

**DUPAGE WATER COMMISSION
2019 – 2024
FIVE YEAR CAPITAL IMPROVEMENT PLAN**



**DuPage Water Commission
MEMORANDUM**

TO: John Spatz
General Manager

FROM: Terry McGhee
Manager of Operations

DATE: January 22, 2019

SUBJECT: Capital Improvement Plan

In accordance with Commission policy, the Capital Improvement Plan is reviewed and evaluated by staff relating to each new budget cycle. A draft of the updated plan is then submitted to the Commission for its consideration. This annual document is based on the Commission's anticipated needs for normal operations, emergency operations and improvements to the system.

The plan is divided into two sections – DuPage Pump Station Improvements and Distribution & Storage System Improvements. A summary shows the capital outlay which will be funded through a five-year capital improvement budget with fiscal year breakouts. Each fiscal year's proposed expenditures are included in the financial projection of Commission revenues and expenditures through fiscal year 2023-2024.

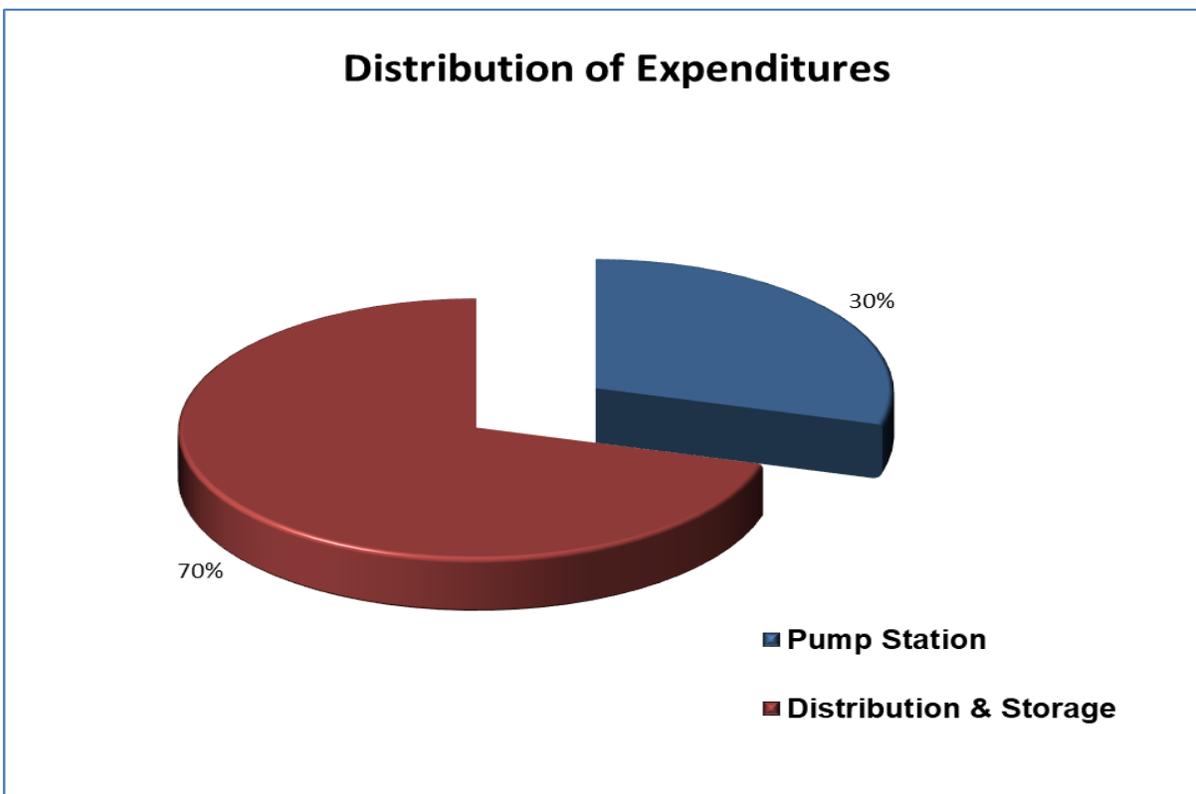
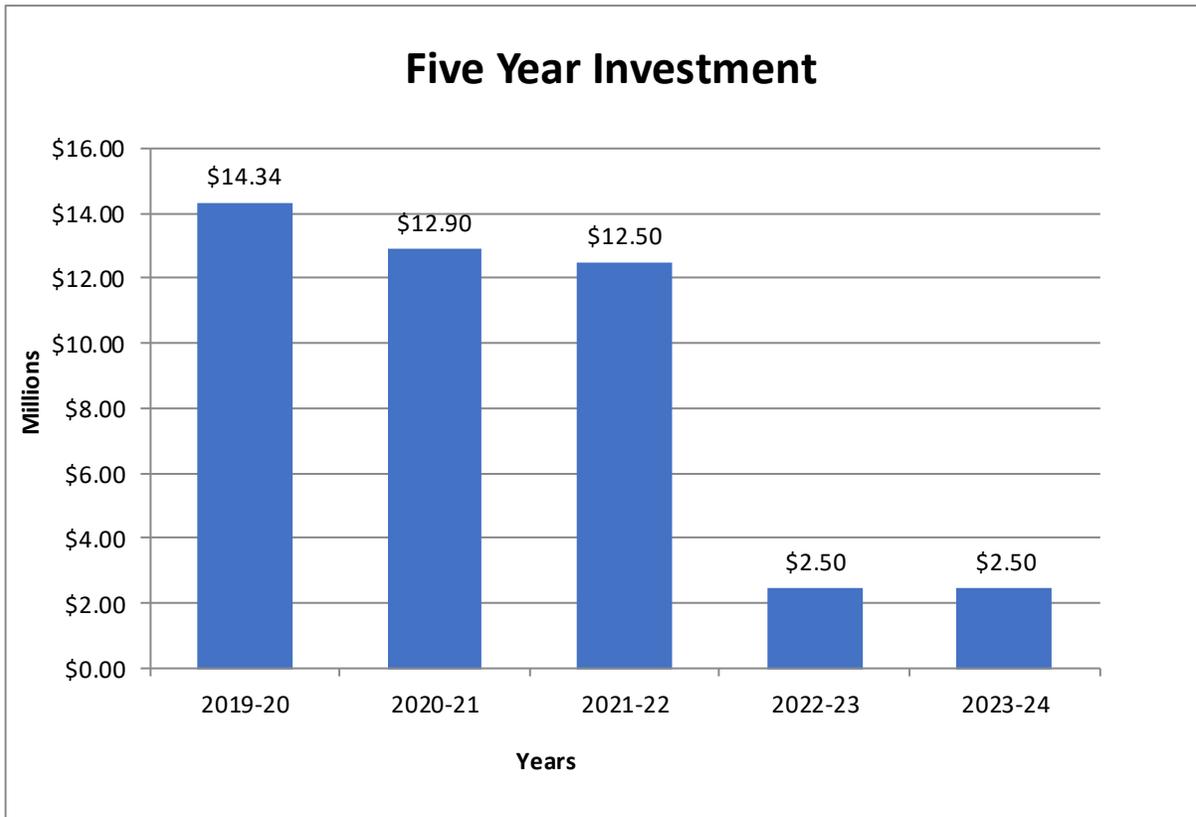
The Commission staff proposes to spend approximately \$44.8 million on 25 projects during the planning period from FY 2019-2020 through FY 2023-2024. The following chart shows the projected annual expenditures over the next five years.

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Yearly Capital Costs

Projects	2019-20	2020-21	2021-22	2022-23	2023-24
DuPage Pump Station					
Addition of Pump # 10	\$250,000	\$750,000			
Replacement of SCADA System	\$4,500,000	\$1,000,000			
BackHaul Radio	\$450,000				
Security System Upgrades	\$800,000				
UPS Replacement	\$125,000				
Replacement of Storage Area Network (SAN)		\$150,000			
High lift Pump Rehab	\$250,000	\$250,000	\$250,000	\$250,000	\$250,000
Admin Bldg./Pump Station Building Rehab	\$1,692,000				
DPS Electronic Locks	\$180,000				
Generator Bldg. Humidification System	\$105,000				
ComEd Yard Rehab	\$780,000				
West Discharge Tunnel Rehab	\$420,000				
Replacement of Roof-Mounted Exhaust Fans			\$300,000		
Replacement of Wall-Mounted Supply Fans			\$300,000		
Replacement of Chillers			\$150,000		
Distribution System					
Meter Station Valve Replacement	\$150,000				
Condition Assessment	\$750,000	\$250,000	\$1,000,000	\$250,000	\$250,000
Replacement of Blow-Off Stems	\$250,000				
ROV and Large Valve Repair	\$150,000				
Cathodic Protection Construction FY 20/21		\$500,000	\$500,000	\$1,000,000	\$1,000,000
Distribution System Upgrades	\$1,000,000	\$10,000,000	\$10,000,000	\$1,000,000	\$1,000,000
Tanksite Improvements	\$787,500				
Bartlett Supply Line	\$1,000,000				
Bartlett Meter station	\$300,000				
Meter Station Rehab	\$400,000				
Totals	\$14,339,500	\$12,900,000	\$12,500,000	\$2,500,000	\$2,500,000

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DUPAGE PUMP STATION IMPROVEMENTS



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PROJECT: Pump #10

LOCATION: DuPage Pumping Station

DESCRIPTION: Install 30 MGD split case centrifugal pump, 1750 H.P. motor, and associated piping in space reserved for future pump.

PURPOSE: To increase pumping capacity from 185 MGD to 205 MGD to satisfy future demand requirements.

BENEFIT: To keep up with current rising water demand, new customers, and maintain current ability to remove pumps from service without reducing pumping capacity.

ESTIMATED COST: (CURRENT YEAR DOLLARS)

LAND/ROW: Improvements to be constructed on property owned by the Commission.

COST: \$1,000,000

TIMING: Fiscal year 2019-2021 – Engineering & Installation

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PROJECT: SCADA

LOCATION: DuPage Pumping Station

DESCRIPTION: Replace the Commission Current Supervisory Control and Data Acquisition (SCADA) system.

PURPOSE: The current SCADA system has been in place since 1991 with two major hardware and software upgrades over the years. The system is a sole source proprietary system from a manufacturer in California. The only source of support is in California.

BENEFIT: The Commission would like to replace the SCADA system with an open source system where there are multiple local vendors available for support.

ESTIMATED COST: (CURRENT YEAR DOLLARS)

LAND/ROW: Improvements to be constructed on property owned by the Commission.

COST: \$5,500,000

TIMING: Fiscal year 2019-2021 – Engineering/installation/implementation

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PROJECT: **Radio Back-Haul System**

LOCATION: DuPage Pumping Station / Remote Sites

DESCRIPTION: Replace existing dedicated phone line with a microwave radio system or dedicated fiber optic lines that will transmit SCADA field data between the Commission's master radio and the Commission headquarters. This project will be completed in conjunction with the SCADA system replacement and security System upgrades.

PURPOSE: Elimination of cost to support AT&T phone lines and increase reliability of the Commission communication system.

BENEFIT: The microwave radio system or dedicated fiber optic lines would impose communication up-time and recue long term maintenance and support costs from AT&T.

ESTIMATED COST: (CURRENT YEAR DOLLARS)

LAND/ROW: Improvements to be constructed on property leased by the Commission.

COST: \$450,000

TIMING: Fiscal year 2019-2020 – Engineering & Installation

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PROJECT: **Security Upgrades**

LOCATION: DuPage Pumping Station / Remote Sites

DESCRIPTION: Upgrade and augment existing surveillance cameras, fencing, intrusion detection, and security communication systems at the Commission Pumping Station and remote facilities.

PURPOSE: Maintain the Commission ability to monitor and protect its assets from vandalism or security threats.

BENEFIT: Provide the Commission with the most current, reliable, cost efficient, and up to date security system. Securing the Commission assets is essential to providing clean and safe water to the resident of DuPage County

ESTIMATED COST: (CURRENT YEAR DOLLARS)

LAND/ROW: Improvements to be constructed on property owned by the Commission.

COST: \$800,000

TIMING: Fiscal years 2019-2020 – Engineering & Installation

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PROJECT: **Uninterruptable Power Supply (UPS) Replacement**

LOCATION: DuPage Pumping Station

DESCRIPTION: Replace the existing redundant UPS system in the Commission's Pumping Station with the most current model and technology.

PURPOSE: The existing UPS system was installed in 2005 and is now obsolete by the manufacturer.

BENEFIT: Maintain reliable power for critical systems: Switchgear and Motor Control Centers, Network server computers, Control Room and SCADA system.

ESTIMATED COST: (CURRENT YEAR DOLLARS)

LAND/ROW: Improvements to be constructed on property owned by the Commission.

COST: \$125,000

TIMING: Fiscal years 2019-2020 – Engineering & Installation

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PROJECT: Replacement of Storage Area Network (SAN)

LOCATION: DuPage Pumping Station

DESCRIPTION: The SAN system is the storage environment used by the virtual network server computers. This project will replace the existing Storage Area Network (SAN) system at the Commission's Pumping Station with the most current system and technology.

PURPOSE: This system was installed in March 2013 with a 5-year full warranty. The system has reached its end of life and technology has now changed, and HP has stopped supporting the existing SAN system.

BENEFIT: Provide the Commission with the most current, reliable, cost efficient, and up to date SAN system. Insuring trouble-free storage environment for the next 5 to 10 years.

ESTIMATED COST: (CURRENT YEAR DOLLARS)

LAND/ROW: Improvements to be constructed on property owned by the Commission.

COST: \$150,000

TIMING: Fiscal years 2020-2021 – Engineering & Installation

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PROJECT: High Lift Pump Repair

LOCATION: DuPage Pumping Station

DESCRIPTION: Develop and issue repair contract for: removing each vertical main pump (Pumps No. 1, 2, and 3) shipping the pumps to an offsite specialty facility for repair and reconditioning of the pumps

PURPOSE: There is excessive leakage from mechanical seals on the three (3) vertical main pumps, particularly pumps No. 1 & 2. Attempts to resolve the seal leakage issue through field service have not been successful over the long term.

BENEFIT: Repairing the pumps will help to extend their useful life while eliminating safety and housecleaning issued caused by the water leakage.

ESTIMATED COST: (CURRENT YEAR DOLLARS)

COST: \$1,250,000

TIMING: Fiscal years 2019-2024 – Work Completion

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PROJECT: Administration Building Exterior and Interior Rehabilitation

LOCATION: DuPage Pumping Station

DESCRIPTION: This project will rehabilitate exterior and interior portions of the Administration Building/Pump Station.

PURPOSE: The Administration Building / Pump Station is approximately 25 years old. Areas of the building have deteriorated due to the normal effects of weather on the structure and its time in service. The major findings from the assessment are summarized below:

- Window systems do not operate properly allowing air and water to leak into the building
- Corrosion of exterior door hardware and lintels
- Water damage and peeling paint in various areas
- Additional cracks and spalls of the interior glazed concrete block in various areas of the pump station.

BENEFIT: Rehabilitation of these issues will return building to near original condition and increase life expectancies.

ESTIMATED COST: (CURRENT YEAR DOLLARS)

COST: \$1,692,000

TIMING: Fiscal years 2019-2020 – Work Completion

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PROJECT: **Electronic Lock Installation**

LOCATION: DuPage Pumping Station & Remote Facilities

DESCRIPTION: This project will replace all the building locks and padlocks with high security electronic locks.

PURPOSE: This project will allow the Commission to standardize on a single keying system that can handle all of the Commissions security needs. The system also provides the ability to allow temporary access to contractors and non-Commission workers without the fear of duplicating keys.

BENEFIT: This system also allows the Commission to manage its key inventory in a more efficient manner, keys can be activated and deactivated as necessary preventing the need to rekey all locks if keys are lost or stolen.

ESTIMATED COST: (CURRENT YEAR DOLLARS)

COST: \$180,000

TIMING: Fiscal years 2018-2019 – Work Completion

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PROJECT: **Generation Building Humidification System**

LOCATION: DuPage Pumping Station

DESCRIPTION: Installation of a humidification system to condition the air in Generation Building office space.

PURPOSE: This project will enhance the working environment throughout the buildings and decrease the buildup of static electricity.

BENEFIT: Installation of this system will enhance the environment throughout the buildings and help protect computers and other electrical equipment from static discharges.

ESTIMATED COST: (CURRENT YEAR DOLLARS)

COST: \$105,000

TIMING: Fiscal year 2019-2020 – Work Completion

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PROJECT: ComEd Yard Rehabilitation

LOCATION: DuPage Pumping Station

DESCRIPTION: This project will include rehabilitation and or replacement of portions of the ComEd Yard security and blast walls.

PURPOSE: During the condition assessment several signs of deterioration were identified. Work will include:

- Masonry tuckpointing and restoration
- Replacement of wall seals
- Painting of corroded metallic surfaces
- Repair of cracked or deteriorated concrete areas
- Sealing of water leakage at cracks

BENEFIT: Rehabilitation or replacement of issues will return ComEd Yard to near original condition and increase life expectancies.

ESTIMATED COST: (CURRENT YEAR DOLLARS)

COST: \$780,000

TIMING: Fiscal year 2019-2020 – Work Completion

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PROJECT: West Discharge Tunnel Rehabilitation

LOCATION: DuPage Pumping Station

DESCRIPTION: This project will include possible excavation of area surrounding the west discharge pipe and identify areas of water infiltration and damaged concrete wall and or seals.

PURPOSE: During the condition assessment several signs of deterioration were identified. Work will include:

- Sealing of water leakage at wall penetration
- Masonry tuckpointing and restoration
- Replacement of link-seals as needed
- Painting of corroded metallic surfaces
- Repair of cracked or deteriorated concrete areas

BENEFIT: Eliminate water infiltration into pump station around west discharge piping and prevent damage to pipe and surrounding concrete.

ESTIMATED COST: (CURRENT YEAR DOLLARS)

COST: \$420,000

TIMING: Fiscal year 2019-2020 – Work Completion

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PROJECT: Replacement of Roof Mounted Exhaust Fans

LOCATION: DuPage Pumping Station

DESCRIPTION: This project will replace the roof mounted exhaust fans that have exceeded their useful life as called out in the Commission's 2015 Condition Assessment.

PURPOSE: This project will replace existing roof mounted exhaust fans with new high efficiency fans.

BENEFIT: Replacement of these fans will increase the efficiency of air movement throughout the buildings and decrease energy cost.

ESTIMATED COST: (CURRENT YEAR DOLLARS)

COST: \$300,000

TIMING: Fiscal year 2021-2022 – Work Completion

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PROJECT: Replacement of Wall Mounted Supply Fans

LOCATION: DuPage Pumping Station

DESCRIPTION: This project will replace the wall mounted supply fans that have exceeded their useful life as called out in the Commission's 2015 Condition Assessment.

PURPOSE: This project will replace existing wall mounted supply fans with new high efficiency fans.

BENEFIT: Replacement of these fans will increase the efficiency of air movement throughout the buildings and decrease energy cost.

ESTIMATED COST: (CURRENT YEAR DOLLARS)

COST: \$300,000

TIMING: Fiscal year 2021-2022 – Work Completion

**DUPAGE WATER COMMISSION
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PROJECT: Replacement of Chillers

LOCATION: DuPage Pumping Station

DESCRIPTION: This project will replace the roof mounted chillers that have exceeded their useful life as called out in the Commission's 2015 Condition Assessment.

PURPOSE: This project will replace existing chillers with new higher efficiency units.

BENEFIT: Replacement of these chillers will increase the efficiency of conditioning of the environment throughout the buildings and decrease energy cost.

ESTIMATED COST: (CURRENT YEAR DOLLARS)

COST: \$150,000

TIMING: Fiscal year 2021-2022 – Work Completion

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DISTRIBUTION & STORAGE IMPROVEMENTS



**DUPAGE WATER COMMISSION
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PROJECT: Condition Assessment Remediation

LOCATION: Various Locations within Cook and DuPage Counties

DESCRIPTION: Address any deficiencies identified in the Condition Assessment Report.

PURPOSE: Deficiencies identified to primary, backup, or ancillary equipment would be rectified to prevent any system failures.

BENEFIT: Remediation of problems, possible structural defects, or equipment inadequacies in the Commission assets. This remediation will help avoid any concerns that could affect the Commission's ability to deliver water either short or long term.

ESTIMATED COST: (CURRENT YEAR DOLLARS)

ENGINEERING: \$2,500,000

TIMING: Fiscal years 2019-2024 – Engineering

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PROJECT: Replacement of Blow-off Valves Stems

LOCATION: Various Locations within Cook and DuPage Counties

DESCRIPTION: Replacement of Blow-off valve stem risers that have corroded over the years. The original hollow core risers will be replaced with solid core Aluminum riser that have a much longer life span.

PURPOSE: As the current valve stems continue to age and corrode, they are starting to break when operated. These failures increase the time and costs to facilitate pipeline repairs and routine maintenance. As a result, it may extend the length of pipeline isolations which interrupts the supply to Commission customers.

BENEFIT: Eliminate the possible inability to operate the Commission's transmission line valves when needed.

ESTIMATED COST (CURRENT YEAR DOLLARS)

LAND/ROW: Improvements to be constructed on property presently owned by the Commission.

COST: \$250,000

TIMING: Fiscal years 2019-2020 – Engineering & Construction

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PROJECT: ROV and Large Valve Repair

LOCATION: Various Locations within Cook and DuPage Counties

DESCRIPTION: Replace existing VFD with upgraded units that will allow for increased efficiency and ease of operation

PURPOSE: As the current valves continue to age, they are starting to fail when operated. These failures increase the time and costs to facilitate pipeline repairs and routine maintenance. As a result, it may extend the length of pipeline isolations which interrupts the supply to Commission customers.

BENEFIT: Eliminate the need to utilize multiple valves during transmission line shutdowns and reduce interrupts in service to our customers.

ESTIMATED COST (CURRENT YEAR DOLLARS)

COST: \$150,000

TIMING: Fiscal years 2019-2020 – Legal - Engineering - Construction

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PROJECT: **Cathodic Protection of Steel Water Mains**

LOCATION: Various Locations within Cook and DuPage Counties

DESCRIPTION: Design and construction of corrosion mitigation measures for steel water mains.

PURPOSE: Mitigating the influences of corrosion, and/or stray electrical current, on the Commission's steel water mains.

BENEFIT: Extend the life of the water mains which will increase the time between replacement and decrease the amount of water lost due to leakage.

ESTIMATED COST: (CURRENT YEAR DOLLARS)

LAND/ROW: Improvements to be constructed on Public Right of Way or Commission Easements.

COST: \$3,000,000

TIMING: Fiscal years 2020-2024 – Construction

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PROJECT: **Distribution System Upgrades**

LOCATION: Various Locations within Cook and DuPage Counties

DESCRIPTION: Enhancements to the Commission distribution system which will provide redundancy and allow for maintenance of valves, pipes, and other structures in the distribution system

PURPOSE: As water demands have changed through the years it has become necessary to increase the Commission ability to move water around the system. These enhancements will allow for redundant flow paths and a reduction in hydraulic stresses caused by partial system shutdowns. They will also help reduce the extent and duration of pipeline isolations which may alter normal flow patterns to our customers.

BENEFIT: Eliminate current hydraulic bottlenecks and increase the Commission ability to re-route flow pattern during repairs or shutdowns while insuring a reliable delivery system for our customers.

ESTIMATED COST (CURRENT YEAR DOLLARS)

LAND/ROW: Improvements to be constructed in Right of Way

COST: \$23,000,000

TIMING: Fiscal years 2019-2024 – Construction

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PROJECT: Tank Site Improvements

LOCATION: Various Locations within DuPage Counties

DESCRIPTION: Repairs and replacement of landscaping, driveways, fencing, and other various site improvements.

PURPOSE: Weather and time have taken their toll on the grounds surrounding our Tank sites. This project will restore grades and improve drainage as well as improving the access and security at our Tank Sites

BENEFIT: Extend the life and help eliminate future erosion of the sites while insuring safe and secure facilities.

ESTIMATED COST (CURRENT YEAR DOLLARS)

LAND/ROW: Improvements to be constructed in Right of Way

COST: \$787,500

TIMING: Fiscal years 2019-2020 – Construction

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PROJECT: **Bartlett Supply line**

LOCATION: Various Locations within Cook and DuPage Counties

DESCRIPTION: All costs associated with the installation of a water main and construction of connection facilities to delivery Lake Michigan Water to the Village of Bartlett.

PURPOSE: The Village of Bartlett has requested to become a customer of the DuPage Water Commission. This project will build and install the necessary assets to deliver Lake Michigan Water to the residents of Bartlett.

BENEFIT: Delivery of Lake Michigan Water to the Village of Bartlett.

ESTIMATED COST (CURRENT YEAR DOLLARS)

COST: \$1,000,000

TIMING: Fiscal years 2019-2020 – Legal - Engineering - Construction

**DUPAGE WATER COMMISSION
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CUSTOMER METERING FACILITIES



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PROJECT: **Meter Station Valve Replacement**

LOCATION: Various Locations within Cook and DuPage Counties

DESCRIPTION: Replace and upgrade all 34 of the electrically operated valve actuators in the Remotely Operated Valve (ROV) vaults.

PURPOSE: The existing units are original approaching their useful life of 30 years according to the Condition Assessment Report. The vault interiors are a harsh environment for the equipment because of the ever-present damp to wet conditions. Replacement parts are getting harder to acquire. Most of the electric actuators require making a confined space entry to operate locally.

BENEFIT: New electric valve actuators will provide another 30 years of reliable service and they will have the operating controls located in the above ground control cabinet.

ESTIMATED COST (CURRENT YEAR DOLLARS)

COST: \$150,000

TIMING: Fiscal years 2019-2020 – Legal - Engineering - Construction

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PROJECT: **Bartlett Connection Facility**

LOCATION: Village of Bartlett

DESCRIPTION: Construction of the connection facility that will allow Lake Michigan water to the Village of Bartlett.

PURPOSE: Supply a facility to house the meters, instrumentation, control valves, and security system necessary to connect the Bartlett supply line to their pressure adjusting station.

BENEFIT: This facility will allow the commission to record and monitor all water flowing to the Village of Bartlett.

ESTIMATED COST: (CURRENT YEAR DOLLARS)

LAND/ROW: Improvements to be constructed on Commission owned property.

COST: \$300,000

TIMING: Fiscal years 2019-2020 – Installation

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PROJECT: Meter Station Rehabilitation

LOCATION: Multiple locations throughout DuPage County

DESCRIPTION: This project will rehabilitate exterior and interior portions of the Meter stations and surrounding areas.

PURPOSE: This project will include the following related work for the equipment and the facility:

- Masonry tuckpointing and restoration
- Replacement of exterior door hardware and painting of lintel
- Painting of corroded interior handrails and other metallic surfaces
- Painting of corroded process piping, valves and equipment
- Sealing of water leakage at wall penetrations and cracks
- Repair of cracked or deteriorated concrete areas
- Site grading and landscape restoration

BENEFIT: Rehabilitation of these issues will return building to near original condition and increase life expectancies.

ESTIMATED COST: (CURRENT YEAR DOLLARS)

LAND/ROW: Improvements to be constructed on property presently owned by the Commission.

COST: \$400,000

TIMING: Fiscal year 2019-2020