



Water and Sewer Connection Fee Study

Lake County, Illinois

Water and Sewer Connection Fees
Project No. 109356

Final Report
10/28/2019



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prepared for

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prepared by

Burns & McDonnell Engineering Company, Inc.

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LIST OF ABBREVIATIONS

<u>Abbreviation</u>	<u>Term/Phrase/Name</u>
AWWA	American Water Works Association
CIP	Capital Improvement Program
CLCJAWA	Central Lake County Joint Action Water Agency
FY	Fiscal year
gpd	Gallons per day
Kgal	Thousand gallons of water
Mgd	Million gallons per day
NSWRD	North Shore Water Reclamation District
NWRWRF	Northwest Regional Water Reclamation Facility
RE	Residential equivalent
WEF	Water Environment Federation

1.0 EXECUTIVE SUMMARY

1.1 Project Background

Burns & McDonnell was engaged by Lake County, Illinois (Lake County) to perform an evaluation of water and sewer connection fees (Study). The goal of this effort was to determine the degree to which current connection fees reasonably recover the cost associated with growth, and where appropriate, make recommendations for future water and sewer connection fees. This Connection Fee Report summarizes the major findings of the Study.

1.2 Methodology

Connection fees are one-time fees intended to recover capital costs associated with utility system infrastructure used to provision service to new customers. Different approaches may be used in the determination of connection fees. For this Study, the Buy-In Method was selected for use in the update of Lake County's connection fees based on the following rationale.

- The Buy-In Method has been used previously by Lake County in the development of its connection fees.
- Generally, the utility systems owned and operated by Lake County are considered to have adequate capacity to accommodate growth.
- The Buy-In Method is commonly accepted and relatively easy to explain.
- Because the approach uses the current cost of existing capacity, it is not dependent on future capital project spending to establish the level of fee.

The basic calculation used to develop connection fees is generally consistent across methodologies and is illustrated below in Figure 1-1.

Figure 1-1: Summary of Connection Fee Calculation



The project approach used in the evaluation of Lake County's connection fees is discussed further in Section 2.0 of this report.

1.3 Existing and Proposed Water Connection Fees

Lake County provides retail water service utilizing water supply from either Lake County groundwater wells and treatment infrastructure or from water supply provided by Central Lake County Joint Action Water Agency (CLCJAWA). Other water facilities involved in the delivery of water service include storage tanks, pump stations, and transmission and distribution mains.

Existing and proposed water connection fees are shown in Table 1-1. Because of the difference in water supply, Lake County's current water connection fees are differentiated by water source. The fees shown in Table 1-1 reflect costs for Lake County facilities only and exclude CLCJAWA connection fees.

The analysis described in this report serves as the basis for recommended adjustments to water connection fees. A common principle applied to utility rate and fee implementation is to mitigate where possible the impact of sudden changes in fees. Following this principle, the proposed water connection fees have been phased-in to reach the recommended connection fee level over three years.

Table 1-1: Existing and Proposed Water Connection Fees

	Existing	Proposed		
	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>
<u>Water Connection Fees</u>				
General Service Areas (CLCJAWA) [1]	\$ 2,250	\$ 2,480	\$ 3,350	\$ 4,510
General Service Areas (Well Water)	\$ 3,780	\$ 4,160	\$ 4,770	\$ 5,470

[1] LCPW portion only. Excludes CLCJAWA connection fee.

Figure 1-2 compares Lake County's existing 2019 and proposed 2020 water connection fees to other regional water utilities. It is important to recognize differences in connection fees can be attributed to several factors, including:

- Fees developed to reflect only a portion of service provided (i.e. supply/treatment only, or transmission/distribution only)
- Variations in fee development methodology
- Policies regarding the recovery of the cost of growth
- Age of and available capacity in applicable infrastructure
- Other factors

Figure 1-2: Regional Comparison of Water Connection Fees

(1) Reflects Lake County Public Works facility costs only, excludes CLCJAWA costs.

Section 3.0 of this report details recommendations regarding Lake County's water connection fees.

1.4 Existing and Proposed Sewer Connection Fees

Lake County provides both retail and wholesale sewer service involving an array of infrastructure such as local collector mains, interceptors, force mains, pump stations and treatment plants. As with water service, depending on location some sewer customers receive sewer service solely through reliance on Lake County infrastructure, while others receive sewer service by relying on a combination of infrastructure owned by Lake County and other regional providers. In this report sewer connection fees have been developed for Lake County recognizing the infrastructure applicable to specific service areas, and only recovers the cost of infrastructure owned and operated by Lake County.

Existing and proposed sewer connection fees are shown in Table 1-2. Fees are differentiated based on the facilities used by each region. The fees shown in Table 1-1 reflect costs for Lake County facilities only and exclude connection fees for treatment service provided by Fox Lake, Libertyville and the North Shore Water Reclamation District.

The analysis described in this report serves as the basis for recommended adjustments to sewer connection fees. A common principle applied to sewer rate and fee design is to mitigate where possible the impact of sudden changes in fees. Following this principle, the proposed sewer connection fees have been phased-in to reach the recommended connection fee level over three years, with relatively few exceptions as outlined further in Section 2.5 and subsequent sections of this report.

Table 1-2: Existing and Proposed Sewer Connection Fees

	Existing	Proposed		
	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>
<u>Wastewater Connection Fees</u>				
Diamond-Sylvan Lake	\$ 9,110	\$ 8,760	\$ 8,760	\$ 8,760
Northeast	\$ 7,240	\$ 7,730	\$ 7,730	\$ 7,730
Northeast Central				
Highland Lake, Avon & Warren Townships, Village of Third Lake	\$ 2,700	\$ 2,970	\$ 3,260	\$ 3,580
Grayslake, Gurnee, Hainesville and Waukegan	\$ 1,300	\$ 1,430	\$ 1,710	\$ 2,040
Northwest				
Fox Lake Hills, Petite Lake and Stanton Bay [1]	\$ 2,590	\$ 2,850	\$ 2,960	\$ 3,080
Wholesale [1]	\$ 1,190	\$ 1,310	\$ 1,420	\$ 1,540
South Central	\$ 5,540	\$ 6,090	\$ 6,300	\$ 6,500
Southeast				
Portwine	\$ 7,580	\$ 8,220	\$ 8,220	\$ 8,220
Buffalo Grove, Riverwoods	\$ 5,150	\$ 5,670	\$ 5,810	\$ 5,950
Kildeer	\$ 6,550	\$ 7,210	\$ 7,350	\$ 7,490
Ela	\$ 9,020	\$ 9,920	\$ 10,070	\$ 10,210
Lake Zurich, Lincolnshire	\$ 3,780	\$ 4,030	\$ 4,030	\$ 4,030
Southeast Central				
Countryside Manor, Terre Faire, North Libertyville Estates [1]	\$ 2,680	\$ 2,950	\$ 3,040	\$ 3,120
Green Oaks [1]	\$ 1,280	\$ 1,410	\$ 1,490	\$ 1,580
Libertyville [1]	\$ 1,280	\$ 1,410	\$ 1,490	\$ 1,580

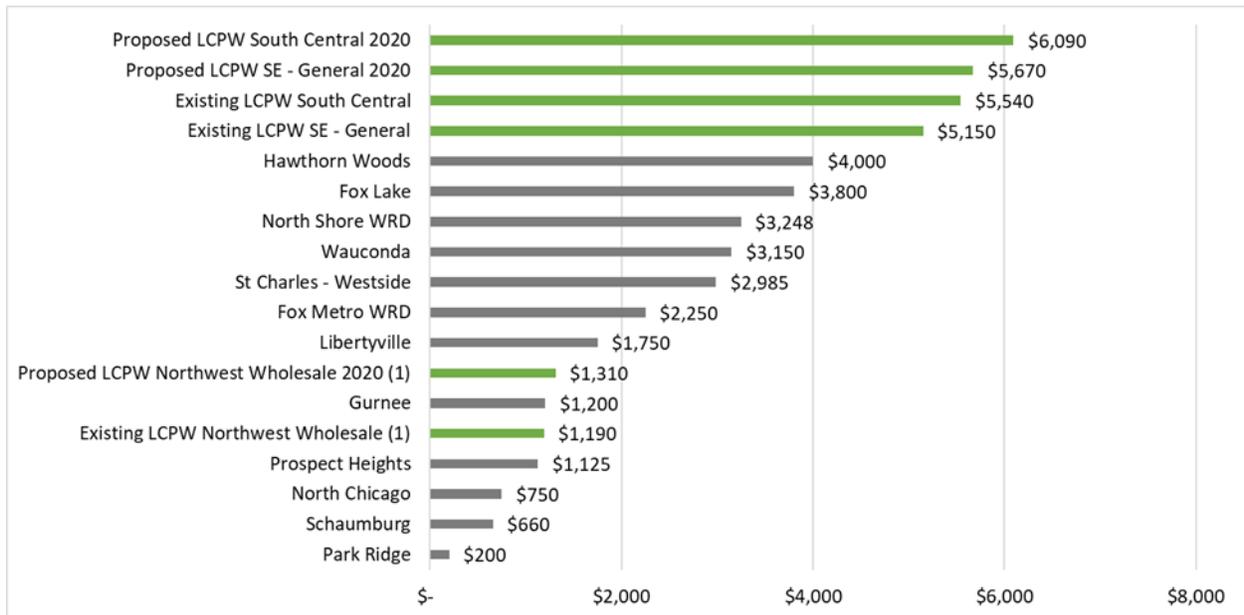
[1] LCPW portion only. Excludes Fox Lake in Northwest Area and Libertyville in the Southeast Central Area.

Figure 1-3 compares Lake County's existing 2019 and proposed 2020 sewer connection fees to other regional water utilities. Because of the number of specific regional sewer connection fees applied by Lake County, Figure 1-3 has been limited to include Lake County's more commonly applied connection fees in recent years.

As with the comparison of water connection fees, it is important to recognize differences in connection fees can be attributed to several factors, including:

- Fees developed to reflect only a portion of service provided (i.e. treatment, or conveyance only)
- Variations in fee development methodology
- Policies regarding the recovery of the cost of growth
- Age of and available capacity in applicable infrastructure
- Other factors

Figure 1-3: Regional Comparison of Sewer Connection Fees



(1) Reflects Lake County Public Works facility costs only, excludes Fox Lake treatment costs.

Section 4.0 of this report details recommendations regarding Lake County’s sewer connection fees.

2.0 CONNECTION FEE METHODOLOGY

2.1 Introduction

The evaluation of connection fees has been performed concurrently with Lake County's Water and Sewer Rate Study, also completed by Burns & McDonnell in 2019. Collectively, the user charges developed in the Rate Study and the Connection Fees described in this report provide necessary funding for Lake County's water and sewer utility enterprise.

Connection fees are one-time fees intended to recover capital costs associated with utility system infrastructure used to provision service to new customers. Within the water and sewer utility industry, connection fees are also sometimes referred to as system development charges, tap fees, or impact fees. Connection fees are designed such that new connections pay their proportionate share of system development costs, thereby lowering the burden of development costs that existing ratepayers would otherwise fund through user charges. By utilizing connection fees, new customers will contribute toward historical investment in facilities made by existing customers. Ultimately, the use of connection fees enables new customers who directly benefit from the service to pay for the service, rather than receive a subsidy from all other customers through user charges.

Connection fees should be implemented with appropriate consideration of legal authority and statutory requirements, which vary by state. Some important elements in the development of connection fees are summarized or referenced in this report. However, this report should not be considered legal advice pertaining to the implementation or use of connection fees.

Generally speaking, a reasonable relationship must exist between the fees charged and the cost of providing capacity to the customer. This relationship is typically referred to as a rational nexus, which is a foundational concept in the development of connection fees. Having a rational nexus means that the connection fee has a reasonable relationship to the benefits received, and that new customers pay their proportionate share of the cost of capacity.

The remainder of this section of the report describes the analysis used to assign new customers their proportionate share of system capacity costs. As such, Lake County is establishing a rational nexus between capacity provided in the system, the proportionate share to be recovered from new customers, and the proposed connection fees.

2.2 Approach

Different approaches may be used in the determination of connection fees. The American Water Works Association (AWWA) M1 Manual of Practice *Principles of Water Rates, Fees, and Charges* indicates the three most common methods for determining connection fees are:

- **Buy-In Method**, which is based on the value of the existing capacity. This method is typically used when the utility has adequate capacity to meet current and anticipated growth requirements.
- **Incremental Cost Method**, which is based on the value or cost to expand the system's capacity. This method is typically used when the existing system has limited or no capacity to accommodate growth and new investment will be needed to serve additional customers.
- **Combined Approach**, which is based on the blended value of the existing and expanded system's capacity. This approach is typically used when capacity to accommodate growth exists in some parts of the service (such as transmission) but additional capacity is required to accommodate growth in other aspects of the service (such as treatment plant.)

The Buy-In Method was selected for use in the update of Lake County's connection fees. Under the Buy-In Method, connection fees for new customers reflect the current value of providing capacity to serve additional users. Under this method, the new customer is effectively on par with the value of capacity contributed by existing customers and proportionately shares in the responsibility for system capacity. The Buy-In Method was selected for this analysis based on the following rationale.

- The Buy-In Method has been used previously by Lake County in the development of its connection fees
- Generally, the utility systems owned and operated by Lake County are considered to have adequate capacity to accommodate growth.
- The Buy-In Method is commonly accepted and relatively easy to explain.
- Because the approach uses the current cost of existing capacity, it is not dependent future capital projects spending to establish the level of fee. In other words, the resulting fee is not reliant on the addition of future capacity in its justification.

The underlying calculation used to develop connection fees is generally consistent across methodologies and is illustrated below in Figure 2-1.

Figure 2-1: Summary of Connection Fee Calculation

Lake County provides water and sewer service through a complex array of facilities owned and operated by the County. For some of Lake County's customers, a portion of the service is provided by other utility entities. Lake County's connection fees discussed in this report are designed to recover the cost of facilities owned and operated by Lake County, and do not include costs associated with any portion of service provided by others. Most frequently, this service is related to water supply or wastewater treatment, and will be noted where applicable as connection fees are detailed later in this report.

2.3 System Valuation

The first step in the Buy-In Method is valuing the system infrastructure, which represents the numerator in the connection fee calculation process illustrated in Figure 2-1. For this study, the Replacement Cost Method was used to identify the value of existing infrastructure in today's dollars. For the water utility, assets valued generally include groundwells, storage, treatment facilities, pump stations, transmission mains (10-inch to 20-inch) and distribution mains (unknown to 8-inch) where applicable. Main-related valuations were developed by Burns & McDonnell reflecting current price per foot estimates and Lake County's inventory of feet of pipe by region. Wells, storage, treatment facilities and pump station valuations were estimated by Burns & McDonnell based on the replacement cost of similar facilities.

For the sewer system, assets valued generally include interceptor mains, force mains, pump stations, local collector mains, and treatment facilities where applicable. Main-related valuations were considered by Burns & McDonnell reflecting current price per foot estimates and Lake County's inventory of feet of pipe by region. Pump stations and treatment facility valuations were estimated by Burns & McDonnell based on the replacement cost of similar facilities.

2.4 System Capacity

As illustrated in Figure 2-1, estimates of system capacity provide the denominator in the connection fee calculation process. For this study, capacity estimates have been developed on the basis of either design capacities for certain facilities or estimates of future demand over a 20-year planning horizon. Lake County generally utilizes a Residential Equivalent (RE) for planning purposes, representing the water

demand or wastewater flow associated with a single-family residence. Use of a RE assists Lake County in estimating the equivalent demand for non-residential accounts such as commercial or industrial facilities based on equivalent flow rates. For each facility or group of facilities valued in this report, an estimate of capacity and a conversion of that capacity to RE's has been prepared. In doing so, a unit cost of capacity is developed that may be applied to a new connection's RE to determine a proportionate connection fee.

2.5 Development of Proposed Fees

In general, where adjustments to existing connection fees have been recommended, proposed fees have been designed to phase-in changes over a three-year period. In consultation with Lake County, the following approach has been taken in the development of the three-year connection fee phasing plan.

- The change in the first year (2020) has been limited to 10 percent of the existing fee.
- The change in years 2 and 3 (2021 and 2022) is calibrated to bring the proposed fee into full implementation by year 3 in equally proportioned changes.
- In some cases, the total indicated change is less than 10 percent. In such instances, the recommendation is to implement the full change in 2020, and then hold the fee constant in 2021 and 2022.

2.6 Statement of Limitations

In preparation of the Lake County Water and Sewer Connection Fee Study (Study), Burns & McDonnell relied upon information provided by Lake County. The information included various analyses, computer-generated information and reports, audited financial reports, and other financial and statistical information, as well as other documents such as operating statistics, billing data and system geographic information. While Burns & McDonnell has no reason to believe that the information provided, and upon which Burns & McDonnell has relied, is inaccurate or incomplete in any material respect, Burns & McDonnell has not independently verified such information and cannot guarantee its accuracy or completeness.

Estimates and projections prepared by Burns & McDonnell relating to financial forecasting and costs are based on Burns & McDonnell's experience, qualifications, and judgment as a professional consultant. Since Burns & McDonnell has no control over weather, cost and availability of labor, material and equipment, labor productivity, contractors' procedures and methods, unavoidable delays, economic conditions, government regulations and laws (including interpretation thereof), competitive bidding, and

market conditions or other factors affecting such estimates or projections, Burns & McDonnell does not guarantee the accuracy of its estimates or predictions.

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3.0 WATER CONNECTION FEES

3.1 Introduction

Lake County provides retail water service utilizing water supply from either Lake County groundwater wells and treatment infrastructure or from water supply provided by Central Lake County Joint Action Water Agency (CLCJAWA). Other water facilities involved in the delivery of water service include storage tanks, pump stations, and transmission and distribution mains.

Because of the difference in water supply, Lake County's current water connection fees are differentiated by water source, with connection fees applicable to General Service Areas served with Lake County well water and General Service Areas with CLCJAWA supply.

Table 3-1 summarizes the valuation, RE, and cost per RE for the water system components. The cost of distribution mains was not included as these smaller local mains are typically contributed by developers.

Table 3-1: Water System Component Values

Sub System	Transmission Main		Storage	Well
	Feet of	Replacement	Replacement	Water Supply
	Transmission	Cost	Cost	Replacement
	<u>Main</u>	<u>Value</u>	<u>Value</u>	<u>Value</u>
10" to 20"	\$	\$	\$	
Arden Shores	-	\$ -	\$ -	\$ -
Brooks Farm	2,995	\$ 898,500	\$ 1,000,000	\$ 1,000,000
Countryside Lake	13,368	\$ 4,010,400	\$ 750,000	\$ 1,200,000
Forest Lake	-	\$ -	\$ -	\$ -
Fox Lake Hills	4,195	\$ 1,258,500	\$ 500,000	\$ 500,000
Grandwood Park	26,924	\$ 8,077,200	\$ 3,000,000	\$ 1,000,000
Hawthorn Woods	-	\$ -	\$ -	\$ -
Highland Lake	-	\$ -	\$ 200,000	\$ 500,000
Knollwood/Rondout	77,218	\$ 23,165,400	\$ 3,000,000	\$ -
Oak Terrace	-	\$ -	\$ -	\$ -
Pekara	7,301	\$ 2,190,300	\$ 1,500,000	\$ 2,000,000
Vernon Hills	274,494	\$ 82,348,200	\$ 10,000,000	\$ -
Wildwood	67,305	\$ 20,191,500	\$ 4,000,000	\$ -
Subtotal	473,800	\$ 142,140,000	\$ 23,950,000	\$ 6,200,000
Engineering & Administrative		\$ 21,321,000	\$ 3,592,500	\$ 930,000
Total Value		\$ 163,461,000	\$ 27,542,500	\$ 7,130,000
Estimated Residential Equivalents		42,343	42,343	7,465
Cost per RE (rounded)		\$ 3,860	\$ 650	\$ 960

3.2 General Service Areas (Well Water)

The existing and proposed water connection fees includes the cost for water supply, transmission, and storage facilities. Cost of local distribution mains are not included in this evaluation as those mains were contributed by developers. The current fee is \$3,780 per RE, while the recommended fee is \$5,470 per RE. Table 3-2 shows the existing and proposed connection fees for this area, reflecting a three-year phase-in of the proposed connection fee.

Table 3-2: General Service Area Connection Fee with Well Water Supply (\$/RE)

<u>Water Connection Fee</u>	Existing	Proposed		
	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>
General Service Areas (Well Water)	\$ 3,780	\$ 4,160	\$ 4,770	\$ 5,470

Figure 3-1 illustrates the primary components of the General Service Area (Well Water) connection fee that are included in the proposed fee. The values in Figure 3-1 reflect the cost per RE for each applicable system component established previously in Table 3-1. The total recommended fee of \$5,470 per RE is phased-in over a three-year period beginning in 2020.

Figure 3-1: Proposed 2022 Connection Fee per RE – General Service Area (Well Water)



3.3 General Service Areas (CLCJAWA)

For water transmission and storage costs, the connection fee for General Service Areas receiving water supplied by CLCJAWA is consistent with the approach for customers served by Lake County Well Water. However, in General Service Areas with CLCJAWA water supply, no cost of water supply has been included in the development of the proposed Lake County connection fee. New connections in these areas remit connection fees for CLCJAWA water supply directly to CLCJAWA. Costs included in this analysis only recover cost associated with Lake County infrastructure.

Table 3-3 shows the existing and proposed connection fees for this area, reflecting a three-year phase-in of the proposed connection fee.

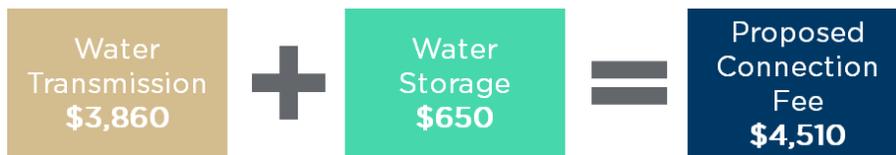
Table 3-3: General Service Area Connection Fee with CLCJAWA Water Supply (\$/RE)

<u>Water Connection Fee</u>	Existing	<u>Proposed</u>		
	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>
General Service Areas (CLCJAWA) [1]	\$ 2,250	\$ 2,480	\$ 3,350	\$ 4,510

[1] LCPW portion only. Excludes CLCJAWA connection fee.

Figure 3-2 illustrates the primary components of the General Service Area (CLCJAWA) connection fee that are included in the proposed fee. The values in Figure 3-2 reflect the cost per RE for each applicable system component established previously in Table 3-1. The total recommended fee of \$4,510 per RE is phased-in over a three-year period beginning in 2020.

Figure 3-2: Proposed 2022 Connection Fee per RE – General Service Area (CLCJAWA)



3.4 Summary of Existing and Proposed Water Connection Fees

Table 3-4 summarizes the existing and proposed water connection fees for Lake County. Note that in General Service Areas with CLCJAWA water supply, no cost of water supply has been included in the development of the proposed Lake County connection fee.

Table 3-4: Existing and Proposed Water Connection Fees

	Existing	Proposed		
	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>
<u>Water Connection Fees</u>				
General Service Areas (CLCJAWA) [1]	\$ 2,250	\$ 2,480	\$ 3,350	\$ 4,510
General Service Areas (Well Water)	\$ 3,780	\$ 4,160	\$ 4,770	\$ 5,470

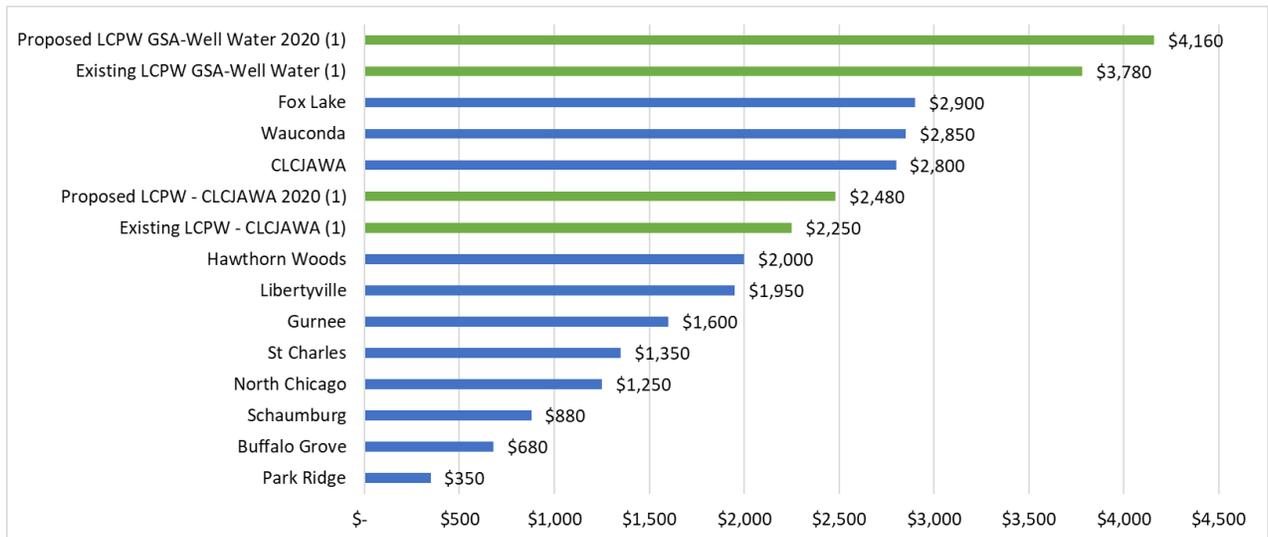
[1] LCPW portion only. Excludes CLCJAWA connection fee.

3.5 Regional Water Connection Fee Comparison

Figure 3-3 compares Lake County's existing 2019 and proposed 2020 water connection fees to other regional water utilities. It is important to recognize differences in connection fees can be attributed to several factors, including:

- Fees developed to reflect only a portion of service provided (i.e. supply/treatment only, or transmission/distribution only)
- Variations in fee development methodology
- Policies regarding the recovery of the cost of growth
- Age of and available capacity in applicable infrastructure
- Other factors

Figure 3-3: Regional Comparison of Water Connection Fees



(2) Reflects Lake County Public Works facility costs only, excludes CLCJAWA costs.

4.0 SEWER CONNECTION FEES

4.1 Introduction

Lake County provides both retail and wholesale sewer service involving an array of infrastructure such as local collector mains, interceptors, force mains, pump stations and treatment plants. As with water service, depending on location some sewer customers receive sewer service solely through reliance on Lake County infrastructure, while others receive sewer service by relying on a combination of infrastructure owned by Lake County and other regional providers. In this report sewer connection fees have been developed for Lake County recognizing the infrastructure applicable to specific service areas, and only recovers the cost of infrastructure owned and operated by Lake County.

Existing sewer connection fees are differentiated based on the facilities used by each region. The fees shown in Table 1-1 reflect costs for Lake County facilities only and exclude connection fees for treatment service provided by Fox Lake, Libertyville, and the North Shore Water Reclamation District.

Table 4-1 summarizes the valuation, RE, and cost per RE for the sewer transmission system components. Table 4-2 summarizes similar information for Lake County’s sewer treatment facilities. As noted in this section, where applicable the cost of local collector mains is included in some areas if Lake County was responsible for their original construction.

Table 4-1: Sewer System Transmission Values

Sub System	Interceptor		Force Main		Pump station	Subtotal	Engineering & Administration	Total	Residential Equivalents	Cost per RE	Rounded Cost per RE
	Feet	\$	Feet	\$							
Diamond-Sylvan Lake	3,874	\$ 1,549,600	11,377	\$ 1,706,550	\$ 1,500,000	\$ 4,756,150	\$ 713,400	\$ 5,469,550	1,616	\$ 3,385	\$ 3,390
Northeast	51,009	\$ 20,403,600	207	\$ 31,050	\$ 500,000	\$ 20,934,650	\$ 3,140,200	\$ 24,074,850	14,286	\$ 1,685	\$ 1,690
Northeast Central	44,565	\$ 17,826,000	11,621	\$ 1,743,150	\$ 5,000,000	\$ 24,569,150	\$ 3,685,400	\$ 28,254,550	13,861	\$ 2,038	\$ 2,040
Northwest	41,360	\$ 16,544,000	34,526	\$ 5,178,900	\$ 5,000,000	\$ 26,722,900	\$ 4,008,400	\$ 30,731,300	19,989	\$ 1,537	\$ 1,540
South Central	11,974	\$ 4,789,600	46,718	\$ 7,007,700	\$ 5,000,000	\$ 16,797,300	\$ 2,519,600	\$ 19,316,900	17,143	\$ 1,127	\$ 1,130
Southeast Central	19,504	\$ 7,801,600	9,309	\$ 1,396,350	\$ 1,500,000	\$ 10,697,950	\$ 1,604,700	\$ 12,302,650	7,767	\$ 1,584	\$ 1,580
Southeast											
Portwine Sector		\$ -	10,000	\$ 3,174,700	\$ 727,500	\$ 3,902,200	\$ 585,300	\$ 4,487,500	1,071	\$ 4,190	\$ 4,190
Ela Sector		\$ -	15,023	\$ 2,253,500	\$ 727,500	\$ 2,981,000	\$ 447,200	\$ 3,428,200	1,259	\$ 2,723	\$ 2,720
All Other Southeast	61,219	\$ 24,487,600	102,839	\$ 15,425,800	\$ 6,545,000	\$ 46,458,400	\$ 6,968,800	\$ 53,427,200	27,835	\$ 1,919	\$ 1,920
TOTAL	233,505	\$ 93,402,000	241,620	\$ 37,917,700	\$ 26,500,000	\$ 157,819,700	\$ 23,673,000	\$ 181,492,700			

Table 4-2: Sewer System Treatment Values

	WRF	Engineering & Administration	Total	Residential Equivalents	Cost per RE	Rounded Cost per RE
	\$	\$	\$		\$	\$
Mill Creek	\$ 31,500,000	\$ 4,725,000	\$ 36,225,000	6,000	\$ 6,038	\$ 6,040
Vernon Hills	\$ 80,000,000	\$ 12,000,000	\$ 92,000,000	17,143	\$ 5,367	\$ 5,370
Des Plaines	\$ 160,000,000	\$ 24,000,000	\$ 184,000,000	45,714	\$ 4,025	\$ 4,030
TOTAL	\$ 271,500,000	\$ 40,725,000	\$ 312,225,000			

4.2 Service Areas

Lake County's sewer system is distinguished by seven service areas as noted below.

- Diamond/Sylvan Lake
- Northeast
- Northeast Central
- Northwest
- South Central
- Southeast
- Southeast Central

Sewer service connection fees have been developed following the same methodology applied to the water connection fees. Fees are distinguished by service area to reflect the unique combination of Lake County assets required to provide sewer service to that area, whether that service is on a retail or wholesale basis. As noted previously, connection fees associated with infrastructure owned by other service providers that assists in the providing a portion of sewer service to these areas are not included in this assessment.

4.3 Diamond/Sylvan Lake

Located in Lake County’s Central Region, the Diamond/Sylvan Lake Service Area receives retail sewer service from Lake County. The Diamond/Sylvan Lake Service Area includes parts of unincorporated Fremont and Ela Townships, including the unincorporated areas of Countryside Lake, Diamond Lake, and Sylvan Lake. Lake County’s infrastructure required for this service includes local collector mains, transmission system assets, and sewage treatment through the Vernon Hills Wastewater Reclamation Facility (WRF). Because local collectors were contributed by developers, costs associated with the local collector assets are not included in this assessment.

Table 4-3 shows the existing and proposed connection fee for this area. Analysis indicates the connection fee for this service area should be lowered, which is proposed to take effect in its entirety in 2020.

Table 4-3: Diamond/Sylvan Lake Connection Fee (\$/RE)

<u>Wastewater Connection Fees</u>	Existing	Proposed		
	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>
Diamond-Sylvan Lake	\$ 9,110	\$ 8,760	\$ 8,760	\$ 8,760

Figure 4-1 illustrates the primary components of the Diamond/Sylvan Lake connection fee that are included in the proposed fee. The values in Figure 4-1 reflect the cost per RE for each applicable system component established previously in Table 4-1 and Table 4-2. Because the change is less than 10 percent, the total recommended fee of \$8,760 per RE is proposed to be implemented in 2020 and remain at that level through 2022.

Figure 4-1: Proposed 2022 Connection Fee per RE – Diamond-Sylvan Lake



4.4 Northeast Service Area

The Northeast Service Area receives both retail and wholesale sewer service from Lake County. Retail service is provided to portions of unincorporated Antioch, Newport and Warrant Townships, as well as portions of the Village of Old Mill Creek. Wholesale service is provided to the Village of Antioch. Lake County’s sewer system infrastructure in the Northeast Service Area includes local collector mains, transmission system assets, and sewage treatment through the Mill Creek WRF. Because local collectors were contributed by developers, costs associated with the local collector assets are not included in this assessment.

Table 4-4 shows the existing and proposed connection fee for this area.

Table 4-4: Northeast Service Area Connection Fee (\$/RE)

<u>Wastewater Connection Fees</u>	Existing	Proposed		
	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>
Northeast	\$ 7,240	\$ 7,730	\$ 7,730	\$ 7,730

Figure 4-2 illustrates the primary components of the Northeast connection fee that are included in the proposed fee. The values in Figure 4-2 reflect the cost per RE for each applicable system component established previously in Table 4-1 and Table 4-2. The total recommended fee of \$7,730 per RE is proposed to be implemented in 2020 and remain at that level through 2022.

Figure 4-2: Proposed 2022 Connection Fee per RE – Northeast



4.5 Northeast Central Service Area

The Northeast Central Service Area receives both retail and wholesale sewer service from Lake County. Communities served include portions of unincorporated Avon, Fremont, Libertyville and Warren Townships, as well as portions of the Villages of Grayslake, Gurnee, Hainesville and Third Lake, and portions of the City of Waukegan. Lake County's sewer system infrastructure in the Northeast Central Service Area includes local collector mains and transmission system assets, which conveys sewer flow to the North Shore Water Reclamation District's (NSWRD) WRF. Lake County built local collector sewers in certain parts of the Northeast Central Service Area, including Highland Lake, Avon & Warren Townships, and the Village of Third Lake. As such a cost for local collector sewers has been included in the applicable areas. In remaining portions of the Northeast Central Service Area, local collectors were contributed by developers, so costs associated with the local collector assets are not included in those areas.

Sewer connection fees differ within the Northeast Central Service Area based on differences in service and are described in the following subsections.

4.5.1 Highland Lake, Avon & Warren Townships, Village of Third Lake

Highland Lake is located within Avon Township and receives retail sewer service. Retail service is also provided to unincorporated areas within Avon and Warren Townships, the Village of Third Lake and Gurnee. Table 4-5 shows the existing and proposed connection fee for this area, reflecting a three-year phase-in of the proposed connection fee.

Table 4-5: Northeast Central Service Area – Highland Lake, Avon & Warren Townships, Village of Third Lake, Gurnee retail Connection Fees (\$/RE)

<u>Wastewater Connection Fees</u>	Existing	Proposed		
	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>
Northeast Central				
Highland Lake, Avon & Warren Townships, Village of Third Lake	\$ 2,700	\$ 2,970	\$ 3,260	\$ 3,580

Figure 4-3 illustrates the primary components of this area’s connection fee that are included in the proposed fee. The values in Figure 4-3 reflect the cost per RE for each applicable system component established previously in Table 4-1 and an allowance for local collectors of \$1,540 per RE. The total recommended fee of \$3,580 per RE is phased-in over a three-year period beginning in 2020. This connection fee excludes the connection fee related to treatment service provided by NSWRD.

Figure 4-3: Proposed 2022 Connection Fee per RE – Northeast Central Service Area – Highland Lake, Avon & Warren Townships, Village of Third Lake



4.5.2 Grayslake, Gurnee wholesale, Hainesville and Waukegan

Lake County provides wholesale sewer service to the Village of Grayslake and portions of the Villages of Gurnee and Hainesville and the City of Waukegan. Lake County’s infrastructure in this service is limited to transmission (conveyance) only. Table 4-6 shows the existing and proposed connection fee for this area, reflecting a three-year phase-in of the proposed connection fee.

Table 4-6: Northeast Central Service Area – Grayslake, Gurnee wholesale, Hainesville, Waukegan Connection Fees (\$/RE)

<u>Wastewater Connection Fees</u>	Existing	Proposed		
	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>
Northeast Central				
Grayslake, Gurnee, Hainesville and Waukegan	\$ 1,300	\$ 1,430	\$ 1,710	\$ 2,040

Figure 4-4 illustrates the primary components of this area’s connection fee that are included in the proposed fee. The values in Figure 4-4 reflect the cost per RE for transmission established previously in Table 4-1. The total recommended fee of \$2,040 per RE is phased-in over a three-year period beginning in 2020. This connection fee excludes the connection fee related to treatment service provided by NSWRD.

Figure 4-4: Proposed 2022 Connection Fee per RE – Grayslake, Gurnee wholesale, Hainesville and Waukegan



4.6 Northwest Central Service Area

The Northwest Central Service Area receives both retail and wholesale sewer service from Lake County. The service area designated as Northwest I includes Fox Lake Hills, Petite Lake, Stanton Bay, and the former Northwest Lakes Region Sanitary District. The Northwest II service area includes portions of Hainesville, Lake Villa, Round Lake, Round Lake Beach, and Round Lake Heights. Retail service is enabled by Lake County infrastructure including local sewer collectors and transmission facilities. Wholesale service relies upon Lake County's transmission facilities only. Both retail and wholesale treatment service is provided by the Village of Fox Lake's Northwest Regional Water Reclamation Facility (NWRWRF). Connection fees associated with the NWRWRF are not included in Lake County's fees discussed herein.

Sewer connection fees differ within the Northwest Service Area based on differences in service and are described in the following subsections.

4.6.1 Northwest I

Retail service is provided to Fox Lake Hills, Petite Lake, Stanton Bay, and the former Northwest Lakes Region Sanitary District utilizing Lake County’s local sewer collectors and transmission assets. Table 4-7 shows the existing and proposed connection fee for this area, reflecting a three-year phase-in of the proposed connection fee.

Table 4-7: Northwest I – Connection Fees (\$/RE)

<u>Wastewater Connection Fees</u>	Existing	Proposed		
	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>
Northwest				
Fox Lake Hills, Petite Lake and Stanton Bay [1]	\$ 2,590	\$ 2,850	\$ 2,960	\$ 3,080

[1] LCPW portion only. Excludes Fox Lake in Northwest Area and Libertyville in the Southeast Central Area.

Figure 4-5 illustrates the primary components of this area’s connection fee that are included in the proposed fee. The values in Figure 4-5 reflect the cost per RE for each applicable system component established previously in Table 4-1 and an allowance for the local collectors of \$1,540 per RE. The total recommended fee of \$3,080 per RE is phased-in over a three-year period beginning in 2020. This connection fee excludes fees related to treatment service provided by NWRWRF.

Figure 4-5: Proposed 2022 Connection Fee per RE – Northwest I



4.6.2 Northwest II

Lake County provides wholesale service to the Northwest II service area, which includes portions of Hainesville, Lake Villa, Round Lake, Round Lake Beach, and Round Lake Heights. Service is enabled by Lake County’s transmission assets. Treatment service is provided by the NWRWRF; connection fees associated with the NWRWRF are not included in Lake County’s fees discussed herein. Table 4-8 shows the existing and proposed connection fee for this area, reflecting a three-year phase-in of the proposed connection fee.

Table 4-8: Northwest II – Connection Fees (\$/RE)

Wastewater Connection Fees	Existing	Proposed		
	2019	2020	2021	2022
Northwest Wholesale [1]	\$ 1,190	\$ 1,310	\$ 1,420	\$ 1,540

[1] LCPW portion only. Excludes Fox Lake in Northwest Area and Libertyville in the Southeast Central Area.

Figure 4-6 illustrates the primary components of this area’s connection fee that are included in the proposed fee. The values in Figure 4-6 reflect the cost per RE for transmission established previously in Table 4-1. The total recommended fee of \$1,540 per RE is phased-in over a three-year period beginning in 2020. This connection fee excludes fees related to treatment service provided by NWRWRF.

Figure 4-6: Proposed 2022 Connection Fee per RE – Northwest II



4.7 Southeast Service Area

Lake County provides retail and wholesale sewer service to the Southeast Service Area. Due to differences in the services provided by Lake County, this area has five sub-areas noted as follows:

- Portwine Sector: Bannockburn, Deerfield, Lincolnshire, Riverwoods
- Ela Sector: Hawthorn Woods, Long Grove, Forest Lake, Kildeer
- General: Buffalo Grove, Riverwoods
- Kildeer, Long Grove, Pekara, Horatio Gardens
- Lincolnshire, Lake Zurich

Lake County's infrastructure in this area includes local collector mains, transmission system assets, and sewage treatment through the Des Plaines River WRF. In some but not all parts of the Southeast Service Area, Lake County built local collector mains. The cost for local collector mains is included in the proposed connection fee where appropriate.

4.7.1 Portwine Sector

Located on the east side of the Southeast Service Area, Lake County provides retail service to portions of the Village of Bannockburn and wholesale service to portions of the Villages of Deerfield, Lincolnshire, and Riverwoods. Retail service utilizes Lake County’s local sewer collectors, transmission and treatment assets, but transmission assets in the Portwine Sector rely on the Portwine Road lift station and force main which discharge directly into the Des Plaines River WRF. Therefore, the Portwine Sector does not share in the transmission costs generally associated with the Southeast Service Area. Additionally, the local collector infrastructure was contributed by developers and is not included in this assessment. Wholesale service utilizes Lake County’s transmission and treatment assets.

Table 4-9 shows the existing and proposed connection fee for this area.

Table 4-9: Portwine Sector – Connection Fees (\$/RE)

<u>Wastewater Connection Fees</u>	Existing	Proposed		
	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>
Southeast				
Portwine	\$ 7,580	\$ 8,220	\$ 8,220	\$ 8,220

Figure 4-7 illustrates the primary components of this area’s connection fee that are included in the proposed fee. The values in Figure 4-7 reflect the cost per RE for each applicable system component established previously in Table 4-1 and Table 4-2. Because the change is less than 10 percent, the total recommended fee of \$8,220 per RE is proposed to be implemented in 2020 and remain at that level through 2022.

Figure 4-7: Proposed 2022 Connection Fee per RE – Portwine



4.7.2 General Sector

Lake County provides retail service to portions of Long Grove and unincorporated Pekara, and wholesale service to portions of the Villages of Buffalo Grove, Kildeer, Lincolnshire, and Riverwoods. Retail service utilizes Lake County’s local sewer collectors, transmission and treatment assets, but the local collector infrastructure was contributed by developers and is not included in this assessment. Wholesale service utilizes Lake County’s transmission and treatment assets.

Table 4-10 shows the existing and proposed connection fee for this area, reflecting a three-year phase-in of the proposed connection fee.

Table 4-10: General Sector – Connection Fees (\$/RE)

<u>Wastewater Connection Fees</u>	Existing	Proposed		
	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>
Southeast General Sector	\$ 5,150	\$ 5,670	\$ 5,810	\$ 5,950

Figure 4-8 illustrates the primary components of this area’s connection fee that are included in the proposed fee. The values in Figure 4-8 reflect the cost per RE for each applicable system component established previously in Table 4-1 and Table 4-2. The total recommended fee of \$5,950 per RE is phased-in over a three-year period beginning in 2020.

Figure 4-8: Proposed 2022 Connection Fee per RE – General



4.7.3 Village of Kildeer

Lake County provides retail service to a portion of the Village of Kildeer, involving Lake County’s local sewer collectors, transmission and treatment assets. In this area, Lake County built the local collector system.

Table 4-11 shows the existing and proposed connection fee for this area, reflecting a three-year phase-in of the proposed connection fee.

Table 4-11: Village of Kildeer – Connection Fees (\$/RE)

<u>Wastewater Connection Fees</u>	Existing	Proposed		
	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>
Southeast Kildeer	\$ 6,550	\$ 7,210	\$ 7,350	\$ 7,490

Figure 4-9 illustrates the primary components of this area’s connection fee that are included in the proposed fee. The values in Figure 4-9 reflect the cost per RE for each applicable system component established previously in Table 4-1 and Table 4-2 and include local collector costs. The total recommended fee of \$7,490 per RE is phased-in over a three-year period beginning in 2020.

Figure 4-9: Proposed 2022 Connection Fee per RE – Kildeer



4.7.4 Ela Sector

Lake County provides retail service to a portion of the Villages of Hawthorn Woods, Long Grove, Forest Lake and Kildeer. Lake County infrastructure includes sewer collectors, transmission and treatment assets. In addition to sharing in the general transmission costs associated with the Southeast Service Area, the Ela Sector also includes the Ela Lift Station and related force main. In this area, Lake County built the local collector system.

Table 4-12 shows the existing and proposed connection fee for this area, reflecting a three-year phase-in of the proposed connection fee.

Table 4-12: Ela Sector – Connection Fees (\$/RE)

Wastewater Connection Fees	Existing	Proposed		
	2019	2020	2021	2022
Southeast Ela	\$ 9,020	\$ 9,920	\$ 10,070	\$ 10,210

Figure 4-10 illustrates the primary components of this area’s connection fee that are included in the proposed fee. The values in Figure 4-10 reflect the cost per RE for each applicable system component established previously in Table 4-1 and Table 4-2 and include local collector costs. The total recommended fee of \$10,210 per RE is phased-in over a three-year period beginning in 2020.

Figure 4-10: Proposed 2022 Connection Fee per RE – Ela Sector



4.7.5 Villages of Lake Zurich and Lincolnshire

Lake County provides wholesale service to the Villages of Lake Zurich and Lincolnshire. Lake County infrastructure required to serve these Villages only includes the Des Plaines River WRF, as both communities discharge directly to the WRF.

Table 4-13 shows the existing and proposed connection fee for this area.

Table 4-13: Lake Zurich and Lincolnshire – Connection Fees (\$/RE)

<u>Wastewater Connection Fees</u>	Existing	Proposed		
	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>
Southeast Lake Zurich, Lincolnshire	\$ 3,780	\$ 4,030	\$ 4,030	\$ 4,030

Figure 4-11 illustrates the primary components of this area’s connection fee that are included in the proposed fee. The values in Figure 4-11 reflect the cost per RE for treatment at the Des Plaines River WRF, established previously in Table 4-2. Because the change is less than 10 percent, the total recommended fee of \$4,030 per RE is proposed to be implemented in 2020 and remain at that level through 2022.

Figure 4-11: Proposed 2022 Connection Fee per RE – Lake Zurich and Lincolnshire



4.8 Southeast Central Service Area

Lake County provides retail and wholesale sewer service to the Southeast Central Service Area. Due to differences in the services provided by Lake County, this area has two sub-areas noted as follows:

- Unincorporated Libertyville Township: Countryside Manor, Terre Faire, North Libertyville Estates
- Green Oaks and Libertyville

Lake County’s infrastructure in this area includes local collector mains, transmission system assets. Treatment service is provided by the Village of Libertyville’s WRF. Use of local collector mains, which were built by Lake County, is limited to the retail service area.

4.8.1 Unincorporated Libertyville Township

Lake County provides retail service in this area utilizing its local sewer collectors and transmission assets. The local collector infrastructure was built by Lake County and is included in this assessment.

Table 4-14 shows the existing and proposed connection fee for this area, reflecting a three-year phase-in of the proposed connection fee. Connection fees do not include the cost associated with the Libertyville WRF.

Table 4-14: Unincorporated Libertyville Township – Connection Fees (\$/RE)

<u>Wastewater Connection Fees</u>	Existing	Proposed		
	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>
Southeast Central				
Countryside Manor, Terre Faire, North Libertyville Estates [1]	\$ 2,680	\$ 2,950	\$ 3,040	\$ 3,120

[1] LCPW portion only. Excludes Fox Lake in Northwest Area and Libertyville in the Southeast Central Area.

Figure 4-12 illustrates the primary components of this area’s connection fee that are included in the proposed fee. The values in Figure 4-12 reflect the cost per RE for applicable transmission cost established previously in Table 4-1. The total recommended fee of \$3,120 per RE is proposed to be implemented in 2020 and is phased-in over a three-year period beginning in 2020. Connection fees do not include the cost associated with the Libertyville WRF.

Figure 4-12: Proposed 2022 Connection Fee per RE – Unincorporated Libertyville Township



4.8.2 Villages of Green Oaks and Libertyville

Lake County provides wholesale service to the Village of Green Oaks and portions of the Village of Libertyville utilizing its transmission assets only. Treatment service is provided by the Village of Libertyville’s WRF.

Table 4-15 shows the existing and proposed connection fee for this area, reflecting a three-year phase-in of the proposed connection fee. Connection fees do not include the cost associated with the Libertyville WRF.

Table 4-15: Green Oaks and Libertyville– Connection Fees (\$/RE)

Wastewater Connection Fees	Existing	Proposed		
	2019	2020	2021	2022
Southeast Central				
Green Oaks and Libertyville [1]	\$ 1,280	\$ 1,410	\$ 1,490	\$ 1,580

[1] LCPW portion only. Excludes Fox Lake in Northwest Area and Libertyville in the Southeast Central Area.

Figure 4-13 illustrates the primary components of this area’s connection fee that are included in the proposed fee. The values in Figure 4-13 reflect the cost per RE for applicable transmission cost established previously in Table 4-1. The total recommended fee of \$1,580 per RE is proposed to be implemented in 2020 and is phased-in over a three-year period beginning in 2020. Connection fees do not include the cost associated with the Libertyville WRF.

Figure 4-13: Proposed 2022 Connection Fee per RE – Green Oaks and Libertyville



4.9 Summary of Existing and Proposed Sewer Connection Fees

Table 4-16 summarizes the existing and proposed sewer connection fees for Lake County. Note that connection fees associated with treatment provided by third parties are not included in the Northeast Central, Northwest, and Southeast Central areas where applicable.

Table 4-16: Existing and Proposed Sewer Connection Fees

	Existing	Proposed		
	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>
<u>Wastewater Connection Fees</u>				
Diamond-Sylvan Lake	\$ 9,110	\$ 8,760	\$ 8,760	\$ 8,760
Northeast	\$ 7,240	\$ 7,730	\$ 7,730	\$ 7,730
Northeast Central				
Highland Lake, Avon & Warren Townships, Village of Third Lake	\$ 2,700	\$ 2,970	\$ 3,260	\$ 3,580
Grayslake, Gurnee, Hainesville and Waukegan	\$ 1,300	\$ 1,430	\$ 1,710	\$ 2,040
Northwest				
Fox Lake Hills, Petite Lake and Stanton Bay [1]	\$ 2,590	\$ 2,850	\$ 2,960	\$ 3,080
Wholesale [1]	\$ 1,190	\$ 1,310	\$ 1,420	\$ 1,540
South Central	\$ 5,540	\$ 6,090	\$ 6,300	\$ 6,500
Southeast				
Portwine	\$ 7,580	\$ 8,220	\$ 8,220	\$ 8,220
Buffalo Grove, Riverwoods	\$ 5,150	\$ 5,670	\$ 5,810	\$ 5,950
Kildeer	\$ 6,550	\$ 7,210	\$ 7,350	\$ 7,490
Ela	\$ 9,020	\$ 9,920	\$ 10,070	\$ 10,210
Lake Zurich, Lincolnshire	\$ 3,780	\$ 4,030	\$ 4,030	\$ 4,030
Southeast Central				
Countryside Manor, Terre Faire, North Libertyville Estates [1]	\$ 2,680	\$ 2,950	\$ 3,040	\$ 3,120
Green Oaks [1]	\$ 1,280	\$ 1,410	\$ 1,490	\$ 1,580
Libertyville [1]	\$ 1,280	\$ 1,410	\$ 1,490	\$ 1,580

[1] LCPW portion only. Excludes Fox Lake in Northwest Area and Libertyville in the Southeast Central Area.

4.10 Regional Sewer Connection Fee Comparison

Figure 4-14 compares Lake County’s existing 2019 and proposed 2020 sewer connection fees to other regional sewer utilities. Because of the number of specific regional sewer connection fees applied by Lake County, Figure 4-14 has been limited to include Lake County’s more commonly applied connection fees in recent years.

It is important to recognize differences in connection fees can be attributed to several factors, including:

- Fees developed to reflect only a portion of service provided (i.e. supply/treatment only, or transmission/distribution only)
- Variations in fee development methodology
- Policies regarding the recovery of the cost of growth
- Age of and available capacity in applicable infrastructure
- Other factors

Figure 4-14: Regional Comparison of Sewer Connection Fees



(1) Reflects Lake County Public Works facility costs only, excludes Fox Lake treatment costs.



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