

# How Much Does it Cost to Connect to a Water and Wastewater Utility in North Carolina?

## Residential Water and Wastewater Connection Fees as of January 2015



March 2015



UNC  
ENVIRONMENTAL FINANCE CENTER

NC LEAGUE  
OF MUNICIPALITIES

## About the Environmental Finance Center

The Environmental Finance Center at the University of North Carolina, Chapel Hill is part of a network of university-based centers that work on environmental issues, including water resources, solid waste management, energy, and land conservation. The EFC at UNC partners with organizations across the United States to assist communities, provide training and policy analysis services, and disseminate tools and research on a variety of environmental finance and policy topics.

The Environmental Finance Center at the University of North Carolina, Chapel Hill is dedicated to enhancing the ability of governments to provide environmental programs and services in fair, effective, and financially sustainable ways.

## Acknowledgements

Written by Jeff Hughes, David Tucker, Alex Clegg, Shadi Eskaf (Environmental Finance Center at the UNC School of Government), and Chris Nida (North Carolina League of Municipalities).

This report was a collaborative effort within the EFC and with the North Carolina League of Municipalities (NCLM). Editorial assistance was provided by Lexi Kay.

This report is a product of the Environmental Finance Center at the University of North Carolina, Chapel Hill and the North Carolina League of Municipalities. Findings, interpretations, and conclusions included in this report are those of the authors and do not necessarily reflect the views of EFC funders, the University of North Carolina, the School of Government, the North Carolina League of Municipalities, or those who provided review.

Funding to create this memo as a resource to utilities in North Carolina was provided by the Public Water Supply Section at the Division of Water Resources of the North Carolina Department of Environment and Natural Resources (NCDENR).

Cover photo courtesy of IDuke (November 2005), posted on [http://en.wikipedia.org/wiki/File:Markham-suburbs\\_aerial-edit2.jpg](http://en.wikipedia.org/wiki/File:Markham-suburbs_aerial-edit2.jpg)



UNC  
ENVIRONMENTAL  
FINANCE CENTER

NC LEAGUE  
OF MUNICIPALITIES

© 2015 Environmental Finance Center  
at the University of North Carolina, Chapel Hill  
School of Government  
Knapp-Sanders Building, CB# 3330  
University of North Carolina at Chapel Hill  
Chapel Hill, NC 27599-3330  
<http://efc.sog.unc.edu>

All rights reserved

# How Much Does it Cost to Connect to a Water and Wastewater Utility in North Carolina, 2015

## RESIDENTIAL WATER AND WASTEWATER CONNECTION FEES AS OF JANUARY 2015

### Introduction

Many water utility customers may believe they are only buying gallons of water from their water and wastewater utilities. In fact, water and wastewater utilities provide a range of services to their customers and employ a wide variety of pricing tools to recover the cost of providing these services. Before a customer ever gets a drop of water, they typically have to pay towards the installation of the equipment needed to provide them with service (e.g. tap to main line, meter, meter box, sewer connection, etc.) and in many cases pay for all or part of the cost of initial capacity that will be needed to serve their property. In some cases, if new homes are not in close proximity to the existing water or wastewater system, customers may have to pay some or all the cost of running water or sewer lines to their property.

New home construction slowed down during the Great Recession, and over the last few years the fees charged to connect new customers has played a relatively minor role in utility financial health. According to the U.S. Census Bureau, the 35,316 new single family building permits issued in North Carolina in 2013 is approximately half the number of what was issued in 2007. However as construction picks up and the costs associated with connecting newly constructed homes increases, these fees are likely to become increasingly important to the utilities, particularly as the costs of infrastructure increase in the future.

In 2014-2015, the Environmental Finance Center at the University of North Carolina's School of Government and the North Carolina League of Municipalities conducted a survey of water and wastewater rates and fees charged by North Carolina utilities owned by local governments, not-for-profit associations, and for-profit entities. As part of this effort, we collected information about recurring water and wastewater charges as well as the one-time fees utilities charge residential customers for new water/wastewater connections to their systems.

In addition to pre-established connection charges, utilities use other mechanisms to recover their costs including property assessments and negotiated developer reimbursement agreements. This report focuses solely on residential water and wastewater one-time tap fees and capacity charges (often referred to as system development charges) for 464 North Carolina utilities<sup>1</sup>. All fees are current as of January 2015. Tables of each utility's tap fees and capacity charges are provided on the [Environmental Finance Center's website](#). This report provides a statewide summary of those charges. *Non-residential fees and other mechanisms such as property assessments were not included in the study and are not included in this report.*

---

<sup>1</sup> Analysis is conducted at the rate structure level, unless otherwise specified. A rate structure level indicates a unique set of rates and/or fees that apply to a specific service area of the utility (excluding inside/outside delineations). There are 482 water rate structures and 394 wastewater rate structures among the 464 utilities in this survey.

## Total Combined Charges: “All in Price” for Obtaining a New Connection

There are no formal terminology requirements in naming the different fees that utilities charge to allow new homes to connect to the water or wastewater (sewer) system. As a result, the terminology for these fees is quite inconsistent across the state. Some utilities will split the cost of a new connection into multiple component fees that include a tap fee and a capacity fee, while many other utilities, particularly smaller ones, will charge a single fee that may be called a “tap fee”, a “connection fee” or something else entirely.

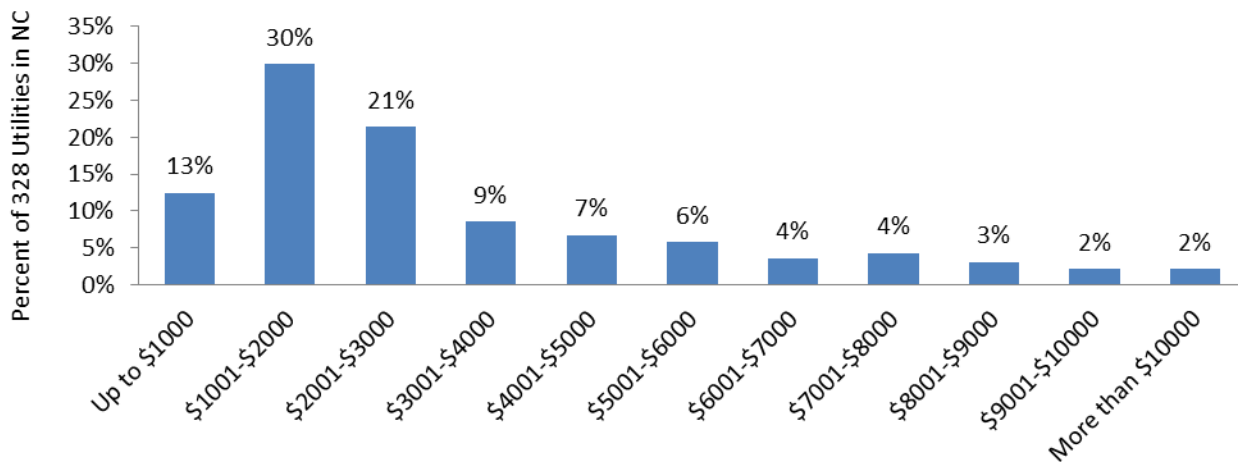
Each utility determines how much of their capital costs they wish to recover in their recurring monthly rates, and how much, if anything, they wish to recover in connection charges. In addition to using different terms, utilities may also choose to use different methods to allocate the revenue needs to customers (e.g. based on meter size, property size, number of fixtures, etc.). To the extent possible, this research characterized fees as either tap fees or system development charges, the term most commonly used in industry pricing guides.<sup>2</sup>

While it is interesting to see the breakdown of fee components (see sections below), examining the total fees charged provides the best view of what it costs new customers to connect to utility services across North Carolina. For this analysis, all fees were added together to calculate the estimated total upfront cost for a typical residential property requesting a connection to the water and/or wastewater system. For 328 utilities that provide combined water and wastewater service, the median charge for customers to get both of these services is \$2,393. Figure 1 shows how these charges varied across the state.

**Figure 1:** Total Combined Charges to Obtain New Single Family Residential Water and Wastewater Connections in 2015

**Most utilities serving water and wastewater charge a combined total of less than \$3,000 for new connections**

The middle half of utilities charge between \$1,500 and \$4,250



<sup>2</sup> While the NC state statutes do not limit terminology or allocation methods, there are a number of widely accepted industry standards that describe different options for calculating fees.



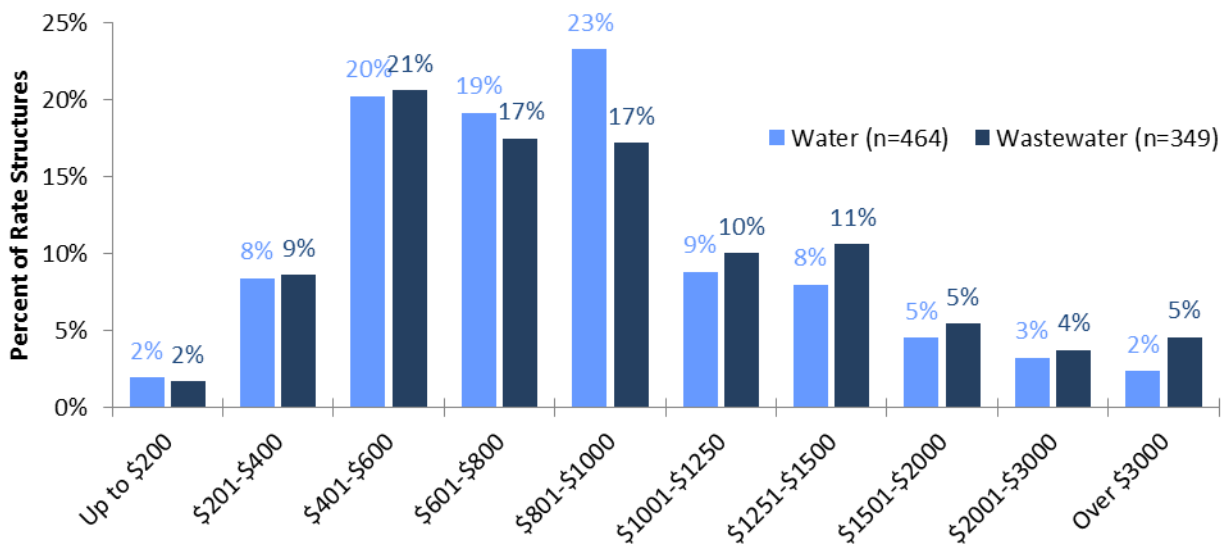
## Tap Fees: Paying for the Direct Costs of Making a Tap

Tap fees – often called connection fees – are designed to recover all or a portion of the materials and labor cost of connecting a customer to the nearest water or sewer line (compared to system development charges which are designed to cover the costs of the major system components including treatment plants and in some cases major transmission lines). In the case of water connections, costs may include the tap, pipe material and installation, water meter, meter box, and other associated material and labor costs. Tap fees are very common among utilities in North Carolina: 99% of all 482 water rate structures in the sample and 92% of all 394 wastewater rate structures in the sample charge a tap fee.

While a few utilities charge the customers the actual cost to make each individual connection, the vast majority of the tap fees (96% water and 93% wastewater) are fixed based on an estimate of the typical cost recovery target to serve a residential customer.

The range of water and wastewater tap fees charged to single family residential customers for a 5/8” or 3/4” water meter (or 4” sewer line) are shown in Figure 2. Most rate structures (63% for water and 55% for wastewater) charge between \$401 and \$1,000 for their tap fees. The median tap fee charged for providing water service was \$810 and the median for wastewater service was \$850.

**Figure 2:** Tap Fees Typically Charged to Residential Customers in January 2015



It appears that many utilities choose to only pass a portion of the tap costs on to their customers. Informal research involving utility interviews suggests that the true cost of a making a new tap, taking in consideration all labor and materials, typically runs between \$1,500 and \$2,500, far more than what most utilities actually charge.

## System Development Charges: Paying for the Capacity Cost of New Service

A capacity charge or system development charge (SDC) is intended to recover some or all the capital costs associated with developing and maintaining system capacity. Water system capacity charges can include costs for source water supply and collection, treatment facilities, storage, pumps, and distribution. Wastewater system capacity features include collection systems and mains as well as treatment and discharge facilities. Utilities choose how much of this capacity cost is included in recurring rates and how much is included in one-time charges. While calculating the cost of these charges can be complex, the two general approaches for calculating system development charges include:

- The equity method (also referred to as system buy-in), where new customers are asked to reimburse the utility for their share of estimated system equity (net assets) at the time they connect. For example, if the net assets a utility that serves 10,000 connections is \$10,000,000, a new connection is charged \$1,000 to buy into the system.
- The incremental cost method, in which new customers pay the estimated cost of the capacity the utility will need to provide them service. For example, a utility calculates the cost of the assets needed to serve the next 1,000 customers as \$5,000,000, then each new customer is charged \$5,000.

System development charges are not as common as tap fees among utilities in North Carolina: 39% of the 482 water rate structures in the sample and 44% of the 394 wastewater rate structures in the sample have a separately listed system development charge. These charges go by many names including: System/Capacity Development Charges, Capacity Use Fee, Capacity Depletion Fee, Capital Facilities Fee, Water Impact Fee, Capital Investment Fee, Capital Recovery Fee, Capital Reserve Fee, Connection Fees, Development and Technology Fee, Acreage Fee, Privilege Fee, Initial Hook-up Fee, and the list goes on.

Some of these names may be informative to the customers about the use and purpose of the fee, while others are not. The range of water and wastewater system development charges typically charged to residential customers are shown in Figure 3. The median water system development charge in 2015 was \$1,000 and the median wastewater charge was \$1,498.

**Figure 3:** System Development Charges in January 2015 Typically Charged to Residential Customers with a 5/8" or 3/4" Water Meter or 4" Sewer Line, in a 3-Bedroom, 1,700 Square Foot Home on a Half Acre Lot that Uses 360 Gallons/Day

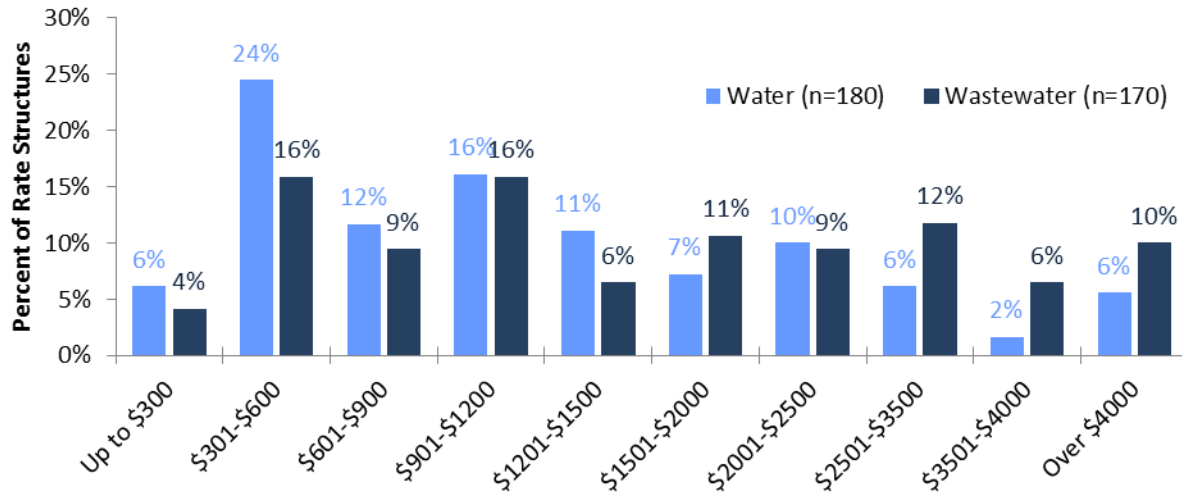
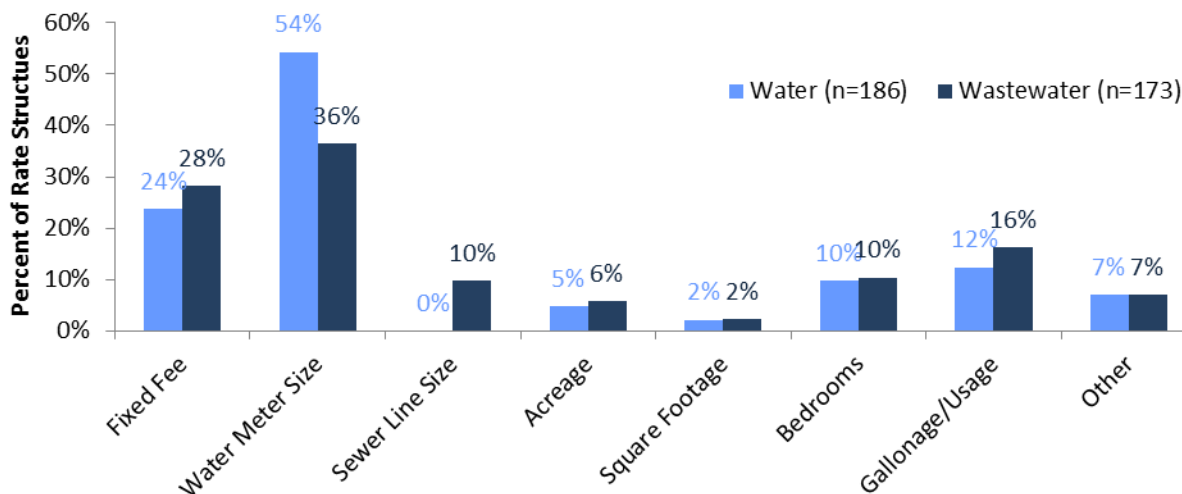


Figure 4 shows the basis used in determining the system development charge for residential customers. 78% of water and 74% of wastewater rate structures with system development charges charge a fixed fee for all customers with the same meter size or line size. The remaining rate structures used a variety of techniques to charge higher prices to residential customers that are expected to use more water or produce more wastewater, thereby paying their fair share towards the system capacity cost. These techniques include charging based on the size of the house (e.g. number of bedrooms or square footage), or size of the land (e.g. acreage), or by estimating the usage amount of the residence itself. Some utilities use a combination of fixed charges and these customer-dependent variable charges.

**Figure 4:** Basis Used for Calculating Residential System Development Charges



To view a table of 464 NC utilities' residential tap fees and system development charges, go to [efc.sog.unc.edu](http://efc.sog.unc.edu) and search for "Residential Tap Fees and System Development Charges in NC."