



System Development Fee Study for Water Facilities

Chatham County, NC

April 16, 2018

(301) 320.6900
TischlerBise.com

Summary

- Authority to Implement Development Fees
- Demographics & Assumptions
 - Growth & Water Demand Projections
 - Equivalent Residential Unit
- Impact Fee Introduction
 - Components, Methods, Allocation
 - Proposed Fees
- Water System Components and calculations



Legislative Authority





Authority and Requirements

SESSION LAW 2017-138 - *Public Water and Sewer System Development Fee Act* Chatham County, along with all local governments, was given direct authority to charge a development fee for water and sewer systems. The fee shall only be expended on the cost of constructing capital improvements.

Additionally, according to S.L. 2017-138:

- a qualified professional must calculate the development fee based on a written analysis, using general accepted engineering and planning practices.¹
- Revenue credits must be at least twenty-five percent (25%) of the aggregate cost of capital improvements.
 - *Two revenue credits are included in analysis and both satisfy this requirement*

¹Our services include development fees, fiscal impact analysis, infrastructure funding, user fee and cost of service studies, capital improvement plans, and fiscal software. TischlerBise has prepared over 900 development fee studies over the past 37 years for local governments across the United States.



Impact Fee Basics

- Facilities / improvements required to serve new development - **Yes**
- Maintenance and repairs – **No**
- Excess capacity in existing facilities – **Yes**
- Improvements required to correct existing deficiencies – **No**
 - Unless there is a funding plan to meet needs of all development
- Requirements: New Development:
 - Creates the need for the infrastructure
 - Pays its fair share of the cost
 - Receives a benefit from the infrastructure

Demographics & Assumptions



Growth & Water Demand Projections

	Base Year		Total Increase
	2017	2027	
Population	22,272	41,100	18,827
Jobs	6,269	11,569	5,300
Residential Connections	8,045	14,846	6,801
Nonresidential Connections	330	609	279
Water Demand, Maximum (MGD)	4.05	11.90	7.85

Source: Chatham County Utilities & Water Division; Local Water Supply Plan, 2016; Chatham County CAFR, 2017; TischlerBise analysis

Equivalent Residential Unit

Land Use	Connections	Total Water Demand, Max (MGD)	Max per Connection (gal)
Residential	8,045	2.26	281
Commercial	194	0.32	1,637
Industrial	76	0.52	6,834
Institutional	60	0.07	1,231
Total	8,375	3.18	379

Source: Chatham County Utilities & Water Division

Jobs Per Connection [1]	19
Gallons Per Nonresidential Connection, Max [2]	2,760
Gallons Per Day Per Job, Max	145
Gallons per Day Per Person, Max [3]	102

[1] Estimated 6,269 jobs in the Chatham County Water System

[2] 330 nonresidential connections

[3] Estimated 22,272 residents

Impact Fee Introduction



Components, Methods, Allocation

Fee Category	Service Areas	Incremental Expansion	Plan-Based	Cost Recovery	Cost Allocation
Water	North, Southwest, and Asbury Water Systems	N/A	Western Intake Partners Water Facility	Western Transmission Main Southeast District Distribution Lines Cary/Apex Raw Water Intake Facility	Water Demand (gallons)

Proposed Fees

All Development (per meter)

Meter Size (inches)	Capacity Ratio	Proposed Water Fee	Current Fee	\$ Change	Percent Change
5/8 x 3/4	1.00	\$3,431	\$3,500	(\$69)	-2%
1	1.67	\$5,729	\$7,000	(\$1,271)	-18%
1 1/2	3.33	\$11,425	\$10,000	\$1,425	14%
2	5.33	\$18,287	\$16,000	\$2,287	14%
3	10.00	\$34,310	\$30,000	\$4,310	14%
4	16.67	\$57,194	\$40,000	\$17,194	43%
6	33.33	\$114,355	\$120,000	(\$5,645)	-5%

Source: American Water Works Association, Manual M-6, Water Meters - Selecting, Testing, Installation, and Maintenance; TischlerBise analysis

Note: Proposed water fee is truncated

Water Facility Components



Western Intake Partners Water Facility

	Phase 1 Costs	%
Construction Subtotal	\$43,459,000	66%
Engineering Costs Subtotal	\$7,842,000	12%
Land Acquisitions and Easements	\$577,000	1%
Contingency	\$12,970,000	20%
Allocation Cost	\$1,093,000	2%
Total (2014 \$)	\$65,941,000	100%
Total (2017 \$) [1]	\$77,345,430	

[1] Total cost has been adjusted to reflect increase in construction costs;

Source: Turner Building Cost Index, 2017

Source: Jordan Lake Partnership Western Intake Feasibility Study, 2014

Description	Capacity	Cost
Western Intake Partners Water Facility	10,000,000	\$77,345,430

Total Cost	\$77,345,430
Gallons of Capacity	10,000,000
Cost per Gallon of Capacity	\$7.73

Source: Jordan Lake Partnership Western Intake Feasibility Study, 2014; TischlerBise analysis

Western Transmission Mains

Description	Capacity	Cost
Western Transmission - Storage Tank	750,000	\$1,568,467

Total Cost	\$1,568,467
Gallons of Capacity	750,000
Cost per Gallon of Capacity	\$2.09

Source: Chatham County 2011 Capital Improvement Program; Chatham County Bond Ledger Series 2012; TischlerBise analysis

Description	Capacity	Cost
Western Transmission - Distribution	7,250,000	\$15,092,212

Total Cost	\$15,092,212
Gallons of Capacity	7,250,000
Cost per Gallon of Capacity	\$2.08

Source: Chatham County Utilities & Water Division; Chatham County Bond Ledger Series 2012; TischlerBise analysis

Western Transmission Mains

Proposed revenue credit

FY	Debt Service	Max Water Demand (MGD)	Cost per Gallon
2017-2018	\$1,011,631	4.1	\$0.25
2018-2019	\$1,001,735	5.6	\$0.18
2019-2020	\$988,113	7.1	\$0.14
2020-2021	\$977,123	8.9	\$0.11
2021-2022	\$968,642	9.4	\$0.10
2022-2023	\$958,907	9.8	\$0.10
2023-2024	\$944,529	10.2	\$0.09
2024-2025	\$935,291	10.6	\$0.09
2025-2026	\$924,608	11.1	\$0.08
2026-2027	\$912,479	11.5	\$0.08
2027-2028	\$902,037	11.9	\$0.08
2028-2029	\$263,467	12.3	\$0.02
Net Present Value (starting FY17-18)			\$1.16

Interest Rate (2018-2021)	4%
Interest Rate (2022-2029)	5%

Source: Chatham County Local Water Supply Plan 2016; Chatham County Bond Ledger Series 2012; TischlerBise analysis

Cost per Gallon of Capacity	\$4.17
Credit Net Present Value per Gallon	\$1.16
Percentage of Cost Reduced by Credit	27.8%

Source: TischlerBise analysis

Southeast District Distribution Lines

Description	Capacity	Cost
Southeast District Distribution Lines	4,600,000	\$6,799,637

Total Cost	\$6,799,637
Gallons of Capacity	4,600,000
Cost per Gallon of Capacity	\$1.48

Source: Chatham County Utilities & Water Division; Chatham County Comprehensive Annual Financial Report 2010; TischlerBise analysis

Southeast District Distribution Lines

Proposed revenue credit

FY	Debt Service	Max Water Demand (MGD)	Cost per Gallon
2017	\$254,780	4.1	\$0.06
2018	\$253,823	5.6	\$0.05
2019	\$253,793	7.1	\$0.04
2020	\$253,650	8.9	\$0.03
2021	\$254,395	9.4	\$0.03
2022	\$254,988	9.8	\$0.03
2023	\$254,428	10.2	\$0.02
2024	\$254,755	10.6	\$0.02
2025	\$253,930	11.1	\$0.02
2026	\$253,993	11.5	\$0.02
2027	\$253,903	11.9	\$0.02
2028	\$253,660	12.3	\$0.02
2029	\$253,950	12.7	\$0.02
2030	\$253,950	13.2	\$0.02
2031	\$254,223	13.6	\$0.02
2032	\$254,223	14.1	\$0.02
2033	\$254,223	14.6	\$0.02
2034	\$254,223	15.1	\$0.02
2035	\$254,223	15.6	\$0.02
2036	\$254,169	16.1	\$0.02
2037	\$254,169	16.5	\$0.02
Net Present Value (starting FY17-18)			\$0.38

Interest Rate	4%
---------------	----

Source: Chatham County Local Water Supply Plan 2016;
Chatham County Comprehensive Annual Financial Report
2010; TischlerBise analysis

Cost per Gallon of Capacity	\$1.48
Credit Net Present Value per Gallon	\$0.38
Percentage of Cost Reduced by Credit	25.7%

Source: TischlerBise analysis

Cary/Apex Raw Water Intake Facility

Cary/Apex Raw Water Intake Capital Projects	
Water Pumping Station and Intake Improvements	\$18,196,402
Chatham County Percent of Capital Cost	4.75%
Chatham County Capital Cost	\$864,329
Jordan Lake Aeration System	\$4,876,000
Chatham County Percent of Capital Cost	4.75%
Chatham County Capital Cost	\$231,610
Total Capital Cost	\$1,095,939

Source: Chatham County, Chatham County Water Intake Service Agreement

Description	Capacity	Cost
Cary/Apex Water Facility Projects	3,000,000	\$1,095,939

Total Cost	\$1,095,939
Gallons of Capacity	3,000,000
Cost per Gallon of Capacity	\$0.37

Source: Chatham County Water Intake Service Agreement

Capital Cost per Gallon and Proposed Fees

	Cost per Gallon of Maximum Day Capacity
Jordan Lake Water Facility	\$7.73
Western Transmission - Storage Tank	\$2.09
Western Transmission - Distribution	\$2.08
Southeast District Distribution Lines	\$1.48
Cary/Apex Water Facility Projects	\$0.37
Debt Service Credit	-\$1.54
Capital Cost per Gallon of Capacity =>	\$12.21
Maximum Day Gallons of Demand per ERU =>	281

All Development (per meter)

Meter Size (inches)	Capacity Ratio	Proposed Water Fee	Current Fee	\$ Change	Percent Change
5/8 x 3/4	1.00	\$3,431	\$3,500	(\$69)	-2%
1	1.67	\$5,729	\$7,000	(\$1,271)	-18%
1 1/2	3.33	\$11,425	\$10,000	\$1,425	14%
2	5.33	\$18,287	\$16,000	\$2,287	14%
3	10.00	\$34,310	\$30,000	\$4,310	14%
4	16.67	\$57,194	\$40,000	\$17,194	43%
6	33.33	\$114,355	\$120,000	(\$5,645)	-5%

Source: American Water Works Association, Manual M-6, Water Meters - Selecting, Testing, Installation, and Maintenance; TischlerBise analysis

Note: Proposed water fee is truncated



Wrap-Up

- Questions
- Discussion
- Thank you