09	Risk Management
PPM10	Communications Management
PPM11	Cost and Schedule Management
PPM12	Reporting
PPM13	Document Control
PPM14	Cost Estimating

TIMING



UPDATED TIMELINE

STARTED

IN PROCESS

STARTED

**INFORMATION
SESSION ON
MASTER PLAN**

SEPTEMBER

**APPROVE CD
MODIFICATION**

TBD

**APPROVE
CIP 2021**

OCTOBER

WIFIA LOAN

PWI SEPTEMBER 15
BOC SEPTEMBER 22

Coming to BOC

GEFA LOAN

PWI SEPTEMBER 15
BOC SEPTEMBER 22

Coming to BOC

**APPROVE
LONG-TERM
FINANCIAL PLAN**

NOVEMBER

**REVIEW
BILLING
IMPROVEMENTS**

DECEMBER

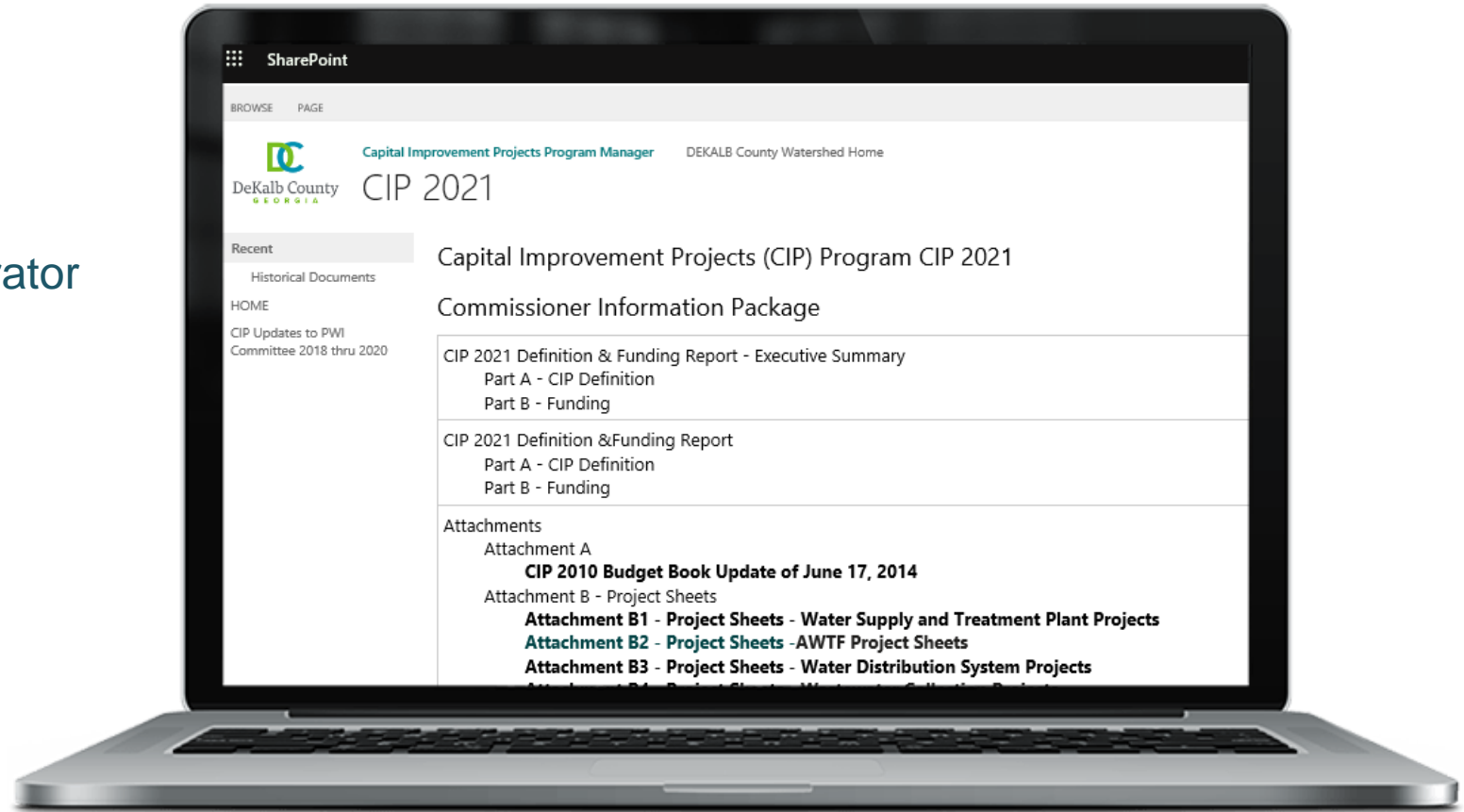
HOW CAN WE HELP?

Please Visit The CIP 2021 SharePoint Site

Any issues, please contact:

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QUESTIONS?

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