

# CITY OF GARLAND, TEXAS WATER IMPACT FEE STUDY FINAL DRAFT



# GARLAND

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Prepared for the City of Garland

Prepared by:

Kimley-Horn and Associates, Inc.

12750 Merit Drive, Suite 1000

Dallas, TX 75251

Phone 972-770-1300

TBPE Firm Registration Number: F-928

Project Number: 063551021

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## EXECUTIVE SUMMARY

This study was performed to update the City of Garland's (City) water system impact fees. The implementation of an impact fee is a way to shift a portion of the burden of paying for new facilities onto new development.

Capital Improvements to elements of the water system, including storage facilities, pumping facilities, and the distribution network itself, were provided by the City. Population and land use projections were developed by Freese and Nichols, Inc.

Generally, new water infrastructure is designed beyond the 10-year requirements of the Impact Fee; however, Texas' impact fee law (Chapter 395 of the *Local Government Code*) only allows recovery of costs to serve the 10-year planning period. A portion of the remaining costs past the 10-year window may be recovered as a result of impact fee updates in the future.

The impact fee law defines a service unit as "a standardized measure of consumption, use, generation, or discharge attributable to an individual unit of development calculated in accordance with generally accepted engineering or planning standards and based on historical data and trends applicable to the political subdivision in which the individual unit of development is located during the previous 10 years". For the purpose of this report, the City defines a service unit as a unit of development that consumes the amount of water requiring a standard 5/8" x 3/4" meter. For developments that require a different size meter, a service unit equivalent has been determined as a multiplier of the 5/8" x 3/4" meter based on its required operating capacity. These service unit equivalency factors and associated maximum assessable impact fees are shown in Table 1.

After analysis of the City's 10-year growth projections and the associated demand values, 3,270 additional service units will need water by the year 2026. Based on these additional service units and recoverable costs calculated from the City's Capital Improvements Plan, the City may assess a maximum of \$593 per service unit. Support and calculations for these results are included in the following report.



Table 1: Maximum Assessable Water Impact Fee for Commonly Used Meters

Meter Size*	Maximum Continuous Operating Capacity (GPM)**	Service Unit Equivalent	Maximum Assessable Fee (\$)
5/8"x 3/4" PD	10	1	593
3/4" PD	15	1.5	890
1" PD	25	2.5	1,483
1 1/2" PD	50	5	2,965
2" PD	80	8	4,744
2" Compound	80	8	4,744
2" Turbine	160	16	9,488
3" Compound	175	17.5	10,378
3" Turbine	350	35	20,755
4" Compound	300	30	17,790
4" Turbine	650	65	38,545
6" Compound	675	67.5	40,028
6" Turbine	1,400	140	83,020
8" Compound	900	90	53,370
8" Turbine	2,400	240	142,320
10" Turbine	3,500	350	207,550

\* PD = Positive Displacement Meter (Typical Residential Meter)

\*\* Operating capacities obtained from American Water Works (AWWA) C-700, C-701 & C-702

## Introduction

The City contracted Kimley-Horn and Associates, Inc. (Kimley-Horn) to update the existing water impact fee. The most recent water impact fee update was completed by Water Resources Management, LP in November, 2003. The purpose of the report is to satisfy the requirements of the law and provide the City with an updated impact fee capital improvements plan and associated impact fees.

For convenience and reference, the following is excerpted from Chapter 395 of the Local Government Code.

*(a) The political subdivision shall use qualified professionals to prepare the capital improvements plan and to calculate the impact fee. The capital improvements plan must contain specific enumeration of the following items:*

*(1) a description of the existing capital improvements within the service area and the costs to upgrade, update, improve, expand, or replace the improvements to meet existing needs and usage and stricter safety, efficiency, environmental, or regulatory standards, which shall be prepared by a qualified professional engineer licensed to perform the professional engineering services in this state;*



- (2) *an analysis of the total capacity, the level of current usage, and commitments for usage of capacity of the existing capital improvements, which shall be prepared by a qualified professional engineer licensed to perform the professional engineering services in this state;*
- (3) *a description of all or the parts of the capital improvements or facility expansions and their costs necessitated by and attributable to new development in the service area based on the approved land use assumptions, which shall be prepared by a qualified professional engineer licensed to perform the professional engineering services in this state;*
- (4) *a definitive table establishing the specific level or quantity of use, consumption, generation, or discharge of a service unit for each category of capital improvements or facility expansions and an equivalency or conversion table establishing the ratio of a service unit to various types of land uses, including residential, commercial, and industrial;*
- (5) *the total number of projected service units necessitated by and attributable to new development within the service area based on the approved land use assumptions and calculated in accordance with generally accepted engineering or planning criteria;*
- (6) *the projected demand for capital improvements or facility expansions required by new service units projected over a reasonable period of time, not to exceed 10 years; and*
- (7) *a plan for awarding:*
  - (A) *a credit for the portion of ad valorem tax and utility service revenues generated by new service units during the program period that is used for the payment of improvements, including the payment of debt, that are included in the capital improvements plan; or*
  - (B) *in the alternative, a credit equal to 50 percent of the total projected cost of implementing the capital improvements plan.*

The impact fees are based on recommended capital improvements and the population growth projections provided by the City.

The study process involved the following two tasks:

#### 1. IMPACT FEE CAPITAL IMPROVEMENTS PLAN

This task involved developing cost projections for the capital improvement projects that the City has identified to be built in the 10-year planning window. It also involved estimating the utilized capacity of the existing and proposed capital improvement projects to determine their 10-year recoverable cost.

## 2. IMPACT FEE ANALYSIS AND REPORT

This task included calculating the additional service units and service unit equivalents. These values were then used to determine the impact fee per service unit and the maximum assessable impact fee by meter size.

### Water Service Area

The build-out service area boundary for the City's water system is shown on the enclosed Water System Service Area Map (Exhibit 1). This area encompasses almost all the land within the City's limits and includes approximately 35,900 acres.

### Water System Definitions

The following terms are used throughout this report.

#### Capital Improvements Plan (CIP)

Recommended improvement to the water distribution system based on growth and water demand projections.

#### Demand (Consumption)

Volume of water used for a given time period, typically measured in million gallons per day (mgd) or gallons per minute (gpm).

#### EST

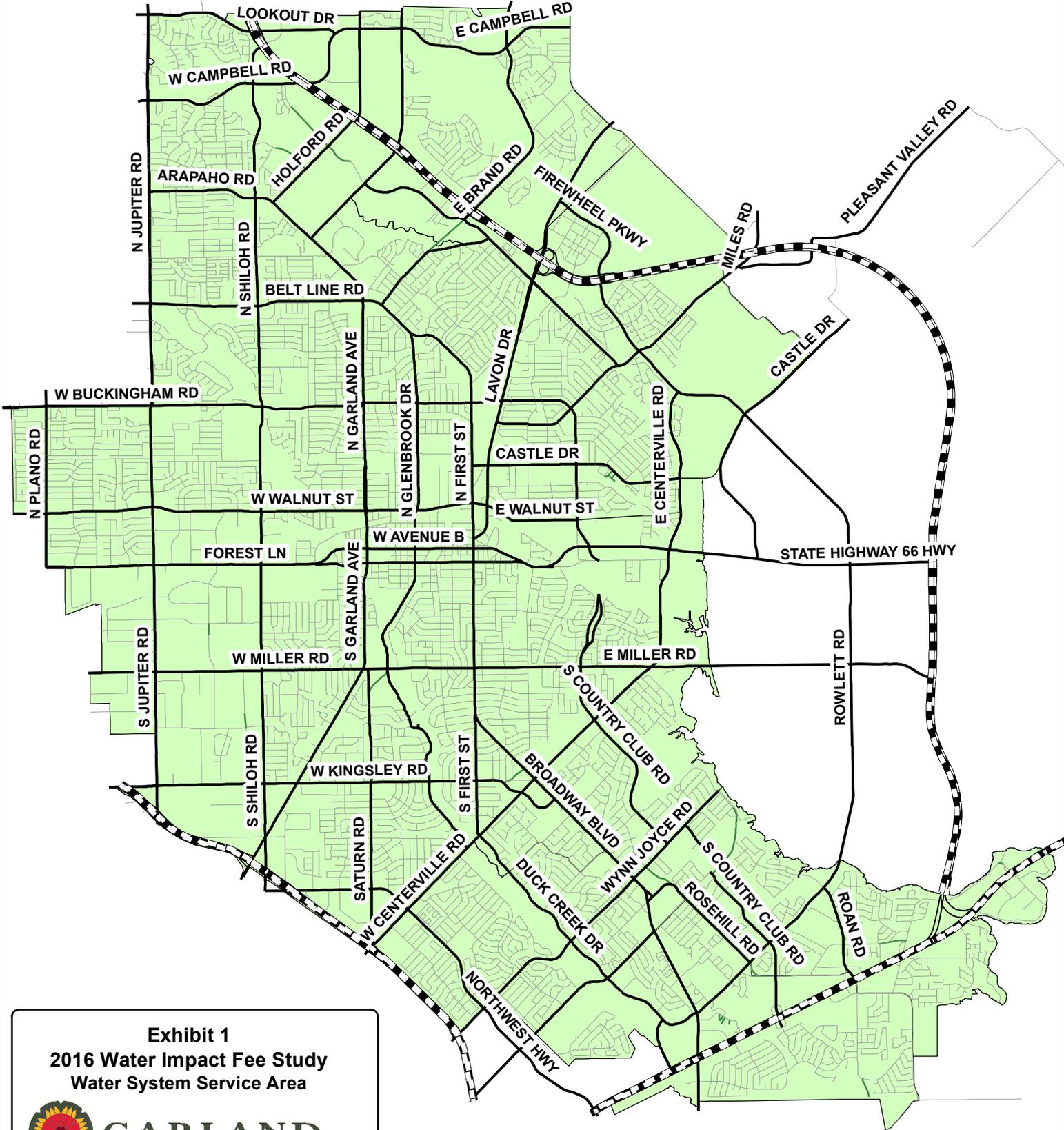
Elevated Storage Tank

#### gpd

Gallons per day

#### GST

Ground Storage Tank



**Exhibit 1**  
**2016 Water Impact Fee Study**  
**Water System Service Area**



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**Legend**

-  Water system Service Area

## EXISTING WATER DISTRIBUTION SYSTEM

### Infrastructure Eligible for Impact Fees

There is some existing City water system infrastructure which has additional capacity to serve future growth within the City’s service area. A portion of the cost of this infrastructure is eligible for recoverable cost in the updated impact fee. Table 2 shows the recoverable cost of the projects that were determined to be eligible for impact fee consideration. These projects are also illustrated in Exhibit 2. The recoverable cost is calculated by multiplying the 2026-2016 capacity utilization percentage by the total project cost.

Table 2: Project Costs for Existing Infrastructure Eligible for Impact Fees

Project No.	Existing Improvement Description	2016 Capacity (% Utilization)	2026 Capacity (% Utilization)	2026 - 2016 Capacity (% Utilization)	Total Project Cost*	2026 Projected Recoverable Cost*
1	Water Line - Firewheel Mall (190 to Lavon)	81%	85%	4%	\$ 542,360	\$ 21,694
2	Pump Station - Broadway Improvements	81%	85%	4%	\$ 5,429,318	\$ 217,173
3	Water Line - Centerville to Pleasant Valley	81%	85%	4%	\$ 4,596,873	\$ 183,875
4	Water Line - Commerce Water Tower to Centerville	81%	85%	4%	\$ 623,561	\$ 24,942
5	Water Lines - Along Naaman Forest & Along Bunker Hill	81%	85%	4%	\$ 1,397,000	\$ 55,880
6	Water Line - Wynn Joyce to Wendell Way	81%	85%	4%	\$ 500,000	\$ 20,000
7	Water Lines - Along Commerce & Along Eastgate Dr	81%	85%	4%	\$ 1,500,000	\$ 60,000
8	Elevated Tank - Commerce Water Tower	81%	85%	4%	\$ 4,978,939	\$ 199,158
9	Water Line - Lawler to Forest along Yale	81%	85%	4%	\$ 814,373	\$ 32,575
10	Water Line - Fifth to under RR tracks along Austin St	81%	85%	4%	\$ 513,000	\$ 20,520
11	Water Lines - Along Fifth St & State St	81%	85%	4%	\$ 1,613,000	\$ 64,520
12	Pump Station - Apollo Northside Improvements	81%	85%	4%	\$ 6,555,322	\$ 262,213
13	Water Line - Centerville to La Prada along Northwest Hwy	81%	85%	4%	\$ 1,760,000	\$ 70,400
14	Water Line - Wendell Way to Rowlett Road	81%	85%	4%	\$ 2,800,000	\$ 112,000
15	Elevated Tank - Southwest Garland Water Tower	81%	85%	4%	\$ 21,376,000	\$ 855,040
16	Water Line - Firewheel to Miles Rd along Pleasant Valley	81%	85%	4%	\$ 700,000	\$ 28,000
<b>TOTAL</b>					<b>\$ 55,699,746</b>	<b>\$ 2,227,990</b>

\* Does not include financing costs.

## WATER IMPACT FEE CAPITAL IMPROVEMENTS PLAN

The City of Garland identified a list of projects that will be required to supply water to the City’s customers in the future. Eight (8) projects are determined eligible for recoverable cost through impact fee over the next 10 years. These impact fee capital improvement projects are summarized in Table 3 and illustrated in Exhibit 2.

**Exhibit 2**  
**2016 Water Impact Fee Study**  
**Impact Fee CIP Projects**



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**Legend**

- Water Service Area
- FEMA Floodplain

**Water Pipes**

- Existing
- Proposed

**Water Tanks**

- iw Existing
- iw Proposed

**Pump Stations**

- ⦿ Existing
- ⦿ Proposed

**Impact Fee CIP Projects**

1. Water Line - Firewheel Mall (190 to Lavon)
2. Pump Station - Broadway Improvements
3. Water Line - Centerville to Pleasant Valley
4. Water Line - Commerce Water Tower to Centerville
5. Water Lines - Along Naaman Forest & Along Bunker Hill
6. Water Line - Wynn Joyce to Wendell Way
7. Water Lines - Along Commerce & Along Eastgate Dr
8. Elevated Tank - Commerce Water Tower
9. Water Line - Lawler to Forest along Yale
10. Water Line - Fifth to under RR tracks along Austin St
11. Water Lines - Along Fifth St & State St
12. Pump Station - Apollo Northside Improvements
13. Water Line - Centerville to La Prada along Northwest Hwy
14. Water Line - Wendell Way to Rowlett Road
15. Elevated Tank - Southwest Garland Water Tower
16. Water Line - Firewheel to Miles Rd along Pleasant Valley
17. Water Line - 635 to Kingsley along Shiloh Rd
18. Water Line - Rosehill to I-30 along Bobtown
19. Water Line - 190 to Muirfield along Brand
20. Water Line - Rowlett Rd to Bobtown along Country Club
21. Water Line - Campbell along 190 along Naaman Forest
22. Elevated Tank - East Zone Water Tower
23. Pump Station - Firewheel Pump Station Expansion



Table 3: Estimated Project Costs for Proposed Capital Improvement Projects

Project No.	Proposed Improvement Description	2016 Capacity (% Utilization)	2026 Capacity (% Utilization)	2026 - 2016 Capacity (% Utilization)	Estimated Total Project	2026 Projected Recoverable Cost
17	Water Line - 635 to Kingsley along Shiloh Rd	81%	85%	4%	\$1,000,000	\$ 40,000
18	Water Line - Rosehill to I-30 along Bobtown	81%	85%	4%	\$1,200,000	\$ 48,000
19	Water Line - 190 to Muirfield along Brand	81%	85%	4%	\$500,000	\$ 20,000
20	Water Line - Rowlett Rd to Bobtown along Country Club	81%	85%	4%	\$1,000,000	\$ 40,000
21	Water Line - Campbell along 190 along Naaman Forest	81%	85%	4%	\$130,000	\$ 5,200
22	Elevated Tank -East Zone Water Tower	81%	85%	4%	\$7,000,000	\$ 280,000
23	Pump Station - Firewheel PS Expansion	81%	85%	4%	\$8,000,000	\$ 320,000
24	Water Master Plan Update	0%	100%	100%	\$550,000	\$ 550,000
Total Project Cost					\$19,380,000	\$ 1,303,200
*Financing Cost					\$ 10,852,800	\$ 729,792
<b>TOTAL</b>					<b>\$30,232,800</b>	<b>\$ 2,032,992</b>

\*Includes 20-year simple interest loan @ 4.7% APR

## WATER IMPACT FEE CALCULATION

In accordance with Chapter 395 of the *Local Government Code*, the City defines a service unit based on historical water usage over the last 10 years as compared to the estimated residential units. The residential unit is the development type that typically uses a 5/8" x 3/4" meter. The measure of the consumption per service unit is based on a 5/8" x 3/4" meter and the data shown in Table 4.

Table 4: Service Unit Consumption Calculation

Year	Population	Service Units (3.08 persons/unit)	Water Usage Average Day Demand (MGD)	Consumption per Service Unit (GPD)
2006	222,432	72,218	36.18	501
2007	224,988	73,048	30.69	420
2008	226,144	73,423	35.76	486
2009	225,865	73,333	31.57	430
2010	226,876	73,661	35.72	485
2011	231,596	75,194	36.67	488
2012	233,623	75,852	31.97	420
2013	234,694	76,199	29.06	381
2014	235,597	76,493	26.17	342
2015	236,897	76,915	27.24	354
10-Year Average Consumption per Service Unit:				431

\* Water Usage Source: City of Garland

\* Population Source: Freese and Nichols

## Additional Service Unit and Water Impact Fee Calculation

According to the City’s 10-year growth projections and corresponding water demand projections, water service will be required for an additional 3,270 service units. The calculation is summarized below:

- A service unit, which is a unit of development that consumes approximately 431 GPD, is a typical residential connection that uses a 5/8” x 3/4” meter. Table 5 details the future water demand projections and how it effects the service units projected for the next 10 years.

Table 5: 10-Year Additional Service Units Calculation

Year	Average Day Demand (MGD)	Service Unit Demand (GPD)	Service Units
2016	27.24	431	63,234
2026	28.65	431	66,504
10-Year Additional Service Units			3,270

Impact fee law allows for a credit calculation to credit back the development community based on the utility revenues or ad valorem taxes that are allocated for paying a portion of future capital improvements. The intent of this credit is to prevent the City from double-charging development for future capital improvements via impact fees and utility rates. If the City chooses not to do a financial analysis to determine the credit value, law requires them to reduce the recoverable cost by 50 percent. The City has decided to forgo the financial analysis and reduce the recoverable cost by 50 percent. The maximum recoverable cost for impact fee is shown in Table 6.

Table 6: Recoverable Cost Breakdown

Water System Facility	Total Project Cost	2026 Recoverable Cost
Existing Bond Projects	\$ 55,699,746	\$ 2,227,990
Proposed Capital Improvement Projects	\$ 30,232,800	\$ 2,032,992
Planning Expenses - Water Impact Fee	\$ 36,594	\$ 36,594
Existing Water Impact Fee Fund Balance	\$ (414,123)	\$ (414,123)
<b>Totals</b>	<b>\$ 85,555,017</b>	<b>\$ 3,883,452</b>

The impact fee per service unit is calculated as follows:

- Assessable Cost = 50% of Recoverable Cost = \$1,941,726
- Impact fee per service unit =  $\frac{\text{Assessable Cost}}{\text{Additional service units}}$



- Impact fee per service unit =  $\frac{\$1,941,726}{3,270} = \$593$

Therefore, the maximum assessable impact fee per service unit is \$593.

For developments that require a different size meter, a service unit equivalent has been determined as a multiplier of the 5/8" x 3/4" meter based on its required operating capacity. The maximum impact fee that could be assessed for other meter sizes is based on the values shown in Table 7.

Table 7: Service Unit Equivalency Table for Commonly Used Meters

Meter Size*	Maximum Continuous Operating Capacity (GPM)**	Service Unit Equivalent	Maximum Assessable Fee (\$)
5/8"x 3/4" PD	10	1	593
3/4" PD	15	1.5	890
1" PD	25	2.5	1,483
1 1/2" PD	50	5	2,965
2" PD	80	8	4,744
2" Compound	80	8	4,744
2" Turbine	160	16	9,488
3" Compound	175	17.5	10,378
3" Turbine	350	35	20,755
4" Compound	300	30	17,790
4" Turbine	650	65	38,545
6" Compound	675	67.5	40,028
6" Turbine	1,400	140	83,020
8" Compound	900	90	53,370
8" Turbine	2,400	240	142,320
10" Turbine	3,500	350	207,550

\* PD = Positive Displacement Meter (Typical Residential Meter)

\*\* Operating capacities obtained from American Water Works (AWWA) C-700, C-701 & C-702

## Appendix A – Capacity Calculations

Table A1: Additional Service Unit & Capacity Calculations

### 10-Year Additional Service Units Calculation

Year	Average Day Demand (MGD)	Service Unit Demand (GPD)	Service Units	Capacity
2016	27.24	431	63,234	81%
2026	28.65	431	66,504	85%
Buildout	33.55	431	77,878	100%
10-Year Additional Service Units			3,270	