Water and Wastewater Management for Municipal Elected Officials

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Imagine a Day without Water

https://www.youtube.com/watch?v=-GvW4uvjpds

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Welcome and Introduction

- Introductions – Who's in the Room?
- What Water and Wastewater Management Issues are your community facing?

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Course Description

Water and wastewater services are fundamental to the operation of a city. This course will provide an overview of the management of these services and introduce participants to the important role of water in community health, quality of life, and economic development.

This course will also describe various service delivery methods and discuss the challenges and opportunities that municipal officials face in providing water and wastewater services to their customers.

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Learning Objectives

Participants will:

- Recognize the importance of water and wastewater in community health, quality of life and economic development.
- Demonstrate an understanding of the services and programs necessary for effective water and wastewater management.
- Understand the attributes of effective water and wastewater management and keys to management success.
- Describe the "Plan/Program/Implement/Sustain Model" and its use to effectively manage water and wastewater services.
- Understand the challenges and opportunities of water and wastewater management.
- Apply the concepts of water and wastewater management best practices to better serve their communities

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Course Content

- Role of water and wastewater management in delivery of municipal services
- Water and Wastewater Management Overview
- Planning, Funding, Building, and Operations & Maintenance of Water and Wastewater Systems
- Wrap-up

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How Water and Wastewater Supports the City Mission (5 minutes)

- Appoint a leader, scribe, timekeeper, and spokesperson (everyone participates)
- Identify services in your city that are provided directly or supported indirectly with water and wastewater
- Summarize and report back to the class

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Services Directly or Indirectly Supported by Water and Wastewater Service

- _____
- _____
- _____
- _____
- _____
- _____
- _____

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Water & Wastewater Management Overview

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Purpose

To achieve the greatest economic, environmental, and social benefits from the public's investment of tax money, land, and other resources that go into building and operating our water and wastewater infrastructure both now and in the future.

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Goals

- Public health, safety and welfare and quality of life for our citizens
- Environmental stewardship
- Economic development

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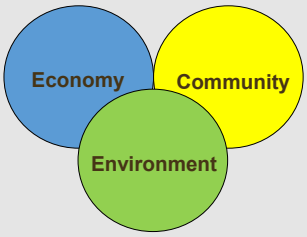
Triple Bottom Line of Sustainability



Goal is to balance these three interests.

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Stakeholders and Benefits Exercise (5 minutes)

- Appoint a leader, scribe, timekeeper, and spokesperson (everyone participates)
- Discuss and identify stakeholders and benefits associated with water and wastewater services
- Summarize and report back to the class

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Stakeholders Associated with Water and Wastewater Service

- _____
- _____
- _____
- _____
- _____
- _____
- _____

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Benefits Resulting from Water and Wastewater Service

- _____
- _____
- _____
- _____
- _____
- _____
- _____

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Water and Wastewater Management Services and Programs

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Water Management

Water Treatment

- Source Water Protection
- Facility O&M
- Preventive Maintenance
- Water Quality Testing Control
- Residuals Management
- Records
- Environmental Compliance

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Water Management

Water Distribution

- Inventory/Mapping
- System O&M
- Service Taps
- Metering
- Fire Flow Testing
- Cross-Connection Control
- Sampling/Testing
- Water Conservation/Loss Control

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Wastewater Management

Wastewater Treatment

- Watershed Protection
- Facility O&M
- Preventive Maintenance
- Water Quality Testing/Controls
- Biosolids Management
- Industrial Pre-Treatment
- Records
- Environmental Compliance

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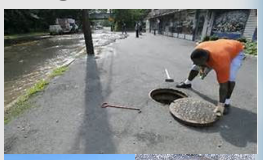
Wastewater Management

Wastewater Collection

- Inventory/Mapping
- System O&M
- Service Taps
- Fat/Oil/Grease
- Inflow/Infiltration



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Water and Wastewater Compliance

- Federal
  - Safe Drinking Water Act
  - Clean Water Act (Sections 402 and 404)
  - Migratory Bird Treaty Act
  - Endangered Species Act
  - Marine Mammal Protection Act
  - Fish & Wildlife Coordination Act
  - National Forest Management Act
  - Federal Land Policy and Management Act
  - Resource Conservation and Recovery Act
  - Federal Insecticide, Fungicide, and Rodenticide Act

See Handout for more detail

- State
  - Administrative Procedures Act
  - Ground Water Use Act
  - Safe Drinking Water Act of 1977
  - Water Supply Act
  - Water Well Standards Act
  - Water Quality Act
  - Comprehensive Statewide Water Management Planning Act
  - Erosion and Sedimentation Control Act
  - Safe Dams Act
  - Planning Act of 1989
  - Environmental Policy Act
  - Flint River Drought Protection Act
  - Programs for Voluntary Water Conservation and Enhancing Water Supply

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Attributes of Effective Water and Wastewater Management Programs

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Water and Wastewater Management Competencies

- Technical
- Administrative/Managerial

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Technical Competencies

- Water Resources
- Right of Way / Utilities
- Emergency Management
- Fleet and Equipment
- Engineering and Technology

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Right of Way / Utilities

- Right of Way Management
- Encroachment Permitting
- Utility Coordination, Locating and Damage Prevention
- Vegetation Management


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Emergency Management

- Hazard Mitigation Planning & Response
- Incident Management Procedures
- NIMS
- Mutual Aid Agreements


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Fleet and Equipment

- Preventive Maintenance
- Corrective Maintenance
- Fleet Replacement (include Vehicle and Equipment Specification)
- Inventory Control
- UST Compliance

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Engineering and Technology

Mapping/GIS/Surveying

- Stormwater
- Wetlands/Buffers
- Flood Plain
- Water
- Sewer

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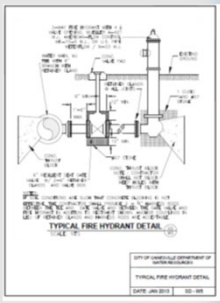
Engineering and Technology

Design Criteria & Standards

- Stormwater
- Water
- Sewer
- Erosion Control



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Engineering and Technology

Development Plan Review

- Site Layout
- Grading
- Roadway
- Access/Traffic Impact
- Stormwater/Hydrology
- Utilities (Water/Sewer)
- Erosion Control

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Engineering and Technology

Project Management

- Project Scoping
- Consultant Selection/Management
- Design/Plan Review
- Bid/Award Process
- Contract Administration
- Construction Inspection
- Closeout

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Administrative/Managerial Competencies

- Leadership
- Strategic Planning
- Human Resources
- Law and the Regulatory Environment
- Finance/Budgeting/Purchasing
- Urban Planning
- Communications
- Advocacy

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Service Delivery Strategy (Business Plan)

- Define Mission, Vision, Values (why we exist & what we believe)
- Identify Major Services and Programs (what we do)
- Set Goals, Objectives, Performance Targets (expectations)
- Identify Key Players & Stakeholders (roles and expectations)
- Establish Organizational Structure (Direct Services)
- Establish Organizational Infrastructure (Support Services/SOP's)
- Create Financial Plan (Budget – O&M and Capital)
- Develop Work Program (major organizational tasks)
- Performance Management (monitor/report results, and make adjustments as necessary)

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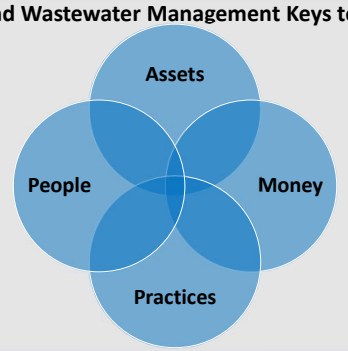
Water and Wastewater Management Keys to Success



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Break

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Water Facts

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Planning, Funding, Building, and Operations & Maintenance

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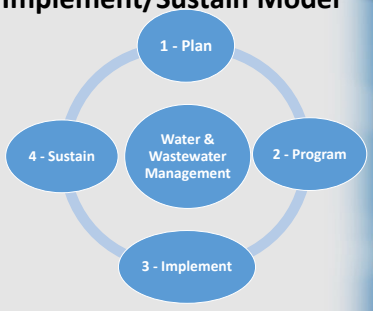
Plan/Program/Implement/Sustain Model

Model is useful whether dealing with a:

- Strategic or Master Plan
- Project
- Service
- Program



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Vision Continuum

Vision:
important work an organization exists to accomplish

Mission:
the tangible image of that important work

Strategic Priorities:
the efforts necessary to create the tangible image

Human Capacity & Financial Resources:
how those priorities are met

Officials

Staff

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Planning for Water and Wastewater Services

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Identification of Levels of Service

- Identifying the levels of service is one of the most basic and fundamental parts of water and wastewater management.
  - Provides foundation
  - Establishes the quality of service that is to be provided to the community
  - Additionally, it identifies organizational responsibilities

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Categories of Levels of Service (LOS)

- LOS directed by the governing board
- LOS determined by a survey of citizens
- LOS adopted for your community when compared to similarly situated communities
- LOS your community can afford or that is prioritized for your organization through some other means
- LOS that you determine or recommend given the resources you have been provided

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Extent of Service

- Service Area
  - Geographic
  - Jurisdictional
- Customers Served
  - Residential
  - Commercial
  - Industrial
- Type of Service
  - Water, Sewer, Stormwater

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Master Planning

- Vision (concept / service delivery agreements)
- Inventory and Mapping
- Existing Conditions Assessment
- Constraints / Opportunities
- Future Conditions Scenario (long range / short range)
- Work Program (CIP, staffing plans, funding, and implementation strategies)

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Discussion Topics

- Consider your organization and the water and wastewater services your provide:
  - What are the levels of service (LOS) set by your organization?
  - Do you know and have the resources (financial, staffing, equipment) needed to meet your LOS?
  - Do you have practices in place to meet your LOS?
- What is the extent of your service for water and wastewater?

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Financing for Water and Wastewater Services

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Finance Principles

- Revenues must cover expenditures
- Operating expenses should not exceed operating revenues
- Capital expenses should be covered with capital revenue sources and/or reserves built from operating revenues in excess of operating expenses
- Rates and Fees:
  - Commodity rates typically cover operations, debt service and reserves for capital maintenance and repair
  - Connection fees typically used to fund capital additions and expansions

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Water and Wastewater Funding

- General Fund
- SPLOST
- TSPLOST
- GEFA Loans
- GA DCA CDBG Grants
- Water and Sewer Enterprises (rates and connection/tap fees)
- Development Impact Fees
- CID
- TAD
- Bonds
- Public Private Partnerships
- ARPA
- BIL (IIJA)

See GMA's 2022-2026 Capital Needs Report

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Capital Projects and Planning

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Breakout Exercise (10 Minutes)
Historical Significance

- With water and wastewater projects, you are creating the history for future generations.
- In your community, identify five historically significant water/wastewater projects and impact of each:

#	Project	Community Impact
1		
2		
3		
4		
5		

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Capital Additions and Improvements

- Should support the Master Plan
- Should be included in the CIP
- Capital funding source(s) must be identified/appropriated and allocated
- Must determine method of accomplishment
- Develop a project management plan for project development and delivery

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Capital Maintenance and Repair

- Should support the asset management plan
- Should be included in the CIP
- Capital funding source(s) must be identified/appropriated and allocated
- Must determine method of accomplishment
- Develop a project management plan for project development and delivery

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Asset Management - Life Cycle Approach

- Expected life of the asset (in years or operating hours)
- Replacement cost of the asset
- Salvage value at the end of expected life
- Annual life cycle cost
- Preventive maintenance to extend expected life

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Inventory and Mapping

- Important to account for the extent of your infrastructure and assets (length, width, size, number, areas, etc).
- GIS is a great management tool for documenting and mapping infrastructure assets.
- On going process that never ends.
- Provides the data necessary to communicate the scale and extent of your infrastructure and assets.

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Condition Assessment

- Age/Hours of Operation
- Deficiencies/Distresses
- Maintenance History
- Level of Performance
- Along with inventory and mapping, provides the data necessary for infrastructure and asset management decisions.

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Financial Forecasting Model

- Includes unit costs for maintenance/repair activities.
- Based on LOS and goals, the forecasting model uses the inventory and condition assessment data to generate various funding scenarios.
- Provides information necessary to make infrastructure and asset management funding recommendations.

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Work Program Development

- Work program is developed based on the results of inventory, mapping, condition assessment and financial forecasting model.
- Work program is not always about "worst, first", but is a balanced approach focused on:
  - Preventive maintenance
  - Capital maintenance and repair
  - Reconstruction/replacement

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Performance Management

- Monitors program results based on:
  - LOS, goals and objectives established
- Assists in communication of infrastructure and asset status to:
  - Community
  - Elected Officials
  - Staff
- Provides justification for staying the course with asset management

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Operations & Maintenance

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Service Delivery Methods

- Self Performance (in house)
- Outsource
  - Privatization
  - Intergovernmental
- Free Market

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Service Delivery Methods

Self Performance (in house)

- Organize (acquire and assign staff)
- Train (train staff to perform mission)
- Equip (provide the necessary resources)
- Perform (use staff, training, and equipment to perform the mission)

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Service Delivery Methods

Outsource - Privatization

- Organizations often rely on the private sector to provide supplemental services as opposed to in-house permanent staffing
- There is a trend in public and non-profit management that encourages outsourcing:
  - Can be more cost effective because organizations pay for only those services they need, when they need them. Not paying for benefits and leave associated with full-time, permanent employment
  - Outsourcing also carries some risks. Oversight is essential, and because of the opportunity for preferential treatment of some vendors and contractors over others, opportunities for actual or perceived impropriety can be elevated.

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Service Delivery Methods

Outsourcing – Privatization

- Keys to Success
  - An amenable statutory and political environment
  - The public agency remains active in the organized structure of the partnership
  - A detailed business plan exists, and contracts readily support that business plan
  - A reliable and solid revenue stream is in place
  - Sufficient stakeholder support
  - Careful selection of the private entity partner on the part of the public works organization

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Service Delivery Methods

Outsource – Intergovernmental

- Another common strategy for outsourcing involves contracting with another public entity for services.
  - In these cases, often the larger entity contracts to a smaller entity
  - A common impediment is sensitivity to risk. When organizations contact for services to a private contractor, risk is assumed by the contractor as part of the negotiation. When the contractor is another government organization, exposure to risk and liability may be greater or more difficult to control.

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Service Delivery Methods

Outsource – Intergovernmental

- Keys to Successful Intergovernmental Partnerships:
  - Understand your Situation, Goals and Needs
  - Have a Plan and Implementation Strategy
  - Seek out Partners with Common Vision and Goals (Must Build a Trust Relationship)
  - Must Have Win-Win Proposals/Solutions
  - Successful Partnerships Require:
    - Political Will
    - Commitment
    - Perseverance

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Service Delivery Methods

Free Market

- Local government relies on the private sector to deliver the service (common example is trash collection)
- Often the jurisdiction may choose to establish franchise agreements to ensure level of service

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Water and Wastewater Organizational Models

- Whether you serve a community of 5,000 or a half a million people, the local government is organized to provide service to the public.
- Not a day goes by that citizens are not served by water and wastewater. In fact, people may not think about the service you provide until the service doesn't work or isn't there.
- It is in these "crisis" situations that W & WW staff are put to the test
- Efficiency and effectiveness are key
- Work we do must always be to the benefit of our constituents, clients, and customers.
- Educating the public garners public support – and this is important in delivering services

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Water and Wastewater Organizational Models

- Organizations are defined as having a group of people who work together to achieve some goal or objective.
  - In this sense, any collective of two or more people can serve as an organization
- At the core of the organization are these elements:
  - Individuals
  - Goals
  - Structure

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Function Based Organization

- A common organizational structure is to organize water and wastewater management around functions
  - Treatment, distribution and collection, facilities maintenance, metering operations, engineering, quality monitoring among others can all be viewed as separate entities within the same department
- Sometimes, this type of organization can make it difficult to prioritize requirements and activities
- A common disadvantage is that divisional goals tend to take precedence over organizational goals in such a way that the synergistic relationship within the organization can be compromised.

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Synergistic Environments

- A unique feature of water and wastewater management organizations is that they do not exist in a vacuum.
  - Unlike other kinds of organizations, they tend to be very dependent on other organizations, regional offices, state regulations, and federal interests.
- This, necessarily, leads to high levels of collaborative efforts.
- As a result, W & WW managers must develop strategies to communicate and work with other organizations that have interests in the same services your organization facilitates.

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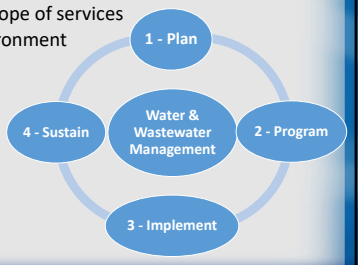
- Many factors affect the organizational structure of water and wastewater management agencies
  - Size of the jurisdiction
  - Mission, vision, goals, scope of services
  - Nature of the work environment
- Recommend using the "Plan/Program/ Implement /Sustain Model" to determine the right fit for your community.



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Challenges and Opportunities

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Challenges

- Most significant challenge is to do more with less
- However these other challenges can be costly and reduce productivity as well:
  - Aging infrastructure
  - A rapidly changing and evolving regulatory environment
  - Impacts associated with technology
  - Public's demand for greater accountability in publicly provided services
  - Determining service delivery strategies and methods

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Advocacy

- Agencies often face challenges in advocating for federal, state, and local support for funding related to critical water and wastewater infrastructure assets.
- However, many have developed tools and practices to engage citizens, businesses, elected officials to build support for water and wastewater services and projects.

See: ASCE 2019 GA Infrastructure Report Card

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For Effective Advocacy

- Discover methods to build community support for water and wastewater services and projects.
- Assess those methods for applicability and utilization in your own community.
- Determine a strategy to engage your community and build a constituency to support your delivery of critical, but often forgotten, services.

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Keys to Success

- Understand your Situation, Goals & Needs
- Have a Plan and Implementation Strategy
  - Clear Message, Target Audience, Delivery Methods
- Seek out Partners with Common Vision and Goals
- Success Requires:
  - Commitment
  - Perseverance
  - Participation

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Course Wrap Up

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Review Learning Objectives

- ✓Recognize the importance of water and wastewater in community health, quality of life and economic development.
- ✓Demonstrate an understanding of the services and programs necessary for effective water and wastewater management.
- ✓Understand the attributes of effective water and wastewater management and keys to management success.
- ✓Describe the "Plan/Program/Implement/Sustain Model" and its use to effectively manage water and wastewater services.
- ✓Understand the challenges and opportunities of water and wastewater management.
- ✓Apply the concepts of water and wastewater management best practices to better serve their communities

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Questions/Discussion
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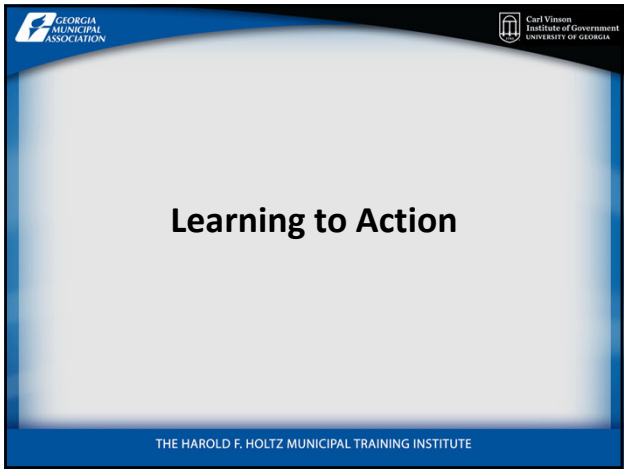
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GEORGIA MUNICIPAL ASSOCIATION

2022-2026

CAPITAL NEEDS
SUMMARY REPORT

218 Georgia cities (41%) reported they will need about **$11.9 BILLION** to address capital needs for the next five years (2022-2026). Based on survey responses, GMA projections indicate that Georgia's cities will need approximately **$18 BILLION** for capital projects over the next five years. The greatest categories of need for most cities are **TRANSPORTATION** and **WATER AND SEWER**.

PROJECTED NEEDS BY CATEGORY

27% TRANSPORTATION $4,850,000,000

25% WATER & SEWER $4,600,000,000

11% PUBLIC SAFETY $1,900,000,000

8% GOVERNMENT BUILDINGS & FACILITIES $1,550,000,000

8% PARKS & RECREATION $1,500,000,000

7% STORMWATER $1,300,000,000

6% COMMUNITY & DOWNTOWN DEVELOPMENT AND HOUSING $1,100,000,000

4% SOLID WASTE $650,000,000

3% LAND ACQUISITION & GREENSPACE $600,000,000

Georgia cities excluding Atlanta*			City of Atlanta	
$4,400,000,000	27%	Transportation	32%	$500,000,000
$4,100,000,000	25%	Water & Sewer	25%	$400,000,000
$1,750,000,000	11%	Public Safety	8%	$125,000,000
$1,500,000,000	9%	Government Buildings & Facilities	3%	$50,000,000
$1,400,000,000	9%	Parks & Recreation	6%	$100,000,000
$1,200,000,000	7%	Stormwater	6%	$100,000,000
$800,000,000	5%	Community & Downtown Development and Housing	13%	200,000,000
$550,000,000	4%	Solid Waste	3%	$50,000,000
$550,000,000	3%	Land Acquisition & Greenspace	3%	$50,000,000
Total: $16,250,000,000			**Total: $1,575,000,000**	

*BASED ON PROJECTED TOTALS

GEORGIA MUNICIPAL ASSOCIATION

KEY FACTORS DRIVING CITIES' CAPITAL NEEDS

- 96% — STANDARD IMPROVEMENTS TO MAINTAIN OR RAISE SERVICE LEVELS
- 76% — ECONOMIC GROWTH
- 48% — PUBLIC SAFETY AND SECURITY

KEY OBSTACLES TO MEETING CAPITAL NEEDS

- 91% — FUNDING CONSTRAINTS
- 66% — UNPREDICTABLE COSTS
- 43% — MATERIALS AND LABOR SHORTAGES

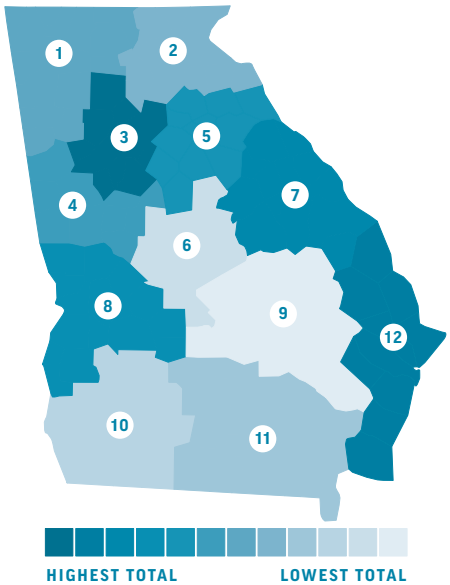
(% OF CITIES THAT SELECTED THIS RESPONSE)

The COVID-19 pandemic has reinforced the important role of cities in protecting infrastructure that residents rely on each day - for everything from clean drinking water to safe and open outdoor spaces. Having financial and technical assistance to maintain and improve these services OVER THE LONG TERM will be key to an effective pandemic response and recovery that advances goals for affordable housing, workforce and economic development and equity and inclusion in all Georgia cities.

In 2021, the Census Bureau ranked Georgia as the 8th most populous state with nearly 10.8 million people. Statewide projections show a 12% increase by 2030, but if the pattern continues, population growth in cities - 25% between 2010 and 2020, vs. 11% statewide - will be much higher.
BOTTOM LINE: MORE PEOPLE MEANS MORE DEMAND FOR PUBLIC SERVICES.

The 2019 Report Card for Georgia's Infrastructure, updated every five years by the American Society of Civil Engineers, gives statewide infrastructure a grade of C+ based on an evaluation across 14 different categories - many of which include infrastructure that is LOCALLY FUNDED, OWNED AND OPERATED.

PROJECTED CAPITAL NEEDS BY REGION & TOP 3 CATEGORIES OF NEED



1	$900,000,000 — 5%	7	$1,750,000,000 — 10%
2	$900,000,000 — 5%	8	$1,250,000,000 — 7%
3	$6,200,000,000 — 35%	9	$550,000,000 — 3%
4	$950,000,000 — 5%	10	$650,000,000 — 4%
5	$1,200,000,000 — 7%	11	$700,000,000 — 4%
6	$550,000,000 — 3%	12	$2,350,000,000 — 13%

CHECK OUT MORE AT OUR WEBSITE GACITIES.COM.

2022-2026 Capital Needs Summary Report

DETAILED SUMMARY TABLES

About the Respondents

Number of responses	222 *(41% of all cities in Georgia)*
Number of respondents anticipating capital needs	218
% of respondents anticipating needs	98%
Total population of all Georgia cities	4,751,112
Total population of responding cities	3,193,393 *(67% of total population of cities)*

Capital Needs by Category

Category	Reported Needs	Projected Needs	% of Projected Needs to Total
Transportation	$3,348,140,069	$4,843,476,099	26.9%
Water & Sewer	$2,850,001,316	$4,580,211,446	25.5%
Public Safety	$1,350,528,177	$1,899,763,097	10.6%
Government Buildings & Facilities	$1,089,667,385	$1,527,191,442	8.5%
Parks & Recreation	$1,041,405,511	$1,499,505,459	8.3%
Stormwater	$719,317,039	$1,324,959,601	7.4%
Community & Downtown Development and Housing	$696,004,402	$1,079,598,565	6.0%
Solid Waste	$437,704,181	$639,950,942	3.6%
Land Acquisition & Greenspace	$358,400,906	$578,439,826	3.2%
	$11,891,168,986	**$17,973,096,477**	**100%**

Capital Needs by Region

Service Delivery Region	Reported Needs	Projected Needs	% of Projected Needs to Total	Region Population	Responding population (% of region population)
1	$503,596,335	$886,370,628	4.9%	233,899	132,891 (57%)
2	$681,439,980	$884,900,522	4.9%	134,905	103,887 (77%)
3	$4,387,176,416	$6,224,500,581	34.6%	2,186,535	1,541,122 (70%)
4	$641,352,420	$957,745,476	5.3%	194,874	130,497 (67%)
5	$901,974,775	$1,211,269,512	6.7%	276,901	206,195 (74%)
6	$333,226,939	$553,166,588	3.1%	322,816	194,464 (60%)
7	$1,577,902,202	$1,755,915,271	9.8%	271,486	243,963 (90%)
8	$1,111,630,740	$1,242,051,515	6.9%	281,217	251,688 (89%)
9	$174,455,351	$550,972,704	3.1%	119,189	37,739 (32%)
10	$457,000,270	$643,523,201	3.6%	178,667	126,881 (71%)
11	$510,184,128	$700,066,779	3.9%	173,628	126,534 (73%)
12	$611,229,431	$2,362,613,700	13.1%	376,995	97,532 (26%)
	$11,891,168,986	**$17,973,096,477**	**100%**	**4,751,112**	**3,193,393** (100%)

INFRASTRUCTURE FACTS: GEORGIA CITIES AND COUNTIES

60% of Georgia's bridges are owned by cities and counties. In 2019 31% of local bridges were posted, meaning they have inadequate structural capacity and require weight limits.[1]

86% of road mileage in Georgia is either county road or city streets.[2]

There are 38% WaterFirst Communities in Georgia – a designation recognizing local governments committed to responsible water stewardship.[3]

286 Georgia cities with a population below 5,000 provide their own water distribution, water supply, and water treatment.[4]

75% of Georgia's water and/or wastewater utilities are operated by municipalities.[5]

60+ stormwater utilities in Georgia, most of which are locally funded and operated.[6]

150 local governments in Georgia have historic preservation ordinances – legislation to "identify, evaluate, and protect historic districts, individual buildings, and archaeological sites." 99 are Certified Local Governments, committed to local-state-federal partnership in upholding historic preservation standards.[7]

40% of Georgia's parks and recreation spaces are managed by cities, according to the 2022-2026 Statewide Comprehensive Outdoor Recreation Plan (SCORP). 86% of SCORP survey respondents say they visited a city or county park in the last year.[8]

21 cities manage their own school systems.[9]

In 13 of Georgia's U.S. congressional districts, 19-39% of infrastructure jobs are hard to fill, meaning they take longer than the median time-to-fill for infrastructure jobs (23 days).

> Of the 435 congressional districts nationwide, GA-07 has the 19th highest proportion of infrastructure jobs that are hard-to-fill (39%).
>
> GA-04 is 7th highest in time to fill infrastructure jobs (40.7 days).

[1] http://www.dot.ga.gov/DriveSmart/Data; American Society of Civil Engineers 2019 Infrastructure Report Card – Georgia, p. 21
[2] http://www.dot.ga.gov/DriveSmart/Data
[3] https://www.youtube.com/watch?v=d4M9mJgjG7c
[4] https://www.gacities.com/Resources/Reference-Articles/Water-System-Staffing-Needs-during-COVID-19-Resour.aspx
[5] https://efc.sog.unc.edu/wp-content/uploads/sites/1172/2019/11/GA-2020-Report-1.pdf
[6] https://www.gacities.com/Resources/GMA-Handbooks-Publications/Handbook-for-Georgia-Mayors-and-Councilmembers/Part-Four-MUNICIPAL-SERVICES/Water,-Wastewater,-Stormwater.aspx
[7] https://www.dca.ga.gov/sites/default/files/hpc-clg_list.pdf
[8] https://gastateparks.org/sites/default/files/parks/pdf/scorp/SCORP_BoardDraft_FINAL.pdf, pp. 27 and 31
[9] http://archives.gadoe.org/ReportingFW.aspx?PageReq=211&PID=61&PTID=67&CTID=215&StateId=ALL&T=0&FY=2021

January 2022

GEORGIA GRADES

Aviation	Bridges	Dams	Drinking Water
B+ ↔	C+ ↑	D ↑	B- ↑

Energy	Parks & Recreation	Ports	Rail
B ↔	C- ↑	B- ↑	B ↔

Roads	Schools	Solid Waste	Stormwater
C+ ↑	B ↑	C ↓	C- ↑

Transit	Wastewater	GPA
D+ ↑	D+ ↓	C+ ↑

Arrows next to the grade indicate the trend compared to the *2014 Georgia Infrastructure Report Card.*

About the Grades

The 2019 Report Card for Georgia's Infrastructure was written by a committee of more than 50 civil engineers across Georgia who volunteered their time to collect and analyze data, prepare and review their findings and present their conclusions. The committee worked with staff from ASCE National and ASCE's Committee on America's Infrastructure to provide a snapshot of our state's infrastructure, as it relates to us locally and on a national level. The Report Card Sections are graded based on the following eight criteria: capacity, condition, funding, future need, operation and maintenance, public safety, resilience and innovation. ASCE defines these grades as follows:

A	B	C	D	F
Exceptional, Fit for the Future	Good, Adequate for Now	Mediocre, Requires Attention	Poor, At Risk	Failing/ Critical, Unfit for Purpose

SOLUTIONS TO RAISE THE GRADE

1. Recent passage of transit legislation created the ATL, a landmark event, and now the metro Atlanta region must focus on effectively implementing a regional transit system strategy that includes adequate, reliable funding, and an excellent user experience to provide competitive alternative commuter options.

2. A significant number of our water-related utilities (drinking water, wastewater and stormwater) are consistently underfunded. The long-term viability of these utilities will require adequate user fees that cover the full cost of service.

3. Since 2014, Georgia has more than doubled its dam safety staff and significantly increased the number of dams with emergency action plans. As more deficient dams are identified, the state should press for alternative funding options such as grant programs to ensure private dams are repaired in order to protect downstream lives and property.

4. The ongoing Savannah Harbor Expansion Project remains a bright spot in Georgia's efforts to create deep water ports. The long-term viability of these ports will require improved rail and truck freight transportation networks to efficiently get goods to and from the port.

5. Landfill owners should consider raising solid waste tipping fees for out-of-state waste. Georgia's per capita waste generation is skewed to almost double the national average due to our tipping fees being significantly less than bordering states.

About ASCE-GEORGIA

The American Society of Civil Engineers (ASCE) is America's largest and oldest national engineering society. In Georgia, ASCE has over 2,000 members. By developing leadership, advancing technology, promoting the value of civil engineering, and advocating lifelong learning, ASCE enables its members, partners, and the public to improve our infrastructure and build a better quality of life.

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2019 REPORT CARD FOR GEORGIA'S INFRASTRUCTURE

ASCE
AMERICAN SOCIETY OF CIVIL ENGINEERS

Infrastructure Matters

The U.S. Census report published in early January 2019 shows that Georgia's population has grown from 9.7 million in 2010 to 10.5 million in 2018. Georgia's growth begs many questions: How will all of these people move around? Will they have adequate drinking water and electricity? What types of facilities will be available for their recreation? How suitable are the school buildings? Every day, civil engineers focus on these types of infrastructure questions.

Because infrastructure impacts so many aspects of the lives of Georgia's citizens, every five years the Georgia Section of the American Society of Civil Engineers (ASCE) evaluates key aspects of our state's infrastructure. Citizens of Georgia benefit from an objective review undertaken by dozens of experts in their respective fields. The 2019 Georgia Infrastructure Report Card represents the fourth evaluation performed by the Georgia Section of ASCE and focuses on 14 categories of infrastructure.

In 2019, the overall grade for Georgia's infrastructure improved for the first time ever, rising to a cumulative grade of C+. While significant improvements headline this positive story, many challenges remain as addressed in our five Key Solutions to Raise the Grade.

How will further progress be made? The answer begins with engagement and we hope the 2019 Infrastructure Report card will help by increasing awareness of infrastructure needs in order start the conversation on how to continue to improve infrastructure to support Georgia's economy and quality of life.

How You Can Get Involved

1. Get the full story behind this Report Card at www.infrastructurereportcard.org.

2. Find out the condition of the infrastructure near you on the Save America's Infrastructure app available on the Apple App store and GooglePlay.

3. Ask your elected leaders what they're doing to make sure your infrastructure is reliable for the future. Use your zip code to find your list of elected officials at www.infrastructurereportcard.org/take-action.

2019 GEORGIA'S INFRASTRUCTURE REPORT CARD

The 2019 Report Card for Georgia's Infrastructure gave the state an overall GPA of C+. The good news is there are solutions to all of these challenges, and we can raise Georgia's infrastructure grades. By learning more today about the conditions of the infrastructure you use every day, you too can help raise the grade.

AVIATION — B+

There are 103 publicly-owned, public use airports in Georgia, including Hartsfield-Jackson Atlanta International Airport (ATL), the busiest airport in the world for passenger traffic. The state's aviation system continues to have excess capacity, and some of the more congested airspace has been helped with Federal Aviation Administration-mandated technology and process improvements, as well as increased efficiencies in aircraft operational movement. Additionally, the state's aviation system budget has grown significantly, from just under $2 million in 2013 to just over $13 million in 2016 and 2017. Also encouraging is that 98% of Georgia's primary runways meet the state's goal of maintaining a 70 or greater Pavement Condition Index. At ATL, a $6 billion expansion plan has been underway since 2016 that will result in updated terminals, increased capacity, and other benefits for travelers.

BRIDGES — C+

The Transportation Funding Act of 2015 provided $900 million in additional funding for Georgia's transportation system each year, including for the 14,863 bridges and culverts across the state. As a result, Georgia has decreased the percentage of structurally deficient bridges, from 8.6% in 2014 to 4.6% in 2017. In addition to replacing and rehabilitating structurally deficient bridges, the state has implemented asset management programs and focused on preventive maintenance. In 2014, the general condition of the bridge infrastructure was in decline, but today this trend has been reversed and the rate of improvement is increasing each year as new funding and programs mature. However, at the local level, municipalities and counties often lack the tools needed to strategically prioritize bridge maintenance and struggle to find funding to improve the condition of bridges. The Transportation Investment Act gave Georgia voters the ability to approve regional sales taxes for transportation infrastructure. However, these measures have not been approved by voters in all parts of the state, meaning some localities have better bridge funding than others.

DAMS — D

Over the last five years, progress has been made toward addressing dam safety in Georgia. Staffing levels supporting the Georgia Safe Dams Program have more than doubled, from four to 10 full time employees (as of December 2018). Additionally, significant progress has been made in developing Emergency Action Plans (EAPs) to address dam safety; as of December 2018, 58% of high hazard potential dams had EAPs, up from 5% in 2014. Nevertheless, major challenges remain. With increased funding for inspection, 87 additional state regulated deficient dams have been identified and catalogued since 2014. In another challenge, most dams in Georgia are privately-owned, and the significant cost associated with dam operation and maintenance remains a challenge for many property owners.

DRINKING WATER — B-

In Georgia, treated water capacity generally meets current demands. The widespread use of new technologies and practices, such as smart pressure reducing valves, pressure data loggers, automated metering infrastructure, Computer Maintenance Management Systems, and "on condition" maintenance has improved the safety and reliability of drinking water service. Georgia is a nationwide leader in water loss control initiatives, and is shifting toward comprehensive water loss control programs. Drought protection has significantly improved over the past four years. Meanwhile, Georgia's relatively low incidence of health-based violations is reflective of these new innovations. Sustaining this performance will require utility rate structures to be continually re-examined to ensure adequate funding. The state will need approximately $12.5 billion over the next 20 years to meet capital improvement demands.

ENERGY — B

Energy in Georgia is primarily generated by natural gas, followed by nuclear and coal, and finally, renewables. In 2016, the state led the nation in the use of wood and wood-derived fuels for generation and in 2017, Georgia was ranked third in the amount of generation from all biomass resources. In recent years, Georgia has increased its electric power capacity by focusing on alternative resources, such as nuclear and solar. With 1556.33 MW of installed solar, Georgia moved up from 22nd to 10th for electricity generated by solar in 2017. The condition of the grid is aging and the commitment to add, maintain and/or replace infrastructure is vital in ensuring a safe and reliable system. Georgia Transmission Corp. plans to invest more than $100 million annually in power line and substation construction and upgrades. Similarly, Georgia Power plans to invest $3 billion on system upgrades in the near future. Storm-hardening of the system remains critical to ensuring reliability.

PARKS & RECREATION — C-

Georgians value parks and recreation and support investing in associated infrastructure, as demonstrated by a statewide survey published by the Georgia Department of Natural Resources. Fortunately, commensurate with the improving economy, state funding for parks has steadily increased in recent years; in FY 2017, $9.2 million was provided for infrastructure repairs and upgrades, up from $8.4 in FY 2008, just before the onset of the Great Recession. The future also looks bright. In November 2018, Georgia voted to direct 80% of revenue from the sales and use tax on outdoor recreation equipment to the Georgia Outdoor Stewardship Trust Fund. Meanwhile, Georgia uses federal Land and Water Conservation Fund grants primarily for maintaining and rehabilitating existing facilities, to effectively mitigate the impacts of age in parks across the state. While the additional funding is encouraging, most of Georgia's land is private, and access to parks, especially in the growing Atlanta region, can at times be insufficient. Atlanta was ranked 43rd by the Trust for Public Lands in 2018 in terms of how city parks are meeting citizen needs.

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PORTS — B-

The capacity of Georgia's ports has increased over the past five years. Today, the Port of Savannah is the busiest export port in the U.S. and is competitive in a post Panama expansion global marketplace. The Georgia Ports Authority has embarked on a planned growth strategy that will require funding from the federal government as well as Georgia state funds. When finished, the Port of Savannah's Garden City Terminal will be home to the largest on-dock intermodal rail facility in North America. Meanwhile, the Savannah Harbor Expansion Project (SHEP) continues to be a major priority. When completed, SHEP will cost an estimated total of $973 million. Critical to the success of Georgia's ports will be ensuring adequate capacity on roads, rail and inland waterways to carry goods to and from the ports.

RAIL — B

Georgia boasts one of the most extensive freight rail systems in the U.S., with nearly 5,000 miles of track transporting more than 196 million tons of freight annually. The two Class I railroads operate 78% of the total track mileage in the state, while 25 Class III (also known as shortline) railroads operate the remaining 22%. Class I railroads are privately owned and generate sufficient revenue from their operations to maintain and modernize their infrastructure and equipment. Most of the Class III railroads in Georgia are privately owned as well, but these smaller operations struggle to generate the revenue needed to materially improve their rail infrastructure or upgrade their aging equipment. The Class III railroads owned by Georgia Department of Transportation fare somewhat better, but still lack sufficient funding to substantially improve their overall operations. Amtrak operates routes along two corridors in the state, providing service to nearly 154,000 passengers per year.

ROADS — C+

Georgia has significantly improved funding for the state's transportation system with the Georgia General Assembly's passing of the Transportation Funding Act of 2015 (House Bill 170 or TFA). The legislation is expected to provide an additional $900 million per year for transportation. The proceeds from TFA have allowed the Georgia Department of Transportation (GDOT) to increase the miles of roads resurfaced annually by more than two and a half times and implement major congestion relief projects. GDOT has begun using innovative materials, design and delivery methods to decrease construction time and cost and reduce inconvenience to drivers. However, there is still a need for additional funding to improve the state's current pavement condition and relieve congestion, particularly with three of the nation's top twenty interstate bottlenecks located on I-285, Atlanta's perimeter interstate.

SCHOOLS — B

The capacity and condition of Georgia's public schools have improved over the past five years. A number of new schools have been built. More recently, the Governor and state legislature have fully funded the Quality Basic Education (QBE) formula which benefits school facilities. More than $1.14 billion in funding has been restored to the school system since 2015. Additionally, attention has been placed upon the future needs of schools, setting money aside for the inevitable growth to come. Georgia is slightly above the national average in terms of school construction capital outlays. The state spends $19,502 per student on school construction, whereas the national average is $19,454. This spending average stands to grow as the Georgia legislature voted to significantly increase available funding for school facilities and students on the FY 2019 appropriations bill.

SOLID WASTE — C

Georgia's solid waste issues center around an ever-increasing population, the rising life-cycle cost of materials, the citizenry's resistance to the opening of new landfills, and the impact of transporting increasing volumes of solid waste on public roads. From 2013 to 2017, the population of the state has grown by approximately 4.5%. Meanwhile, during that same period, waste disposal rates have increased by 35%. Cheap disposal rates in Georgia bring out-of-state waste and are a major factor in the overall waste picture. The availability of disposal capacity at competitive rates provides little incentive to reduce waste generation, prohibit importing waste, or increase recycling. The lack of funding for future solid waste handling facilities, minimal efforts to promote alternatives for waste management disposal options, and little advancement in the development of conservation and recycle markets all compound solid waste issues in Georgia.

STORMWATER — C-

Georgia's stormwater infrastructure – drains, manholes, pipes, ditches and more – has improved over the past five years. More localities are creating designated stormwater funding sources, as evidenced by the 44% growth in stormwater utilities since 2014. This increase in funding, a shift to integrated water planning, and the addition of volume reduction requirements in recent MS4 permits are the major factors in the slight grade increase. While this progress is significant, substantial funding needs remain. A limited stormwater program survey indicated a median of $6 per capita per year is spent on new or renovated stormwater infrastructure, much less than the $85 per capita need projected by the Environmental Protection Agency. Looking forward, Georgia's growing population is likely to continue to stress its stormwater management infrastructure and additional action will be needed to protect water quality in streams, rivers and lakes.

TRANSIT — D+

Funding for public transit infrastructure has increased significantly over the past five years. New state funding has been augmented by local sales tax initiatives, including Clayton County's one-cent sales tax in 2015 and the City of Atlanta's "More MARTA" half-cent sales tax increase in 2016. "More MARTA" is expected to raise $2.5 billion over 40 years. Additionally, the Georgia General Assembly designated the Atlanta Transit Link (ATL) as the umbrella organization for regional coordination of transit systems and funding. While these recent developments are encouraging, the state is still heavily car centric. In 2016, 90% of trips in Georgia were made using automobiles, while only 2% were made by transit. In 2016, Atlanta ranked 32nd in the nation in transit access. Meanwhile, Atlanta is the eighth most congested city in the world. More funding and collaboration between systems is needed to continue to maintain existing systems, improve access for all citizens, and make transit a more attractive option.

WASTEWATER — D+

Georgia's wastewater infrastructure continues to age, and wastewater agencies struggle to upgrade wastewater treatment systems to meet changing water quality standards. While progress has been made in dealing with the threats of overflows from combined sewer systems, slow progress in addressing overflows from sanitary sewer systems, aging wastewater infrastructure and the demands of a growing population have resulted in lowering of the grade. In 2017, the Georgia Water & Wastewater Report found that 45% of the 373 local government water or wastewater agencies in Georgia did not generate enough revenue to cover their operations and maintenance costs and account for future capital costs. Systems need to be properly maintained and expanded for future growth. Nearly half of all Georgians do not have access to public sewers, many relying on septic systems.