HG&E

2021

ANNUAL REPORT

HG&E Board of Commissioners (from left): James A. Sutter, Francis J. Hoey III, and Robert H. Griffin

TO THE HONORABLE MAYOR, MEMBERS OF THE CITY COUNCIL, AND VALUED CUSTOMERS:

Submitted herewith is the 119th Annual Report of the City of Holyoke Gas & Electric Department (HG&E) for the year ending December 31, 2021.

In spite of ongoing COVID-19 pandemic impacts, HG&E began to return to more normal operations in 2021. After being closed for over 14 months, HG&E offices were reopened to the public on May 24, 2021, with modified health and safety protocols to ensure the safety of customers and employees. Field personnel also resumed more normal operations in order to execute on required infrastructure work and maintenance activities. In addition, HG&E staff continued to enhance and promote online services to our customers, helping to ensure the continuity of business even during a pandemic or similar emergency.

During the year, Governor Baker signed nation-leading climate legislation that commits the Commonwealth to reducing emissions below 1990 levels by 50% by 2030 and 75% by 2040, and to achieve net zero emissions by 2050. This bill will have a significant impact on the electric and natural gas businesses over the coming years and will impact building and transportation sectors as well. HG&E has worked very hard over the past several years to reduce its carbon footprint and is well positioned to meet the incremental targets of the new climate bill. In fact, the electric portfolio currently meets the mandated emissions reductions well beyond 2030.

HG&E continued its leadership role in deploying clean energy assets with the commissioning of a new battery energy storage system (BESS), the Martin J. Dunn Energy Center. The BESS is a 5 MW/10 MWh battery storage facility that will help HG&E reduce its transmission costs, helping to maintain stable and competitive rates. HG&E was also recognized by the Smart Electric Power Alliance (SEPA) for its leadership in transforming to a carbon-free future and was one of 10 utilities across the nation to make SEPA's Top 10 leaderboard list. In addition, HG&E received the American Public Power Association's Smart Energy Provider designation for its leadership in clean energy deployments. In 2021, HG&E also celebrated 20 years of municipal hydroelectric power after purchasing the Holyoke Dam and canal system in December 2001.

The natural gas moratorium that was imposed in 2019 due to regional natural gas pipeline constraints continues to pose challenges for the Gas Division. Under the moratorium, new connections to HG&E's natural gas system are not allowed until the capacity challenges are adequately addressed at a regional level, and regional opposition to various solutions leaves few viable options at present. Lifting the moratorium remains a top priority for the Department, and staff continues to look for practical solutions to bring additional natural gas capacity and end the moratorium. In parallel, HG&E is working with current and prospective customers on alternate solutions and continuing to maintain the local natural gas infrastructure. At the end of 2021, there were no reported leaks in the gas distribution system.

HG&E's Telecom Division continued to support the Department's Information Technology and network operations while expanding wholesale network business with several local communities. Staff completed a fiber-to-the-home (FTTH) interest campaign during the year and will continue to review the results of that exercise to determine if there are viable areas within the city to provide FTTH internet service to residential customers.

I am pleased to report that even with the ongoing challenges mentioned above, HG&E finished 2021 with strong financial performance, largely due to a partial rebound of the commercial and industrial load that had been impacted by the pandemic, an increasing cultivation load within the city, and strong hydroelectric production that helped offset power supply expenses. In addition, Fitch Ratings affirmed the Department's credit rating of AA- during the year, reflecting the strong financial performance and positive outlook.

We thank the city officials for their support and HG&E employees for their continued faithful service. We shall continue to work diligently to provide our customers with reliable utility services at competitive rates, backed by an unprecedented dedication to customer service.

Respectfully,

Francis J. Hoey III, Commission Chairman
Robert H. Griffin, Commission Treasurer
James A. Sutter, Commission Secretary
James M. Lavelle, Manager

GAS DIVISION

MORATORIUM

In 2019, the Department was forced to institute a gas moratorium on all requests for new and increased gas load. Regionally, the demand for natural gas is outpacing supply, and the gas distribution operates at capacity under peak demand in the winter. The Department continues to evaluate options that will allow for the moratorium to be lifted; however, it is uncertain when or if that will occur.

PIPELINE SAFETY MANAGEMENT SYSTEM

In 2019, the Department committed resources to establish a formalized Pipeline Safety Management Systems (PSMS). Safety Management Systems (SMS) have proven to help other industries, and the adoption of API RP1173, Pipeline Safety Management Systems, will allow the Department to systematically manage pipeline safety and continuously measure progress to improve overall pipeline safety performance, awareness, and vigilance. As part of this process, the Department worked with regional organizations and SMS experts on generating a customized roadmap for implementation in our organization. In 2021, the Department embarked on its journey toward establishing PSMS within the organization, demonstrating our continued commitment to safety and establishing a goal of zero incidents.

GAS SUPPLY & FLOW CONTROL

The Department distributed 2,115,296 dekatherms (DTH) of gas in 2021, with a peak daily send-out of 16,916 DTH on January 29, 2021. Of that, 12,215 DTH was delivered over the pipeline and 4,701 DTH was supplemented by liquefied natural gas (LNG). HG&E continues to operate its LNG storage and vaporization system, providing the supplemental gas needed during the coldest winter days. LNG also serves as an emergency supply for the city.

In 2021, the Department extended its high-pressure system to activate a regulator station at Cabot and North Canal Street to enhance system reliability in South Holyoke. This station brings the number of regulator stations in system to 18.

In 2020, the Gas Division began a five-year plan to install tertiary protection at all gas regulating stations in the distribution system. This practice will further enhance the safety of the distribution system by reducing the risk of overpressurization of the downstream gas system in the event of equipment failure. Of the Department's 18 regulating stations, 11 locations are now currently equipped with tertiary protection.

GAS MAINS AND SERVICES

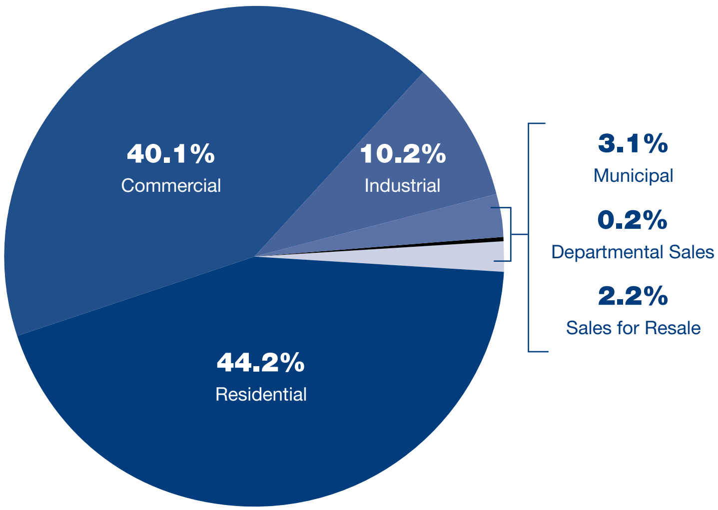
The Department continued its cast-iron main replacement and abandonment efforts and eliminated over one-and-a-half miles of cast-iron pipes with new plastic infrastructure on Morgan Street, Mountain View Drive, North Bridge Street, and Pearl Street. The new plastic mains are generally four, six, and eight inches in diameter.

Per HG&E's Distribution Integrity Management Plan (DIMP), which was implemented in August 2011, the Department is continuing efforts on an accelerated bare steel service replacement program. There are currently fewer than 725 bare steel gas services remaining in Holyoke, down from approximately 3,200 at the beginning of the program. At the conclusion of this program, all gas services will be constructed of either polyethylene plastic or cathodically protected coated steel. Bare steel services were installed from the early 1900s through the late 1960s.

This past year, the Department completed the replacement of an eight-inch coated gas main alongside a bridge on East Street in Southampton via the practice of horizontal directional drilling. This practice allowed the Department to maintain reliable service while the bridge was removed and taken out of service.

Also as part of DIMP, the Department replaced an isolated segment of coated steel pipe on Whitney Avenue with a new plastic main. In all, the Department installed over 9,800 feet of new main infrastructure and 197 replacement services, and abandoned 131 services. HG&E's natural gas distribution system now consists of 185 miles of mains and just over 8,300 service lines.

2021 GAS REVENUES




Robert Donais, Utility Engineering Aid

LEAK SURVEYS

The Department helps ensure the safety and reliability of the gas distribution system through an extensive series of compulsory and voluntary, comprehensive leak surveys. Each year, the Department conducts public building, mobile, and walking flame ionization patrols; special monthly winter patrols; and vegetation observation surveys. The full-length walking survey over each individual gas service covered over 4,600 lines in 2021, or about one-half of the service pipes in the system. The combined surveys accounted for the detection of 43 leaks, mostly minor. All leaks were investigated, prioritized, and repaired in accordance with applicable industry standards and regulations. At year end, the Department had zero leaks on file within the gas distribution system.

SERVICE

The Department responded to 2,711 appliance service calls for residential customers in Holyoke and Southampton during the year. These calls include boiler/furnace, water heater, and dryer repairs, as well as thermostat installations, when pandemic restrictions allowed. In addition, a total of 2,808 atmospheric corrosion inspections were completed to evaluate the integrity of exposed service piping.

ELECTRIC PRODUCTION

HYDROELECTRIC

HG&E is the owner and operator of the Holyoke Dam, Canal System, and associated hydroelectric facilities, which the Department purchased from Northeast Utilities (Holyoke Water Power) in 2001. The Hadley Falls facility contains two hydroelectric generating wheels with a total installed capacity of approximately 33 megawatts. The Holyoke Canal System is a three-tiered, 4½-mile system that runs throughout downtown Holyoke and provides water to generating stations that have a total combined capacity of approximately 17 megawatts. HG&E received Low Impact Hydropower Institute (LIHI) certification for its hydro system in 2012 and was recertified in 2017.

In addition to operating a source of carbon-free electrical generation and conducting various environmental studies, HG&E has made significant environmental enhancements since acquiring these assets. A number of projects were completed in 2021 that improved or contributed to the future generation capacity and reliability of the Department's hydroelectric facilities, including:

- Hadley Falls #2 Rehabilitation Project: The Department finalized the scope of work for the Hadley Falls Unit 2 upgrades and contracted for a unit rehabilitation outage in 2023. The new wicket gate design was completed.
- Canal System Log Boom: Sections were fabricated for a new, stronger canal log boom that better excludes debris. Installation was originally planned for summer 2021; however, it was postponed until summer 2022 due to high river flows.
- Chemical Station Unit #2: The two units at the station underwent major rehabilitation in 2020. During the first quarter of 2021, the upgraded units were tested and brought back into service. The upgraded units now provided full remote operation and monitoring from the Gatehouse.
- Valley Station: The Department completed electrical and controls upgrades including new protection relays and excitation. Station startup is slated for the first quarter of 2022.
- Riverside Station Unit #5: Metering, generator protection relays were upgraded, and oil-filled switchgear was eliminated.

OTHER PROJECTS:

Annually, HG&E performs two canal inspections, one in the spring and another in the fall. During these inspections, the canals were drained and assessments performed along canals and canal walls, including overflows, intakes, penstocks, powerhouses, and tailraces. No significant findings were reported in 2021.

HG&E continued its annual efforts to control the invasive water chestnut infestation at Log Pond Cove. As in recent previous years, this work was completed in partnership with Connecticut River Conservancy and the US Fish and Wildlife Conte Refuge. Efforts consisted of hand pulling by volunteers and herbicide treatment.

Upgrades were completed to all four Overflow #4 feed gates, which are used for balancing flows in the Third Level Canal. Gate actuators were replaced. Electrical equipment was upgraded, and service was changed from 230V to 208V, which is more consistent with the existing distribution system configuration on site. A human-machine Interface (HMI) screen was installed, which allows for manual on-site monitoring and control of the facility.

Dive survey video inspections of various Holyoke Project structures were completed, including the Gatehouse, Riverside, Valley, and Chemical Station tailraces, as well as the Boatlock Station draft tubes, the Dam Apron, and the South Hadley Gatehouse. These dive inspections are required as part of HG&E's ongoing inspection and maintenance program to ensure dam safety. No significant findings were reported in 2021.

All in-field survey work was completed for dam deformation monitoring. This survey identifies any dam movement to the nearest millimeter and is required every five years as part of HG&E's dam safety program. No significant findings were reported in 2021. The final report will be available in early 2022.

Colin Boyle, 2021 Cadet Engineer, and Sarah LaRose, Project Engineer

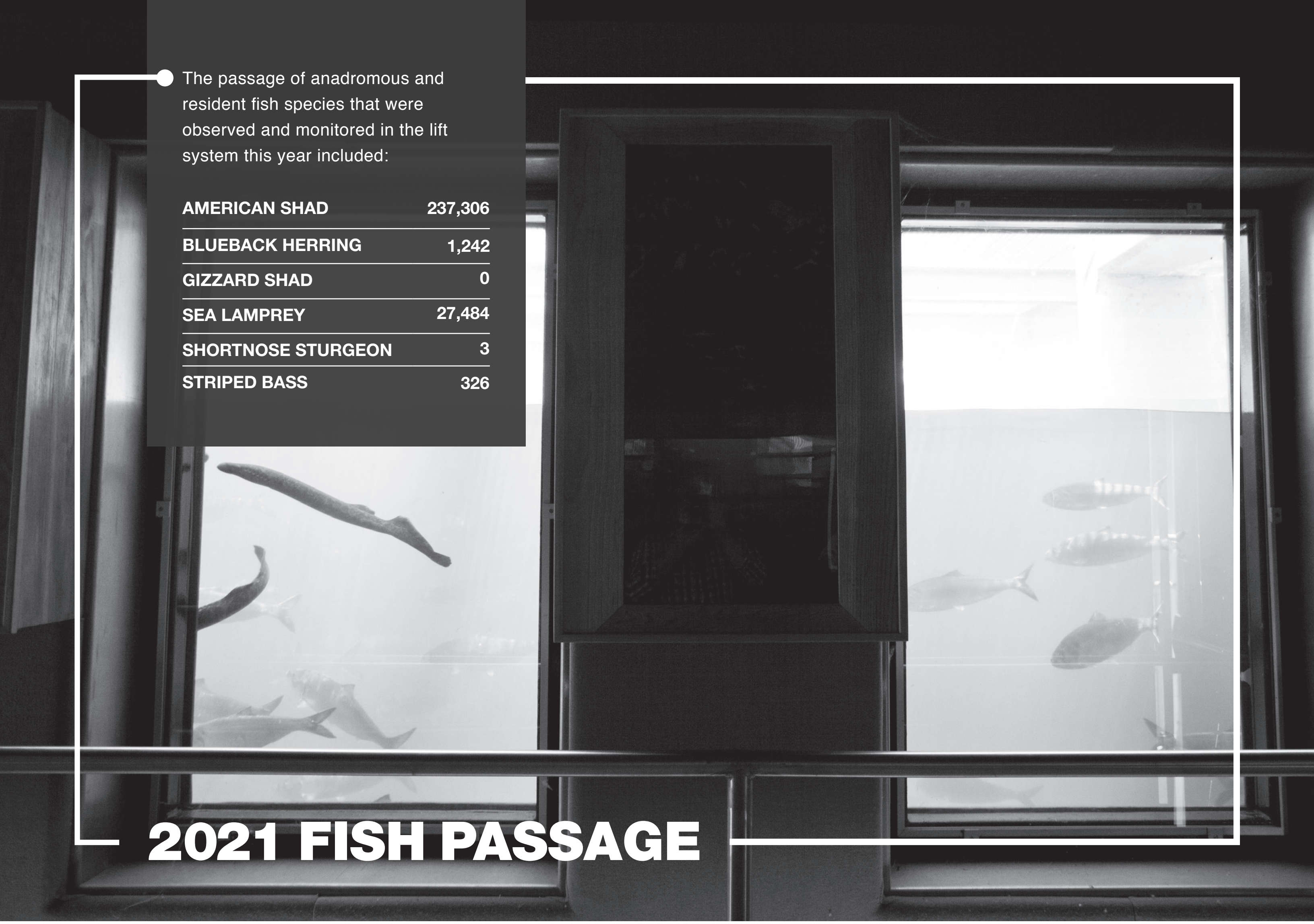
The Louver Bypass Pipe, which transports fish from the entrance of the First Level Canal back to the river, was observed to have developed a leak, which in turn created a slope slough in the vicinity of the leak. HG&E undertook investigative efforts to determine the cause of the bypass pipe failure and then completed repair efforts involving the removal of the leaking flange in the pipe and installation and welding of a new spool piece. In addition, a new sand filter was installed around the underground section of the pipe to mitigate any future minor leakage, and the slope was reconstructed in the vicinity of the slough. HG&E also had a 250-foot section of the First Level Canal wall shotcreted to mitigate further leakage.

In 2019, the Department completed efforts associated with decommissioning the Albion A, Albion D, and Nonotuck units. The final surrender order for the Albion A, Albion D, and Nonotuck units was issued by FERC on February 8, 2021. FERC final acceptance for decommissioning of Beebe Holbrook E&F was received on June 22, 2021. Decommissioning these smaller, inefficient facilities allows HG&E to save on maintenance costs and focus on diverting available water resources to larger, more efficient facilities.

Robert Barrett Fishway

HG&E completed various maintenance and upgrades to the fishway. Specifically:

- All pneumatic hoses were replaced;
- Operating gears for both upper flume gates were replaced;
- A new fishway exit gate was fabricated and installed, and an actuator was installed for the new gate;
- Access improvements including new ladders and grating were completed;
- New traveling floors for the trapping station were fabricated and installed; and
- New bucket door guides were fabricated and installed.



2021 FISH PASSAGE

The passage of anadromous and resident fish species that were observed and monitored in the lift system this year included:

AMERICAN SHAD	237,306
BLUEBACK HERRING	1,242
GIZZARD SHAD	0
SEA LAMPREY	27,484
SHORTNOSE STURGEON	3
STRIPED BASS	326

In 2021, HG&E continued its partnership with Holyoke Community College (HCC) for the collection of data on the number of species passed at the Robert E. Barrett Fishway. There was a reduced HCC staff level due to pandemic-related restrictions. Activities included biological sampling, trapping and loading of shad, trapping of shortnose sturgeon and Atlantic salmon, and observations of lift operations and eel passage.

The fishlift at the Robert E. Barrett Fishway helps migrating fish to reach spawning areas above the Holyoke Dam. HG&E's fish passage facility was the first and most successful fishlift on the Atlantic coast. It comprises two fish elevators, which carry migrating fish up and beyond the dam.

In addition to the fishlift, there is a total of three eel ramp passage facilities on both the Holyoke and South Hadley shores below the dam. The number of American eels counted at the eel ramps in 2021 was 12,945.

In 2021, the public viewing facility at the Barrett Fishway was not open to the public due to pandemic-related restrictions and guidance.

HG&E SHAD DERBY

The annual HG&E Shad Derby offers both adult and youth fishing enthusiasts the opportunity to enjoy the recreational benefits of the Connecticut River. Due to pandemic-related restrictions and guidance, the Shad Derby was cancelled in 2021.

ELECTRIC DIVISION

ELECTRIC OPERATIONS

In 2021, a number of projects were completed that will increase the reliability of the Department's electric substation and transmission infrastructure.

THESE PROJECTS INCLUDED:

Holyoke 17L Indoor Switchgear Auto Transfer Scheme & Bus Relay Upgrade: In order to increase the reliability of the 13.8 kV Indoor Switchgear at the Electric Station, an sutomatic transfer scheme was designed and installed. In a loss of supply event, this scheme will automatically restore service to approximately 10 MW of load in the downtown area. The existing electromechanical primary and backup bus protective relays were also replaced with modern microprocessor relays to further enhance reliability.

Electric Station Office Alternatives Study: Continuing on a project started in 2020, a study to assess the options for relocating the Electric Operations offices, shop spaces, and hazardous material storage was completed. The study evaluated pros and cons while providing cost estimates for three options, including a new building, and two renovation possibilities in the existing Electric Station facility. Engineering and design is scheduled to take place in 2022 provided the project is determined to be financially justifiable.

Transmission Maintenance: Major maintenance on the Department's transmission infrastructure was completed as follows:

- Tree clearing on the 1657 Line in the vicinity of Whitney Avenue and Ashley Reservoir was completed. This will reduce tree contact outages and decrease response time in this difficult-to-access area.
- Twelve steel transmission poles were thoroughly inspected and assessed. The assessment identified two poles with minor corrosion issues. These will be repaired in 2022.

Substation Preventative Maintenance: As part of the Department's preventative maintenance (PM) plan, major maintenance and testing was performed on various substation and plant equipment throughout the year. In summary, 312 maintenance orders were completed, including major maintenance and/or testing on:

- Two 115 kV circuit breakers at North Canal Substation,
- Seventeen medium-voltage vacuum circuit breakers at Holyoke Substation,
- Three power transformers at Highland and Holyoke substations,
- Five low-voltage secondary network protectors, and
- Nine 115 kV voltage transformers at Ingleside Substation.

Three 6.9 kV bushings were replaced on the Hadley Falls 2X transformer as a follow up to 2020 testing. Eighteen 115 kV voltage transformers were replaced at North Canal Sub as a follow up to failures that occurred in 2020 and early 2021.

HG&E line crew members (from left) Ryan McMahon, Dan Bailey, Nathan Boutin, Pat St. Lawrence, and Angel Maldonado

Support for electric distribution and hydro during the year included the preparation of 298 switching orders with clearances issued for planned and emergency medium and high-voltage work; assistance with the design, testing, and commissioning of several medium voltage automated switchgears and motor-operated air break switches, and assistance with the interconnection processes and protection of various diesel, solar, and battery energy storage projects. Maintenance and repair operations were also performed, as required, on distribution and hydro equipment, including inspections of line reclosers, sectionalizers, and capacitor switching controls. Support was again provided for the city-owned flood control pumping stations in the form of emergency maintenance and pumping operations, as required.

ELECTRIC DISTRIBUTION

In 2021, HG&E continued to make important investments in the electric distribution system. One of these major investments included the replacement of approximately 13,000' of 350 MCM paper, insulated lead cable (PILC) with new 500 MCM Cu underground primary cable on the 17L7 and 17L8 circuits between Holyoke Substation and Holyoke Medical Center, including the installation of two new padmounted primary metering switchgear for Holyoke Medical Center. These two circuits were the last PILC circuits remaining on the distribution system.

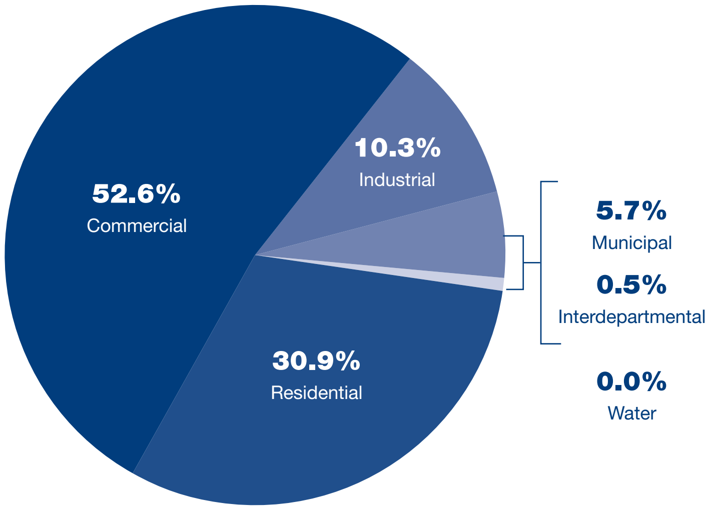
The Department continued its work that began in 2016 involving the removal or replacement of existing vacuum switches in manholes. The project involves planned replacement of all 94 existing 15 kV vacuum switches located in various manholes throughout the city that are used in isolating a circuit for the purposes of load shifting, outage restoration, and/or maintenance work. Sixteen more vacuum switches were removed or replaced with air break switches and/or padmounted air switchgear throughout the year, bringing the total to 67 since 2016. The last remaining oil switch serving the former Lynch School was also removed from the manhole system as part of its demolition. The Department will be using a combination of automated padmount, oil-filled, and air-insulated switchgear that will eventually replace some of the remaining vacuum switches in the field. This new switchgear will also provide automation to isolate faulted sections of circuit more quickly and provide control of these devices from remote locations.

Backyard pole lines in the areas serviced mainly from Highland Substation were constructed in the 1950s and 1960s. The aging infrastructure has created reliability and access issues, which is a liability to the overall system. Based on reliability data, tree trimming expenses, and known hazard areas, locations with backyard facilities were reviewed in 2018. Based on the type of distribution infrastructure existing nearby, the Department determined if new facilities are to be installed underground or overhead. There were 47 services, 32 single family and 15 multifamily, that were relocated from the backyard to the street in locations including Nonotuck Street, Jefferson Street, Elliott Street, Taylor Street, Parker Street, Charles Street, Princeton Street, Pleasant Street, Lincoln Street, Laurel Street, and Waldo Street. The Department also worked in conjunction with Comcast and Verizon to jointly install new underground infrastructure on Valley Heights.

This infrastructure will replace the two existing antiquated backyard pole lines that served this street, once all overhead services are transferred underground in early 2022. This work will improve service reliability and infrastructure accessibility, and eliminate some existing potential safety hazards due to structures being installed after the existing service infrastructure. Additionally, these measures will reduce some of the tree trimming and outage costs for the Department.

The Department continued with its conversion of 4.8 kV circuits, completing the remaining two circuits from Walnut Substation and a small portion of the H3 circuit. This is a multiyear project that will upgrade infrastructure, including automated switchgear and fault isolation points to all laterals, and increase the operating voltage to 13.8 kV, reducing system losses. The W1 and W4 circuits originating from Walnut Substation were the remaining two circuits completed this year. This area included Appleton Street between Chestnut Street and Locust Street and between Essex and Suffolk Street, as well as Hampden Street between Linden Street and Pearl Street. The H3 portion included the area from Hampden Street to Nonotuck Street along Lincoln Street, including side streets. There were 32 poles replaced; approximately 1,300' of underground primary cable, 8,800' of overhead primary wire, 3,700' of overhead secondary wire, and 1,200' of underground secondary installed; and numerous termination cabinets and padmounted switchgear

2021 ELECTRIC DIVISION REVENUES



installed that will help improve reliability in these areas. The Department is on target to complete upgrades of all remaining 4.8 kV circuits to 13.8 kV by end of 2024.

A new BESS was placed into service on Water Street. The system was named the Martin J. Dunn Clean Energy Center on July 29, 2021, in honor of Holyoke's late Mayor and State Senator Martin "Marty" J. Dunn. Located directly across from our North Canal Substation, this 4.99 MW/10.00 MWh system allows the Department to reduce its load during peak times of the year. A 500' underground line extension from North Canal substation was used to service this system. This is the second BESS installation on our distribution system to date.

There were 60 transformers that were replaced as part of our ongoing age-based asset replacement program. This program is a proactive approach to replacing assets in the field found to be beyond the expected asset life span before a problem arises that causes an outage. Transformers of at least 40 years in age have been initially targeted to be replaced as part of this project. A net 2,099.5 kVA was removed from the system as a result of the program. While the overall system load increased in 2021, this reduction is related to transformer connected load. Transformers were either oversized or underutilized based on nameplate ratings. These efforts will increase the efficiency of the overall distribution system.

Two vault covers that are used to cover our network transformers were replaced at the intersections of Appleton Street and Heritage Street, and Maple and Suffolk streets. These vault covers will allow for easier access into network vaults and ease of replacing transformers.

There was a multiyear MassDOT project that began in 2019 and was completed this year to improve local infrastructure, the Lyman Street Bridge Replacement Project. This project involved repaving the nearby section of road and sidewalks as well as installing new decorative lighting on Lyman Street between Gatehouse Road and Front Street. New street lighting infrastructure and conduit bank installed underneath the bridge that spans the First Level Canal were also included in the project. With the completion of this bridge, the circuit tie between North Canal substation and Walnut substation can be re-established and will be automated with new switchgear in 2022. This circuit tie had been temporarily removed as part of the bridge replacement project on the Second Level Canal in 2010.

A number of preventative maintenance activities continued throughout the year. Testing was performed on 11 new and used transformers, eight pole-top units, and three padmount units. HG&E also performed 280 manhole inspections and 660 wood pole inspections throughout various areas of the city. Stray voltage testing of approximately 20% of the city was completed in the Elmwood, Great Lakes, and Blueberry Hill areas. There were 175 padmount transformers and 16 termination cabinets on various circuits inspected by the line crew. Annual visual inspections on all three transmission lines were performed using drones to ensure reliable operation of the transmission system. Infrared inspections were performed on all distribution circuits throughout the city. There were three transformers upgraded or replaced due to overload conditions, leaking, and/or poor condition.

New electric services for Amazon on Whitney Avenue and Compound East on Dwight Street were completed, resulting in a net additional connected load of 50 kVA. Service upgrades were performed at 650 Beaulieu Street for Solurge and 28 Appleton Street for GTI, resulting in an additional connected load of 1,500 kVA. There was one new condominium complex constructed at the Riverview Estates, resulting in additional connected load of 25 kVA. There was also one new home constructed on an available lot on Beech Street that required a new electric service, resulting in a connected load of 10 kVA.

In summary, for 2021, HG&E set 152 poles and removed 153. A net 2,372 kVA connected load was removed from the distribution system due to a large number of oversized or underutilized transformers. Some 30,971 circuit feet of underground cable was installed, while 31,275 was removed. Similarly, 42,965 circuit feet of overhead wire was installed, while 48,700 was removed. Approximately 12,520 feet of PVC conduit was installed. There was a net decrease of 34 contract lights and five streetlights.

RELIABILITY

Reliability statistics allow the Department to track its service reliability and compare it from year to year with that of other municipal and private utilities. There are four statistics used to define the length and frequency of interruptions to customers, system availability, and the number of customers impacted by both unscheduled outages alone, as well as unscheduled and scheduled outages combined (see chart at right).

The Department has received the American Public Power Associations' (APPA) Reliable Public Power Provider (RP3) designation since 2011. An RP3 designation is a sign of a utility's dedication to operating an efficient, safe, and reliable distribution system. Being recognized by the RP3 program demonstrates to community leaders, governing board members, suppliers, and service providers a utility's commitment to employees, customers, and community. The Department has been either a Diamond or Platinum member, the highest awarded designations, since 2015.

In addition to the RP3 designation, the Department is also a five-year recipient of the Certificate of Excellence in Reliability award from APPA. This award recognizes the Department for having achieved excellence in reliability by significantly outperforming the electric industry national average and achieving the top quartile of system outage duration from national reliability data collected by the Energy Information Administration (EIA).

UNSCHEDULED OUTAGES ONLY

STATISTIC	2021	2020
ASAI	99.9851%	99.9865%
CAIDI	89.665 min	84.743 min
SAIDI	82.397 min	99.634 min
SAIFI	0.919 outages	1.176 outages

COMBINED OUTAGES

STATISTIC	2021	2020
ASAI	99.9785%	99.9781%
CAIDI	86.874 min	90.224 min
SAIDI	116.815 min	144.808 min
SAIFI	1.345 outages	1.605 outages

Average System Availability Index (ASAI)
Represents how much of the time a customer actually has service available.

Customer Average Interruption Duration Index (CAIDI)
Represents the average time expected to restore service after a sustained interruption.

System Average Interruption Duration Index (SAIDI)
Defines the average interruption duration per customer served.

System Average Interruption Frequency Index (SAIFI)
Defines the average number of times that a customer's service is interrupted during a given year.

METERING

In 2021, the Department continued its advanced metering infrastructure (AMI) system rollout to support commercial and industrial billing and future distribution automation. The Department installed 1,018 AMI meters, which included replacing the last mechanical meter in the system. In addition, the Department replaced 931 single-phase AMR meters with AMI meters for hard to access/safety locations and to facilitate the mesh network communication paths back to the field routers. Despite these replacements, the AMR system still maintained an average daily read rate of 99.76%.

The Department implemented the smart map service, which utilizes the current Meter Data Management System (MDMS) and electric distribution GIS model to display and alert for abnormal transformer loading and voltage conditions. With the integration of SmartMap, the MDMS was securely connected to the AMI headend, which gives customer service personnel the ability to connect/disconnect AMI meters as well as pull AMI meter reads in real time from the MDMS interface.

The Department updated seven customer locations to increase revenue and metering accuracy. At two locations, the Department converted from instrument-rated metering to self-contained metering. At the other five locations, current transformers were replaced with high-accuracy current transformers due to either safety concerns or the fact that the current transformers were oversized for the application.

Throughout the year, the metering group continued to support customer service, performing delinquent customer ons and offs, tagging notifications, meter reads, and collections. In total, 3,904 credit-related duties were performed in 2021.

In summary, there was a net total of 100 electric meters installed, 1,041 electric meters replaced, and 429 electric meters retired, having an average age of 15.56 years. A total of 522 electric meters were tested and calibrated; 306 turn-ons, 255 turn-offs, and 29 electric successions performed, and 25 vacant consumption reports investigated for metering problems and/or theft of service. There were 36 current transformers installed and 22 current transformers removed. Fifteen of these current transformers were replacements of standard accuracy transformers with newer high-accuracy current transformers. There were nine potential transformers installed and four potential transformers removed. On the gas side, 2,531 meters were removed and tested, 189 meters were installed, 2,255 meters were sealed, and 155 meters were retired.

WHOLESALE POWER

HG&E manages a diverse power supply portfolio. HG&E purchases power to meet the ever-changing electric loads and brings it into Holyoke from all over New England. HG&E monitors possible monthly and annual peak hours and actively institutes load reduction measures to lower its load and thus costs during these times. As part of the Energy Purchasing and Risk Management Plan, the Department monitors the available energy supply and sources on a daily basis to stabilize and ensure price certainty for the future cost of power. The Department purchases power on both a short-term and long-term basis to take advantage of the fluctuating market, manage the risk of rising prices, and increase the stability of future energy costs, thereby stabilizing rates for all customers while maintaining a clean energy supply. HG&E is committed to protecting the environment and setting minimum percentages of noncarbon energy sold to its retail end-user customers.

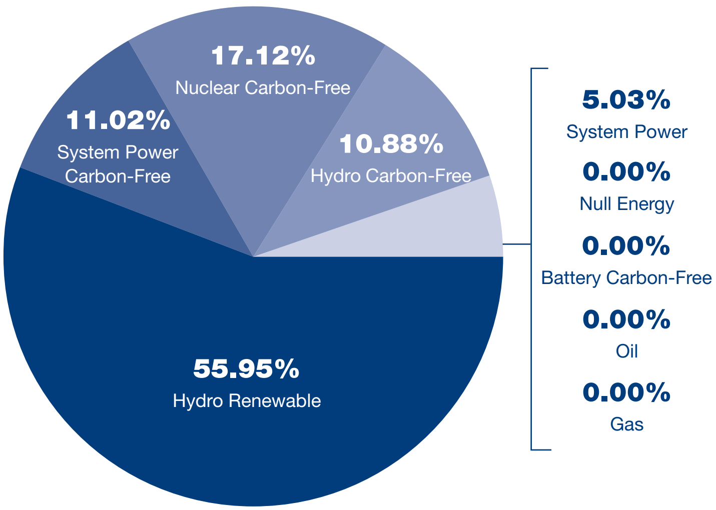
HG&E's goal is to maintain and increase clean energy within the fuel mix through sustainable, long-term business practices. For 2021 through 2035, HG&E is expected to meet and exceed greenhouse gas (GHG) emission targets set by the state and will continue to generate and procure energy with the best interest of the ratepayers in mind.

At the end of 2021, HG&E developed a voluntary Carbon-Free Electric Pilot Program for commercial and industrial customers who wish to have their electricity come from 100% carbon-free energy sources, made possible through the purchase and retirement of qualifying Massachusetts Class I or Class II Renewable Energy Certificates (RECs). This program will assist HG&E and commercial customers with achieving carbon-free goals. The pilot will run from January 1, 2022, through December 31, 2022, and will be re-evaluated to determine continuation in the future.

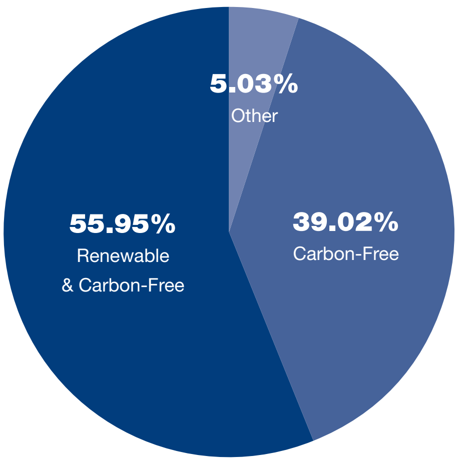
In 2021, 55.95% of HG&E's power supply production came from generation that qualifies as renewable, according to definitions set forth by the Renewable Portfolio Standards within the New England states. Additionally, 22.78% of HG&E's production came from generators that produce solar, hydro, battery storage, and wind power, but that HG&E cannot claim as green energy because the renewable energy certificates (REC) are not owned by or retired with HG&E. The Null Energy Label is used to signify non-REC ownership. Zero percent of Null Energy total production served to meet HG&E's electrical load in 2021; it was sold to the market.

The pie chart on the next page shows Holyoke's supply by fuel type as a percent of electrical load from retail sales. It can be collapsed into three categories.

HOLYOKE GAS & ELECTRIC DEPARTMENT
2021 ENERGY MIX AS PERCENTAGE OF RETAIL SALES



2021 ENERGY EMISSIONS CHART



In 2021, 55.95% is renewable & Carbon-Free, while an additional 39.02% is carbon-free (nuclear, carbon-free system power, and hydro). The Other category comprises 5.03% of carbon emitting resources. Therefore, 94.97% of HG&E's electrical load for the year was considered carbon-free. This percentage is slightly higher than 2020 carbon-free primarily because of higher electrical loads due to the return to normal effects from COVID-19 and more hydro production because of higher water flows. Our load was up approximately 7.0%, and hydro generation was up approximately 23.35% as compared to 2020.

The System Power represents various-term-length bilateral contracts comprising system mix within ISO-NE that were procured during the summer time frame. System Power Carbon-Free represents long-term, on-peak bilateral contracts with nuclear carbon-free certificates attached that will end in December 2035 and a long-term, around-the-clock bilateral contract from Hydro Quebec with carbon-free certificates attached that will end in October 2025.

HG&E currently hosts two battery energy storage systems. One system totals 3 MW/6 MWh, and the other system, which began commercial operation in June 2021, totals 4.99 MW/10 MWh. These clean energy systems were successful in reaching 100% of all forecasted monthly hourly peak loads and the one annual hourly summer peak load, resulting in significant transmission and capacity cost savings to rate payers of more than $711,200 in 2021.

During 2021, the Department continued to proactively pursue and host low-cost carbon-free projects to secure and further enhance its energy portfolio. In 2021, HG&E contracted with two additional utility-scale battery energy storage systems totaling 4.80 MW/14.40 MWh and 4.75 MW/14.25 MWh. Both of these systems are expected to become commercial in 2023.

HG&E currently hosts 28 solar projects (17 utility-scale, nine residential, and two commercial), with a corresponding output load of 17.886 MW-dc, allowing the Department to purchase power at a lower cost. Utility-scale projects resulted in 20,015 MWh of load reduction, while residential and commercial customer solar resulted in 76,623 kWh of load reduction on the system in 2021. The harnessing of solar energy from these projects within Holyoke is offsetting the Department's demand and reducing future costs for all customers.

Beginning in February 2017, HG&E developed a Community Solar Program open to all residential customers who have chosen to participate (opt in) to the program. In 2021, 2,355 customers participated in this program. This program allows residential customers to receive the benefits of solar without the expense of installing a system at their location. The Mt. Tom Solar project, totaling 4.988 MW-ac (increased in output during 2019 from prior 4.50 MW-ac rating), and the Kelly Way 2 project, totaling 0.603 MW-ac, were designated as community solar projects. Load reduction from community-shared solar generated a total savings of $49,972 to those participating in the program. Additionally, in 2021, a total of $20,071 was provided to the Holyoke Housing Authority from three solar systems (Aegis, Gary Rome, and Hadley Mills) that were set up under the Low or Moderate Income (LMI) Solar Program.

A total of 265,395 MWh of net generation was produced from Department-owned hydro resources, which continued to help drive down the overall cost of power. During 2021, the hydro preference power credit to residential customers generated total savings of $1,188,994 ($944,006 from Department-owned hydro and $244,988 from NYPA entitlements).

The hydroelectric system, including the Hadley Falls Dam and the Holyoke Canal hydro facilities, maintains Massachusetts Class I and II status, in addition to Maine Existing certifications. 10.91% of Hadley Falls 1 and 2 is MA Class I certified, and Hadley Falls 1 and 2 were certified as Clean Existing Generation Units in 2021. All of the canal units with the exception of City 4J (which is 100% MA Class I) are MA Class II certified, and six canal units are certified with small percentages as MA Class I. Sale of these certificates resulted in $1,591,551 of revenue to the Department in 2021.

HG&E proactively works throughout the year to improve reliability by maintaining and making upgrades to its 9.25 circuit miles of pool transmission facilities (PTF). Ensuring that all transmission lines and processes are up to date allows HG&E to meet its future needs and reduce transmission costs. Transmission Regional Network Service (RNS) rates increased 9.07% from $129.26/kW-year to $140.98/ kW-year in June 2021. The Department's RNS annual charge of $7,893,223 was offset by 9.25 circuit miles of transmission infrastructure, with three transmission substations. With PTF revenues of $4,950,876 and peak shaving solar, energy storage, and hydro offsets of $996,831, in 2021, the Department's annual RNS charge was reduced to $1,945,507.

Holyoke achieved Green Community status in 2010 and is committed to efficiency, conservation, and sustainability. The Department's replacement of high-pressure sodium lights with more efficient light-emitting diode (LED) lighting technology has, on average, reduced the city's streetlight consumption by 60%. The city has realized about $300,000 in direct energy savings from these lights in 2021 compared to pre-LED street lighting costs, although, when factoring in additional LED decorative and other lights added by the city to the capital investment list over the past several years, the total resulting savings was about $129,000 in 2021. This total savings will increase significantly when the initial capital investment has been paid off in 2023.

HG&E earned a Smart Energy Provider (SEP) designation from the American Public Power Association (APPA) for demonstrating commitment to and proficiency in energy efficiency, distributed generation, and environmental initiatives that support a goal of providing low-cost, quality, safe, and reliable electric service. The SEP designation, which lasts for two years (December 1, 2021, to November 30, 2023), recognizes public power utilities for demonstrating leading practices in four key disciplines: smart energy program structure, energy efficiency and distributed energy programs, environmental and sustainability initiatives, and the customer experience. HG&E is one of only about 100 of approximately 2,000 public power utilities in the nation to receive such designation.

In 2021, HG&E was recognized as one of a handful of utilities nationwide for its leadership in transforming to a carbon-free energy system by the Smart Energy Power Alliance (SEPA) and was listed on the 2021 Utility Transformation Leaderboard. This significant recognition was awarded to only 10 utilities nationwide. SEPA also ranked HG&E third nationally in energy storage per capital.

ENERGY EFFICIENCY & ELECTRIFICATION

As mentioned in the Gas Division report, in January 2019, HG&E issued a natural gas moratorium, effectively discontinuing new or increased requests for natural gas services in HG&E's territory. Through additional efforts to keep Holyoke's carbon footprint low, HG&E continued to expand its energy efficiency and electrification incentives and programs in 2021 by encouraging the installation of cleaner, more efficient alternative electric technologies, such as heat pumps.

HG&E's Green Team, established in 2020, continued to strategize its energy efficiency and electrification efforts and initiatives for both residential and commercial customers. In order to respond to rising costs in equipment and labor, the amount of assistance under the Residential Energy Conservation Program (RECP) was increased from $5,000 to $10,000. This additional amount of assistance has helped cover a significant portion of project installation costs, thus reducing the financial barriers that can otherwise hinder customers from moving forward with various energy efficiency and electrification measures.

Beginning in 2021, HG&E began managing all rebates in-house, a process previously handled by a third-party contractor. This not only reduced administration costs, but also assists with expediting review and payment times. HG&E approved close to 300 rebate and assistance requests in 2021, totaling over $450,000 in energy efficiency and electrification incentives for customers. Additionally, by processing all of these applications in-house, HG&E is able to collect the necessary data needed to track the energy and carbon emissions savings resulting from its incentive programs. HG&E will continue to analyze and evaluate the results of these incentive programs and continue to improve existing incentives offered in an effort to better understand how each program benefits the overall goal of reducing emissions.

In July, HG&E launched a Whole-Home Air Source Heat Pump (ASHP) Program, designed to support the installation of high-efficiency and optimally designed ASHP systems. This equipment operates year-round and will assist Massachusetts goals of reducing greenhouse gas emissions by replacing traditional higher-emitting fossil fuel heating systems with an electric heating and cooling alternative. As part of this program, HG&E has hired a professional energy audit company to calculate the heating load requirements for the customer's entire home. In turn, customers then provide these requirements to their contractor of choice in order to ensure the heat pump system is adequately sized and can be used as the home's sole heating system. Through this program, HG&E offers an enhanced rebate amount toward these systems along with an added incentive to improve weatherization in parallel.

HG&E will continue to revise and improve its energy efficiency programs and initiatives in 2022 to further promote energy savings, electrification, and emissions reduction. Several new and enhanced rebate programs are being explored, which include residential and commercial demand response programs, commercial electrification incentives, and continuous improvements of incentives for energy efficiency and electrification measures.

POWER SUPPLY

2021 POWER SUPPLY RESOURCES

PROJECT NAME	FUEL TYPE	PROJECT START DATE	CONTRACT CAPACITY (kW-AC) WINTER	SUMMER	CONTRACT END DATE
NYPA FIRM	HYDRO	1985	1,989	1,989	9/1/25
MILLSTONE 3 - MIX 1	NUCLEAR	1986	1,334	1,334	11/25/45 *
MILLSTONE 3 - PROJ 3	NUCLEAR	1986	2,325	2,325	11/25/45 *
SEABROOK - MIX 1	NUCLEAR	1990	147	147	3/15/50 *
SEABROOK - PROJ 4	NUCLEAR	1990	3,306	3,306	3/15/50 *
SEABROOK - PROJ 5	NUCLEAR	1990	408	408	3/15/50 *
HYDRO QUEBEC 1	N/A	1986	1,717	1,717	LOU **
HYDRO QUEBEC 2	N/A	1989	3,585	3,585	LOU **
NYPA PEAK	HYDRO	1985	426	426	9/1/25
STONYBROOK GT 2A	#2 OIL	1982	2,476	1,910	10/31/2040 * **
STONYBROOK GT 2B	#2 OIL	1982	2,413	1,850	10/31/2040 * **
HADLEY FALLS 1&2	HYDRO	1949	33,400	33,400	OWNED *
RIVERSIDE 8	HYDRO	1931	4,575	4,575	OWNED *
RIVERSIDE 4-7	HYDRO	1921	3,270	3,270	OWNED *
BOATLOCK	HYDRO	1924	3,313	3,313	OWNED *
HOLYOKE HYDRO/CABOT 1-2	HYDRO	1923	1,856	1,856	OWNED *
HOLYOKE HYDRO/CABOT 3	HYDRO	1940	450	450	OWNED * ****
HOLYOKE HYDRO/CABOT 4	HYDRO	1955	750	750	OWNED * ****
CHEMICAL	HYDRO	1935	1,600	1,600	OWNED *
SKINNER	HYDRO	1924	300	300	OWNED *
VALLEY HYDRO	HYDRO	2004	790	790	OWNED *
OPEN SQUARE	HYDRO	2004	525	525	2/29/16 ****
HANCOCK WIND	WIND	2016	6,032	6,032	12/14/41
CONSTELLATION - MUELLER RD	SOLAR	2012	2,693	2,693	12/20/31****
CONSTELLATION - MEADOW ST	SOLAR	2012	793	793	12/20/31****
CITIZENS - COUNTY RD	SOLAR	2013	615	615	2/5/33 ****
HPP MA, LLC - RICAR	SOLAR	2015	792	792	10/1/40 ****
C2 ENERGY CAPITAL - DINN	SOLAR	2016	475	475	12/27/36 ****
C2 ENERGY CAPITAL - KELLY WAY I	SOLAR	2016	475	475	12/27/36 ****
JACKSON CANAL, LLC - AEGIS	SOLAR	2017	833	833	1/4/37 ****
GROWING HOLYOKE, LLC - GARY ROME	SOLAR	2017	666	666	1/6/37 ****
MT. TOM SOLAR, LLC - ENGIE	SOLAR	2017	4,988	4,988	2/7/37 ****
SCANNELL SOLAR, LLC - CONKLIN	SOLAR	2017	633	633	2/24/37 ****
GEEPV - RIVERSIDE A/B	SOLAR	2017	133	133	5/8/37 ****
GEEPV - WALNUT	SOLAR	2017	100	100	11/22/37 ****
SUNWEALTH - HADLEY MILLS	SOLAR	2017	336	336	12/31/37 ****
C2 ENERGY CAPITAL - KELLY WAY II	SOLAR	2018	475	475	6/4/38 ****
GEEPV - BOYS & GIRLS CLUB	SOLAR	2018	150	150	4/20/38 ****
GEEPV - JACKSON	SOLAR	2018	120	120	3/15/38 ****
GEEPV - YMCA	SOLAR	2018	167	167	12/17/38 ****
MT. TOM SOLAR, LLC - ENGIE	STORAGE	2019	3,000	3,000	5/31/38 ****
HOLYOKE BESS, LLC	STORAGE	2021	4,999	4,999	7/31/36 ****

All capacity contracts follow the ISO New England calendar system.

* Investments continue for the life of the unit (LOU)

** After 8/31/01, there is no firm energy contract, only capacity and entitlement, which continues for the life of the unit and based on full rating of the line.

*** In process of retiring assets

**** Load reducer

TELECOMMUNICATIONS

TELECOMMUNICATIONS DIVISION

HG&E's commercial network, now in its 22nd year of operation, provides high-speed internet and network connectivity via fiber-optic lines to business-class customers located in Holyoke, Chicopee, downtown Springfield, and throughout the Pioneer Valley. Both the Department itself and the city receive services from the network. The service platforms are industry-standard Carrier Ethernet and Internet Protocol (IP), supporting speeds up to 100 gigabits per second (Gbps).

TELECOMMUNICATIONS HELP DESK

HG&E administers a centralized help desk, accepting support calls from customers and internal staff. As a telecom utility, HG&E offers 24x7 network monitoring services and an on-call support structure to ensure maximum network uptime, and the best possible customer experience.

The help desk received 1,599 tickets — 996 for HG&E Department employees, 603 for commercial customers. Of the 1,599 trouble reports received, 1,547 tickets were resolved in 2021.

COMMERCIAL NETWORK UPGRADES

As customers' needs grow and application requirements evolve, HG&E's network investments continue as well. In 2021, HG&E completed key improvements in the carrier transport network by adding two additional 100G-capable core transport switches, refreshing two internet gateway routers to support 100Gbps connectivity, adding an additional IP aggregation router in Springfield, and updating critical network management platforms.

COMMERCIAL NETWORK EXPANSION

In 2021, the Department continued fiber-optic Wide Area Networking (WAN) services throughout the Pioneer Valley. Within this service territory, HG&E is focused on providing fiber-optic WAN services for large, complex institutions. For example, HG&E provides support for a regional institution with six locations, offering 10 Gbps of bandwidth and carrier Ethernet over fiber connecting all locations. Local support, network performance, and reliability are some of the factors that contribute to our customer loyalty.

CARRIER INTERCONNECTION

In 2021, HG&E further developed interconnection relationships with regional fiber Ethernet carriers in order to service core customers with locations outside of the existing footprint. These interconnections allow HG&E the flexibility to provide additional services outside of the previous service boundaries. HG&E interconnected to a new fiber vendor in order to provide private LAN service to new customer locations throughout Northern Connecticut.

HG&E is a next-generation provider, having designed, engineered, and implemented full IPv6 internet routing and peering with upstream internet carriers. The Telecom Division continued to scale into its two primary wholesale internet feeds running at 10 Gbps, each moving to 100 Gbps capable connections, in 2021. Currently, HG&E has an internet capacity of 30 Gbps. A third internet feed is currently being implemented to provide an additional 20 Gbps of capacity, for a total aggregate of 50 Gbps.

UTILITY OPERATIONS NETWORK UPGRADE

In addition to maintaining commercial network customers, the Division continued its support for the design, operation, and maintenance of HG&E's internal operations network and information intelligence needs. In 2019, the Department began refreshing the entire utility operations network; this was phase one of a three-phase plan. Phase one included the network core switching and routing at HG&E's Suffolk Street and Walnut Street facilities, with two 100 Gbps interconnects, and a data center mesh using a combination of 100 Gbps and 40 Gbps interconnects. Phase two consisted of the distribution areas of the network, substations, and larger buildings. Phase three included endpoint locations such as hydro wheels. The project will be completed in 2022.

In 2021, HG&E continued to optimize its new computer, storage, and network platforms. HG&E continued to provision software, and in some cases provided new hardware, in order for employees to work from home through VPN access during the pandemic. HG&E provided flexible solutions to accommodate the unique ways in which our employees needed to collaborate with each other, as well as vendors and contacts outside of HG&E.

The Division supports a wide variety of utility operational applications, systems, and platforms, including computing, internet, telephone, collaboration, video surveillance, SCADA platforms, cybersecurity engineering, and user training and support.

CYBERSECURITY

As cyberthreats continue to evolve, both internally and externally, HG&E remains committed to continually improving its cybersecurity posture. Pursuant to these goals, HG&E maintains an umbrella cyberthreat detection and mitigation system at its internet gateways. This system provides blanket attack protection, in real time, to all HG&E internet subscribers and users. HG&E also performs regular user awareness training and vulnerability testing to ensure compliance with cybersecurity policies and best practices. In 2021, the internet threat mitigation platform was upgraded to support 100Gbps internet feeds. HG&E also introduced MFA (multifactor authentication) on its utility operations computing platforms.

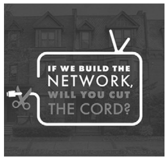
WHOLESALE BROADBAND SERVICES

HG&E continued its development and execution of a last-mile strategy and wholesale service offerings, including the continued scaling of the residential wholesale broadband platform. Leveraging its current network infrastructure, HG&E is supporting several communities that sought to build their own networks but needed an experienced network operator and/ or project manager.

In these communities, HG&E does not provide residential internet service, but rather wholesale internet services to internet service Pproviders (ISPs) and those ISPs then sell internet services to residents. These engagements have helped HG&E develop additional expertise in the design, construction, and operation of FTTH networks and have provided additional revenue to HG&E.

As of 2021, HG&E has a wholesale presence in nine rural and local communities. HG&E utilizes the Massachusetts Broadband Institute (MBI) regional fiber-optic network and Crown Castle Fiber to connect with these rural communities.

FIBER TO THE HOME



In 2021, HG&E performed a test marketing campaign that was designed to better understand current customer demand for municipal fiber-to-the-home (FTTH) broadband service. While HG&E is capable of providing residential FTTH service and is currently providing residential broadband service within Holyoke on a limited basis, there must be sufficient interest in order for a citywide venture to be economically viable and not have an adverse effect on utility rates. Taking the time to fully understand the impact of a potential FTTH build is critical to meeting HG&E's mission to provide competitive rates, innovative and sustainable energy solutions, reliable service, and excellent customer care.

Summary

In spite of several seriously interested respondents, not enough households are currently willing to subscribe to a local, residential fiber internet service to justify an estimated $30 million expenditure to provide citywide FTTH service.

Purpose

The Fiber-to-the-Home Interest Form was not intended as a poll or a survey of the general population. Rather, it was the first step in a test marketing campaign to determine how many of those interested in FTTH would sign up for the service and to obtain contact information for future follow-up. The question that needed to be answered was whether or not there was enough interest to make a $30 million build financially viable. Also, it is important to understand if the interested customers are willing to pay service rates that would cover the buildout cost while paying for continued operation and upgrades.

The Goal

It is important to HG&E that the FTTH project be financially self-supporting for several reasons. It would be unfair to have some people pay more for their utilities so other people could have faster, less expensive internet. It is critical that the FTTH enterprise be able to pay back the original investment in a reasonable period of time so that the enterprise can afford the upgrades that are inevitable.

An often-cited theory is that a municipal internet project needs a 30% share of its market in order to reach the break-even point. There are 15,278* households in Holyoke, so the FTTH project would need 4,583 subscribers to reach a 30% market share. The Department's financial analysis shows that if the FTTH enterprise had 3,000 subscribers paying $90 a month, it would not come close to paying off the original $30 million investment within 20 years. So, at $90 a month, the project would not be viable unless it had considerably more than 3,000 subscribers.

**This information is based on US Census data. In addition to US Census data, HG&E has been monitoring cable TV subscription data, which is published annually by the Massachusetts Department of Telecommunications and Cable (DTC).*

Methodology

In order to determine the number of potential subscribers in Holyoke, HG&E launched a test marketing campaign with the slogan "If we build the network, will you cut the cord?" This three-month outreach effort ran from April 2021 to July 2021 and included significant advertising and outreach within HG&E's footprint. From print ads to social media and from direct mail to radio, HG&E saturated the market in an effort to educate customers and solicit feedback from the community.

The campaign encouraged "customers who would like to subscribe to a local, residential fiber internet service" to visit the website to fill out an interest form that was available to all in Spanish and English. An effort was made to keep the form as fair, as factual, and as brief as possible, but it was important to explain what was involved in cutting the cord for those unfamiliar with the process. Potential advantages and disadvantages were included, but neither were exaggerated.

Responses were screened to exclude duplicates and incorrect addresses and to include households that could be served as part of the $30 million investment.

Findings & Results

Results indicate that fewer than 1 out of 10 (6.0%) of the 15,278 residential households within HG&E's service territory reported they would be willing to subscribe to residential fiber internet, while 94.0% were either not willing (0.4%), or did not complete the interest form (93.6%).

A significant portion of customers who completed the interest form (69.5%) reported they are unhappy with their current provider and their current provider is too expensive. These customers indicated they would switch if HG&E offered a lower-cost alternative. Based on the required costs to implement and maintain fiber-optic internet in the service territory, HG&E estimates that it would not be able to offer a significantly below-market rate for FTTH internet access due to the cost of the overall investment and the continual upgrades necessary to maintain an up-to-date network capable of meeting changing customer needs.

Conclusion & Next Steps

The results indicated that the interest in FTTH is not sufficient enough for HG&E to move forward with a citywide residential FTTH project. With that said, HG&E has identified pockets of interest throughout the city and will complete a network design in 2022 in order to determine the feasibility of a pilot fiberhood.

As previously mentioned, HG&E is fully capable of providing the service when there is adequate demand. Residents who did not previously complete the interest form are encouraged to provide feedback.

HG&E is committed to the following:

Develop a Network Design

In order to better understand the true cost and key variables associated with a network buildout, including type of delivery (overhead/underground, backyard or street-side), residence type (single family, multifamily, multidwelling unit), and pole make-ready needs, HG&E will procure a full network design in 2022. In addition to determining the true cost in today's economic climate, the design will allow HG&E to develop a scalable and cohesive network, ensuring any investment is sustainable long term.

Explore Pilot Opportunities

The results of this test marketing campaign have helped to identify pockets of interest throughout the community, providing the ability for HG&E to better understand the feasibility of a gradual roll-out, neighborhood by neighborhood.

In an effort to better understand the local residential market, HG&E is administering three residential pilot programs at the Cubit, Chestnut Park Apartments, and Russell Terrace. During the redevelopment of these buildings, HG&E was able to work with the property owners to cost-effectively install fiber in the buildings and offer customers broadband service. HG&E continues to seek similar opportunities and will evaluate a residential pilot fiberhood as additional network design information is received.

Identify Potential Funding Opportunities

In 2021, HG&E submitted an application to the city of Holyoke for American Rescue Plan Act (ARPA) funds in the amount of $3.5 million. While this application was not selected, HG&E's team will continue to monitor and explore available funding opportunities on the local, state, and federal levels.

HG&E will continue to explore and assess all broadband opportunities within the service territory, while studying the outcomes of similar projects in neighboring communities.

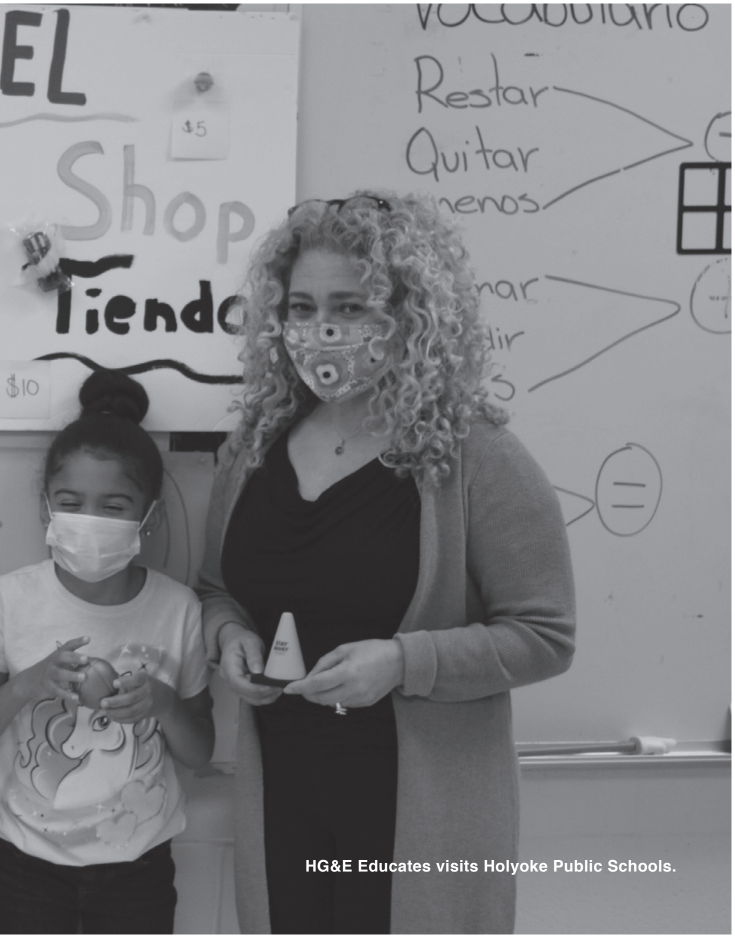
Public Power & Natural Gas Celebration
October 6, 2021

GOODWILL

Community involvement is a central belief of the public power philosophy, and the Department is proud of the role it takes in making Holyoke a better place to call home. Due to the pandemic and associated restrictions, many events were cancelled or postponed in 2020 and 2021. Key community events that are typically underwritten by HG&E, like the Hispanic Family Festival, the St. Patrick's Day Parade, and the Holyoke Fireworks were cancelled. In total, $38,266 in sponsorships and $10,688 in labor was provided for nonprofit causes.

HG&E invited the local community to celebrate Public Power & Public Natural Gas Week on October 6 from 4 – 6 PM at Veterans Park. This free, inaugural celebration featured electric vehicles, HG&E's energy efficiency and audit incentives, activities for kids, and several community and state partner organizations.

Each October, community-owned utilities throughout the country celebrate Public Power & Public Natural Gas Week, collectively providing electricity and natural gas services to millions of Americans. This annual nationwide event is intended to build public awareness about the value of having a community-owned utility. Public Power & Public Natural Gas Week is a national, event sponsored in conjunction with the American Public Power Association (APPA) and the American Public Gas Association (APGA).



HG&E Educates visits Holyoke Public Schools.

NEIL J. MORIARTY JR. SCHOLARSHIP FOR CADET ENGINEERS

The Cadet Engineer program is dedicated to the memory of our late commission Chairperson Cornelius J. Moriarty Jr. He often noted that the admission of new students into the program was one of the most rewarding actions that the commission took each year.

The program offers aid to Holyoke students who are pursuing Bachelor of Science degrees in engineering. Maeve Norton, Marcel Guzik, and Colin Boyle were admitted as the 2021 cadets.

ECONOMIC DEVELOPMENT

In 2021, the Department provided $153,805 in additional discounts to businesses that have relocated or expanded within the city under the Economic Development Discount Program. This program provides an additional 10% off participants' gas and electric bills for a three-year period.

The Department also offers a similar program for residential customers, under which first-time Holyoke homebuyers can receive 10% off of their first three years of gas and electric bills. In 2021, $123,404 was provided under this program.

CONTRIBUTION	AMOUNT
Nonprofit Sponsorships	$38,266
Nonprofit Labor	$10,688
Cadet Engineer Scholarship	$37,500
Payment in Lieu of Taxes	$1,194,152
Municipal Payment Discounts	$285,206
Discounted Street Lighting	$129,109
Economic Development Discount	$153,805
New Homeowner Discount	$123,404
Energy Conservation Assistance	$326,405
TOTAL COMMUNITY SUPPORT	**$2,355,349**

Holyoke Gas and Electric
(Enterprise and Fiduciary Funds of the City of Holyoke, Massachusetts)

Financial Statements and
Supplementary Information

December 31, 2021 and 2020

Table of Contents
December 31, 2021 and 2020

Independent Auditors' Report

To the Board of Commissioners of
Holyoke Gas and Electric

Opinions

We have audited the accompanying financial statements of Holyoke Gas and Electric and Holyoke Gas and Electric OPEB Trust, enterprise and fiduciary fund of the City of Holyoke, respectively, as of and for the years ended December 31, 2021 and 2020, and the related notes to the financial statements. Hereafter, the funds will collectively be referred to as “Holyoke Gas and Electric”.

In our opinion, the financial statements referred to above present fairly, in all material respects, the financial position of Holyoke Gas and Electric as of December 31, 2021 and 2020 and the respective changes in financial position and, where applicable, cash flows thereof for the years then ended in accordance with accounting principles generally accepted in the United States of America.

Basis for Opinions

We conducted our audits in accordance with auditing standards generally accepted in the United States of America (GAAS). Our responsibilities under those standards are further described in the Auditors' Responsibilities for the Audit of the Financial Statements section of our report. We are required to be independent of Holyoke Gas and Electric and to meet our other ethical responsibilities, in accordance with the relevant ethical requirements relating to our audit. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinions.

Responsibilities of Management for the Financial Statements

Management is responsible for the preparation and fair presentation of the financial statements in accordance with accounting principles generally accepted in the United States of America; and for the design, implementation and maintenance of internal control relevant to the preparation and fair presentation of financial statements that are free from material misstatement, whether due to fraud or error.

Auditors' Responsibilities for the Audit of the Financial Statements

Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditors' report that includes our opinions. Reasonable assurance is a high level of assurance but is not absolute assurance and therefore is not a guarantee that an audit conducted in accordance with GAAS will always detect a material misstatement when it exists. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations or the override of internal control. Misstatements are considered material if there is a substantial likelihood that, individually or in the aggregate, they would influence the judgment made by a reasonable user based on the financial statements.

In performing an audit in accordance with GAAS, we:

- Exercise professional judgment and maintain professional skepticism throughout the audit.

- Identify and assess the risks of material misstatement of the financial statements, whether due to fraud or error, and design and perform audit procedures responsive to those risks. Such procedures include examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements.
- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Holyoke Gas and Electric's internal control. Accordingly, no such opinion is expressed.
- Evaluate the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluate the overall presentation of the financial statements.

We are required to communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit, significant audit findings and certain internal control-related matters that we identified during the audit.

Emphasis of Matters

As discussed in Note 1, the financial statements present only the Holyoke Gas and Electric enterprise and fiduciary funds and do not purport to, and do not, present fairly the financial position of the City of Holyoke, Massachusetts, as of December 31, 2021 and 2020 and the respective changes in financial position or cash flows, where applicable, for the years then ended in accordance with accounting principles generally accepted in the United States of America. Our opinions are not modified with respect to this matter.

Required Supplementary Information

Accounting principles generally accepted in the United States of America require that the required supplementary information, as listed in the table of contents be presented to supplement the financial statements. Such information is the responsibility of management and, although not a part of the financial statements, is required by the Governmental Accounting Standards Board who considers it to be an essential part of financial reporting for placing the financial statements in an appropriate operational, economic or historical context. We have applied certain limited procedures to the required supplementary information in accordance with auditing standards generally accepted in the United States of America, which consisted of inquiries of management about the methods of preparing the information and comparing the information for consistency with management's responses to our inquiries, the financial statements, and other knowledge we obtained during our audit of the financial statements. We do not express an opinion or provide any assurance on the information because the limited procedures do not provide us with sufficient evidence to express an opinion or provide any assurance.

Supplementary Information

Our audit was conducted for the purpose of forming opinions on the financial statements that collectively comprise the Holyoke Gas and Electric's financial statements. The supplementary information as listed in the table of contents is presented for purposes of additional analysis and is not a required part of the financial statements. Such information is the responsibility of management and was derived from and relates directly to the underlying accounting and other records used to prepare the financial statements. The information has been subjected to the auditing procedures applied in the audit of the financial statements and certain additional procedures, including comparing and reconciling such information directly to the underlying accounting and other records used to prepare the financial statements or to the financial statements themselves, and other additional procedures in accordance with auditing standards generally accepted in the United States of America. In our opinion, the supplementary information is fairly stated in all material respects, in relation to the financial statements as a whole.

Baker Tilly US, LLP

Madison, Wisconsin
April 29, 2022

Management’s Discussion and Analysis

The management of Holyoke Gas & Electric (HG&E) offers all persons interested in the financial position of the utility this narrative overview and analysis of the utility's financial performance during the years ending December 31, 2021, 2020 and 2019. You are invited to read this narrative in conjunction with the utility's financial statements.

Financial Highlights

Operating Revenue

- Operating revenues for the utility increased by $663,802, or 1%, in 2021.

- Electric operating revenues increased by $4,180,940, or 8.4% percent as a result of 2021 rate increases, new cannabis load and business/municipal offices reopening after the COVID-19 shutdown. Residential, commercial and municipal sales were up over 2020 (4.14%, 15.82% and 13.17% respectively) while industrial sales were down 1.77% from 2020.

- Gas operating revenues increased by $2,337,701, or 11%. The increase in gas revenues was due to an overall colder winter in 2021 as well as the impacts of 2021 rate increases and a higher purchased gas adjustment (PGA). Unit (Mcf) sales were up 2% over 2020.

- As a result of the revenue increases in 2021, the Department made an election to defer $2.5M in 2021 electric operating revenues to the Department's rate stabilization reserve. The purpose of this stabilization reserve is to ensure that the Department's rates remain stable under various market conditions. This deferral offset the increases in 2021 operating revenue. In 2020, the Department utilized $3.4M in reserve funds to offset higher power supply costs.

Fuel Cost

- Fuel costs increased by $644,209 or 2% in 2021.

- Electric fuel expenses decreased by $1,077,432 or 5%. The decrease was a result of lower purchased power costs as a result of higher hydro generation in 2021 at a higher average price which offset a higher load during the year.

- Gas fuel expenses increased by $1,721,641 or 21%. The increase is a result of higher pipeline fuel prices during 2021.

Non-Fuel Cost

- Non-fuel expenses decreased by $3,460,178 or 12%, in 2021. The non-fuel decrease from 2020 was primarily due to a $3,423,917 or 63% decrease in the Department's actuarially calculated pension expense.

- Depreciation expense increased by $67,395 or 1% in 2021 as a result of ongoing capital improvement and replacement projects undertaken by the Department.

Other Revenue

- Other revenues decreased by $742,386, or 20% in 2021 due to the performance of the Department's investment portfolios. Market performance in 2021 resulted in overall investment gains of $5,687,902 compared with higher investment gains of $6,444,173 in 2020.

Net Position

- The Departments' total net position increased by $12,735,548 in 2021 from the combined activities of HG&E, Holyoke Solar Cooperative, and the Massachusetts Clean Energy Cooperative. This increase was due to overall strong operating results combined with the continued strong performance of Department's investment accounts during 2021.

2021 MCECC Bond Issue

- In 2021 the Department issued $69,040,000 in taxable revenue bonds through the Massachusetts Clean Energy Corporation (Clean Energy Coop), a component unit of the Department. $57,970,000 of the bond proceeds were used to advance refund existing bonds at a lower interest rate and $11,070,000 was issued to pay for rehabilitation of the Hadley Falls facility, Unit #2.

Overview of the Financial Statements/Using This Report

The HG&E Commission is a three member board comprised of three local citizens. Nominated by the mayor and approved by the city council, each member has a six year term when approved. One member comes up for re-appointment every two years on a rotating schedule. HG&E provides Electric, Gas and Telecommunications services to the City of Holyoke.

The gas division has a distribution system that covers the City and the eastern portion of Southampton, Massachusetts. There are approximately 12,000 meters and 185 miles of main pipes. The division also operates a liquefied natural gas plant that is used to meet peak demand during the winter months. In addition to these services, gas and electric appliance repair is offered to customers.

The electric division operates and maintains five substations, 160+ miles of pole lines, 46+ miles of underground distribution, 9.25 miles of overhead transmission, 2,464 transformers and 4,158 streetlights. There are approximately 18,000 electric customers.

HG&E also owns and operates over 50 MW of hydro-electric generation capacity within the City of Holyoke. The Holyoke Gas & Electric hydroelectric system, including the Hadley Falls Dam and the Holyoke Canal hydro facilities, generated a total of 259,424 MWh of net generation which continued to help drive down the overall cost of power.

The Department is a member of the Massachusetts Municipal Wholesale Electric Company (MMWEC), a public corporation and a political subdivision of the Commonwealth of Massachusetts. Through MMWEC, HG&E has partial ownership (entitlements) to the following projects; Stony Brook Peaking Unit, Millstone Unit # 3 and Seabrook Nuclear Power Station.

In addition to offering some of the lowest electric rates in the Commonwealth, in 2021, 55.95 % of HG&E's electricity sold at retail was renewable and 94.97 % of HG&E's electricity sold at retail is considered carbon free.

Other

Please refer to the table of contents for the various sections included in this report. The utility is a self-supporting entity and follows enterprise fund reporting; accordingly, the financial statements are presented using the economic resources measurement focus and the accrual basis of accounting. Enterprise fund statements offer short- and long-term financial information about the activities and operations of the utility.

- The Statement of Net Position includes all of the utility's assets, deferred outflows of resources, liabilities, and deferred inflows of resources and provides information about the nature and amount of investments in resources and the obligations to creditors. This statement provides the basis for evaluating the capital structure and assessing the liquidity and financial flexibility of the utility.

- The Statements of Revenues, Expenses, and Changes in Net Position provide an indication of the utility's financial health.

- The Statements of Cash Flows report the cash provided and used by operating activities, as well as other cash sources such as investment income and cash payments for repayment of bonds and capital additions.

Utility Financial Analysis

An analysis of the utility's financial position begins with a review of the Statements of Net Position, and the Statements of Revenues, Expenses and Changes in Net Position report information. These two statements report the utility's net position and changes therein. The utility's net position, the difference between assets, deferred outflows of resources, liabilities, and deferred inflows of resources, is key to measuring the financial health of the utility. Over time, increases or decreases in the net position value are an indicator of whether the financial position is improving or deteriorating. However, it should be noted that the financial position can also be affected by other non-financial factors, including economic conditions, customer growth, climate conditions and new regulations.

A summary of the utility's Statements of Net Position is presented below in Table 1.

Table 1
Condensed Statements of Net Position

	2021	2020	2019
Current and Other Assets	$ 122,971,327	$ 107,152,462	$ 103,767,689
Capital Assets	167,735,728	165,901,737	165,826,054
TOTAL ASSETS	290,707,055	273,054,199	269,593,743
DEFERRED OUTFLOWS OF RESOURCES	7,451,056	9,306,976	12,860,608
Long-term Debt Outstanding	83,958,308	79,746,222	85,406,296
Other Liabilities	38,134,177	48,683,635	55,469,067
TOTAL LIABILITIES	122,092,485	128,429,857	140,875,363
DEFERRED INFLOWS OF RESOURCES	56,611,377	47,212,617	44,896,040
Net Investment in Capital Assets	98,917,924	93,140,978	87,911,628
Restricted for Debt Service	3,878,552	6,384,669	8,072,066
Restricted for OPEB	1,896,162	-	-
Unrestricted	14,761,611	7,193,054	726,254
TOTAL NET POSITION	$ 119,454,249	$ 106,718,701	$ 96,709,948

Current and other assets increased by $15,818,865 or 14.8% in 2021. $10,159,429 of that increase relates to the project fund for the Hadley Falls #2 rehabilitation that was established from the proceeds of the MCECC 2021 revenue bonds discussed in the financial highlights section. That project was started in 2021 and is expected to be complete in 2023. The remaining increase is attributable to increases in the Department's investment accounts as a result of both additional contributions of operating proceeds by the Department as well as increases in the market value of those investments. Additionally, in 2021, the Department recorded a net OPEB asset of $1,896,162 as a result of the plan being 109.29% funded as of December 31, 2021.

Net Capital assets increased by $1,833,991 or 1.11% in 2021. The Department continued with its aggressive capital improvement and replacement plan during 2021, investing $10,869,141 into capital. That increase, however, was offset by the recording of annual depreciation expense of $8,036,027 and the retirement of $876,752 in assets that were not yet fully depreciated as part of the Department's ongoing efforts to identify obsolete assets that are no longer in service.

Long-term debt outstanding increased by $4,212,086 or 5% in 2021 due to additional debt issued for the Hadley Falls unit #2 rehabilitation project, offset by scheduled debt repayments made during the year.

Other liabilities decreased by $10,549,458 or 21.67% in 2021 primarily due to a $9,680,508 decrease in the Department's actuarially determined net Pension and OPEB liabilities. Accrued interest payable also decreased as of 2021 due to the refinancing of the Department's existing bonds outstanding as part of the 2021 bond issue.

Table 2
Condensed Statement of Revenue, Expenses, and Changes in Net Position

	2021	2020	2019
OPERATING REVENUES	$ 74,439,506	$ 73,775,704	$ 72,821,541
OPERATING EXPENSES	63,435,648	66,184,213	64,462,824
Operating Income	11,003,858	7,591,491	8,358,717
OTHER REVENUES (EXPENSES)	2,925,842	3,668,228	6,946,087
Change in Net Position before Transfers	13,929,700	11,259,719	15,304,804
TRANSFERS	(1,194,152)	(1,250,966)	(1,080,522)
Change in Net Position	12,735,548	10,008,753	14,224,282
NET POSITION - Beginning of Year	106,718,701	96,709,948	82,485,666
NET POSITION - End of Year	$ 119,454,249	$ 106,718,701	$ 96,709,948

As previously noted, the Statement of Net Position shows the change in financial position. The specific nature or source of these changes then becomes more evident in the Statements of Revenues, Expenses and Changes in Net Position as shown above in Table 2.

During 2021, operating revenues increased $663,802 or 1%. This increase in revenue was due to a combination of higher electric and gas consumption for the year as well as 2021 rate increases. The overall increase in revenue was offset by an election to defer $2.5M in 2021 electric revenue to the Department's rate stabilization reserve.

Operating expenses decreased by $2,748,565 or 4.15% overall. This was due to decreased non fuel costs ($3,460,178) offset by increased fuel costs ($644,209) discussed in the financial highlights section.

The Departments' total net position increased by $12,735,548 in 2021 from the combined activities of HG&E, Holyoke Solar Cooperative, and the Massachusetts Clean Energy Cooperative discussed in more detail in the financial highlights section.

Table 3
Condensed Statements of Cash Flows

	2021	2020	2019
CASH FLOWS FROM OPERATING ACTIVITIES	$ 18,291,303	$ 11,763,524	$ 15,160,508
CASH FLOWS FROM INVESTING ACTIVITIES	6,676,522	7,577,856	10,287,902
NET CASH USED IN NONCAPITAL FINANCING ACTIVITIES	(1,194,152)	(1,250,966)	(1,080,522)
CASH FLOWS FROM CAPITAL AND RELATED FINANCING ACTIVITIES	(8,382,266)	(15,478,727)	(21,528,729)
Increase in Cash and Cash Equivalents	15,391,407	2,611,687	2,839,159
CASH AND CASH EQUIVALENTS - Beginning of Year	77,226,961	74,615,274	71,776,115
CASH AND CASH EQUIVALENTS - END OF YEAR	$ 92,618,368	$ 77,226,961	$ 74,615,274
NONCASH FINANCING ACTIVITY			
Bond proceeds used in refunding debt	$ 53,660,000	$ -	$ -
Loss on Retirement of Fixed Assets	$ 876,750	$ 220,461	$ 849,614
Amortization of Premium on Bonds Payable	$ 711,779	$ 810,815	$ 846,374

Cash flows from operating activities increased by $6,527,779, primarily because of an increase in cash received from customers, offset by a decrease in cash paid to suppliers. The increase in cash received from customers was a result of higher sales and a decrease in customer receivable balances during 2021. The Department had seen a rise in delinquent accounts during 2020 as a result of the pandemic but many of those balances were brought current in 2021 as businesses reopened and additional assistance programs became available to customers. Cash paid to suppliers decreased as a result of lower overall operating expenses in 2021.

Cash flows from investing activities decreased by $901,334. Investment income was lower in 2021 than 2020 as a result of market performance during the year.

Cash flows from capital and related financing activities increased by $7,096,461 in 2021. The increase is due to the proceeds received from the MCECC 2021 bond issue related to the Hadley Falls Unit #2 rehabilitation which were offset by payments on existing debt and ongoing capital investment by the Department.

Cash and cash equivalents increased by $15,391,407

Table 4
Capital Assets – Electric

Electric	2021	2020	2019
Capital Assets			
Land	$ 4,408,008	$ 4,405,918	$ 4,405,918
Plant, Property, and Equipment	216,903,146	213,017,345	210,185,015
TOTAL CAPITAL ASSETS	221,311,154	217,423,263	214,590,933
Construction Work in Progress	2,540,580	1,398,177	566,833
Less: Accumulated Depreciation	(86,192,046)	(81,128,271)	(76,350,857)
NET CAPITAL ASSETS - ELECTRIC	$ 137,659,688	$ 137,693,169	$ 138,806,909

Electric plant, property and equipment increased by $3,885,801 or 2% in 2021 as a result of ongoing replacements of the electric division's substation, transmission and distribution infrastructure.

Construction work in progress increased by $1,142,403 primarily due the ongoing work related to the rehabilitation of Hadley Falls unit #2.

Table 5
Capital Assets – Gas

Gas	2021	2020	2019
Capital Assets			
Land	$ 236,856	$ 236,856	$ 214,304
Plant, Property, and Equipment	61,201,760	58,215,845	56,695,316
TOTAL CAPITAL ASSETS	61,438,616	58,452,701	56,909,620
Construction Work in Progress	1,028,895	900,057	143,880
Less: Accumulated Depreciation	(32,391,471)	(31,144,190)	(30,034,355)
NET CAPITAL ASSETS - GAS	$ 30,076,040	$ 28,208,568	$ 27,019,145

Gas plant, property and equipment increased by $2,985,915 or 5% in 2021 due to ongoing replacements of bare steel and cast iron services and mains. There was also an increase in service replacements in 2021 as the gas division was unable to complete all planned service replacements in 2020 due to the pandemic.

Further details on capital assets are included in Note 3.

Long-Term Debt

As of December 31, 2021, Holyoke Gas & Electric had $69,040,000 in bonds payable as well as $14,918,308 in notes payable. Bond payable increased by $10,400,000 due to the new debt issued as for the Hadley Unit #2 rehabilitation. Notes payable decreased by $685,425 as a result of scheduled debt payments during the year.

Details of the existing debt are included in Note 7.

Currently Known Facts/Economic Conditions

HG&E continues its aggressive maintenance and capital improvement program to upgrade its infrastructure in order to maintain system reliability performance objectives for all facets of the operation.

Contacting Utility's Financial Management

This financial report is designed to provide our customers, investors and creditors with a general overview of the Utility’s finances. If you have questions about this report, or need additional financial information, contact Holyoke Gas & Electric Department at 99 Suffolk St, Holyoke Massachusetts 01040 or (413) 536 9300.

Holyoke Gas and Electric

Statements of Net Position

December 31, 2021 and 2020

	2021	2020
Assets		
Current Assets		
Cash and investments	$ 25,646,091	$ 21,638,639
Restricted assets:		
Redemption account	1,594,622	2,760,424
Customer accounts receivable, net	7,984,632	8,967,064
Note receivable, current portion	539,639	512,097
Materials and supplies	3,705,386	3,019,112
Fuel for electric generation and gas in storage	767,682	591,807
Prepaid expense	3,029,326	2,911,152
Other receivables	1,827,150	2,631,293
Total current assets	45,094,528	43,031,588
Noncurrent Assets		
Restricted assets:		
Accounts required under bond indenture/note payable	19,173,749	8,192,749
Net OPEB asset	1,896,162	-
Customers' deposits	2,009,756	1,602,639
Note receivable, after one year	6,368,897	6,908,536
Hi-Lite assistance loans	1,217,536	1,588,961
Other assets:		
Purchased power accounts	383,374	380,556
Rate stabilization accounts	45,173,643	44,491,344
Regulatory asset, debt issuance cost	717,159	-
Costs recoverable in future, pollution	84,800	37,700
Other investments	188,390	188,390
Intangible assets	663,333	729,999
Capital assets:		
Plant, property and equipment in service	282,749,770	275,875,964
Construction in progress	3,569,475	2,298,234
Total capital assets	286,319,245	278,174,198
Less accumulated depreciation	(118,583,517)	(112,272,461)
Net capital assets	167,735,728	165,901,737
Total noncurrent assets	245,612,527	230,022,611
Total assets	290,707,055	273,054,199
Deferred Outflows of Resources		
OPEB related amounts	286,616	403,079
Pension related amounts	7,164,440	8,903,897
Total deferred outflows of resources	7,451,056	9,306,976

See notes to financial statements

Holyoke Gas and Electric

Statements of Net Position
December 31, 2021 and 2020

	2021	2020
Liabilities		
Current Liabilities		
Accounts payable	$ 5,982,205	$ 6,098,235
Accrued liabilities	589,331	667,532
Current portion, accrued compensated absences	367,561	429,982
Accrued environmental costs	114,800	67,700
Liabilities payable from restricted assets:		
Current portion, leases, bonds and notes payable	6,494,892	4,830,904
Customers' deposits	1,618,089	1,290,386
Accrued interest	101,009	1,242,600
Total current labilities	15,267,887	14,627,339
Long-Term Liabilities and Credits		
Bonds payable, long-term	63,530,000	54,710,000
Premium on bonds payable	-	5,502,488
Bonds payable, net	63,530,000	60,212,488
Notes payable, long-term	13,933,416	14,702,830
Accrued compensated absences	3,695,819	3,426,592
Net OPEB liability	-	2,700,503
Unearned revenue	2,671,343	2,782,163
Reserve fund for note receivable	144,374	148,291
Net pension liability	22,849,646	29,829,651
Total long-term liabilities and credits	106,824,598	113,802,518
Total liabilities	122,092,485	128,429,857
Deferred Inflows of Resources		
Regulatory deferral	4,231,257	3,366,251
Gain on refunding on debt	1,476,837	-
Pension related amounts	7,627,060	4,343,415
OPEB related amounts	2,861,214	1,587,942
Rate stabilization reserve	40,415,009	37,915,009
Total deferred inflows of resources	56,611,377	47,212,617
Net Position		
Net investment in capital assets	98,917,924	93,140,978
Restricted for debt service	3,878,552	6,384,669
Restricted for OPEB	1,896,162	-
Unrestricted	14,761,611	7,193,054
Total net position	$ 119,454,249	$ 106,718,701

See notes to financial statements

Holyoke Gas and Electric

Statements of Revenues, Expenses and Changes in Net Position
Years Ended December 31, 2021 and 2020

	2021	2020
Operating Revenues		
Gas charges for service	$ 22,709,742	$ 20,372,041
Electric and telecommunications charges for service	54,229,764	50,048,824
Rate stabilization funds(deferred)/utilized in the current period	(2,500,000)	3,354,839
Total operating revenues	74,439,506	73,775,704
Operating Expenses		
Gas operation and maintenance	18,130,598	17,640,543
Depreciation, gas plant and equipment	1,737,168	1,706,839
Total gas operating expenses	19,867,766	19,347,382
Electric and telecommunications operation and maintenance	37,269,023	40,575,038
Depreciation, electric and telecom plant and equipment	6,298,859	6,261,793
Total electric and telecommunications operating expenses	43,567,882	46,836,831
Total operating expenses	63,435,648	66,184,213
Operating Income		
Gas	2,841,976	1,024,659
Electric and telecommunications	8,161,882	6,566,832
Total operating income	11,003,858	7,591,491
Other Revenues (Expenses)		
Investment income, net of fees	3,520,112	2,751,503
Net gain (loss) on investments	2,167,790	3,692,671
Interest expense	(2,278,245)	(2,750,949)
Miscellaneous income (expense)	1,156,699	747,388
Amortization of intangible assets	(66,667)	(66,667)
Net gain (loss), plant retirements	(1,457,019)	(634,491)
Net gain (loss), merchandise jobbing	(25,888)	9,440
Taxes, other	(90,940)	(80,667)
Total other revenues (expenses)	2,925,842	3,668,228
Change in net position before transfers	13,929,700	11,259,719
Transfers		
Payment in lieu of taxes, City of Holyoke	(1,194,152)	(1,250,966)
Change in net position	12,735,548	10,008,753
Net Position, Beginning	106,718,701	96,709,948
Net Position, Ending	$ 119,454,249	$ 106,718,701

See notes to financial statements

Holyoke Gas and Electric

Statements of Cash Flows
Years Ended December 31, 2021 and 2020

	2021	2020
Cash Flows From Operating Activities		
Cash received from customers	$ 80,024,073	$ 68,633,896
Cash paid to suppliers	(45,105,779)	(40,662,277)
Cash paid to employees	(16,626,991)	(16,208,095)
Net cash flows from operating activities	18,291,303	11,763,524
Cash Flows From Investing Activities		
Proceeds from sale of investments	615,214	688,797
Purchase of investments	(138,691)	(41,076)
Investment income (loss), net of fees	5,687,902	6,444,174
Repayments on notes receivable	512,097	485,961
Net cash flows from investing activities	6,676,522	7,577,856
Cash Flows From Noncapital Financing Activities		
Payment in lieu of taxes and other property taxes	(1,194,152)	(1,250,966)
Net cash flows from noncapital financing activities	(1,194,152)	(1,250,966)
Cash Flows From Capital and Related Financing Activities		
Net investment in plant, property and equipment	(10,752,728)	(7,086,138)
Proceeds from debt issued	11,662,459	-
Debt issuance costs	(179,000)	-
Payments on bonds and notes payable	(5,925,507)	(4,806,771)
Interest paid on bonds, notes and leases payable	(3,187,490)	(3,585,818)
Net cash flows from capital and related financing activities	(8,382,266)	(15,478,727)
Increase in cash and cash equivalents	15,391,407	2,611,687
Cash and Cash Equivalents, Beginning	77,226,961	74,615,274
Cash and Cash Equivalents, Ending	$ 92,618,368	$ 77,226,961
Supplemental Noncash Financing Activity		
Bond proceeds used in refunding of debt	$ 53,660,000	$ -
Loss on retirement of fixed assets	$ 876,750	$ 220,461
Amortization of premium on bonds payable	$ 711,779	$ 810,815

See notes to financial statements

Holyoke Gas and Electric

Statements of Cash Flows
Years Ended December 31, 2021 and 2020

	2021	2020
Schedule of Reconciliation of Operating Income to Net Cash Provided by Operating Activities		
Operating income	$ 11,003,858	$ 7,591,491
Adjustments to reconcile operating income to net cash provided by operating activities:		
Depreciation	8,036,027	7,968,632
Amortization of regulatory deferral	101,739	37,782
Nonoperation Income	973,204	609,495
Changes in operating assets and liabilities:		
(Increase) decrease in:		
Accounts receivable	982,432	(1,581,882)
Materials and supplies	(686,274)	207,291
Fuel for electric generation and gas in storage	(175,875)	142,845
Prepaid expense	(118,166)	111,537
Other receivables	449,683	(969,824)
Hi-Lite assistance and Constellation loans	371,425	64,888
Accounts payable	651,620	1,447,132
Customers' deposits	327,703	99,178
Accrued liabilities	(1,121,946)	(464,880)
Accrued compensated absences	206,806	292,134
Rate stabilization related deferrals	2,500,000	(3,354,840)
Pension and OPEB related deferrals and liabilities	(5,163,833)	(519,755)
Accrued environmental costs	(47,100)	82,300
Total adjustments	7,287,445	4,172,033
Net cash provided by operating activities	18,291,303	11,763,524
Reconciliation of Cash and Cash Equivalents to the Statements of Net Position		
Cash and investments	25,646,091	21,638,639
Redemption account	1,594,622	2,760,424
Accounts required under bond indenture/note payable	19,173,749	8,192,749
Customer deposits	2,009,756	1,602,639
Purchased power accounts	383,374	380,556
Rate stabilization accounts	45,173,643	44,491,344
Other investments	188,390	188,390
Total cash and investments	94,169,625	79,254,741
Less noncash equivalents	(1,551,257)	(2,027,780)
Cash and cash equivalents	$ 92,618,368	$ 77,226,961

See notes to financial statements

Holyoke Gas and Electric OPEB Trust

Statements of Fiduciary Net Position - Fiduciary Fund
December 31, 2021 and 2020

	2021	2020
Assets		
Noncurrent Assets		
Investments	$ 22,303,231	$ 17,141,692
Total assets	$ 22,303,231	$ 17,141,692
Net Position		
Net Position Restricted for OPEB	$ 22,303,231	$ 17,141,692

See notes to financial statements

Holyoke Gas and Electric OPEB Trust

Statements of Changes in Fiduciary Net Position - Fiduciary Fund
Years Ended December 31, 2021 and 2020

	2021	2020
Additions		
Employer contributions	$ 2,820,251	$ 2,118,769
Investment income (loss)	2,411,103	1,792,024
Employee contributions, direct payment of member benefits	403,490	406,537
Employer contributions, direct payment of member benefits	575,849	589,998
Total additions	6,210,693	4,907,328
Deductions		
Benefit payments, including refunds of member contributions	979,339	996,535
Advisory fees	69,815	49,907
Total deductions	1,049,154	1,046,442
Net increase in net position	5,161,539	3,860,886
Net Position, Beginning	17,141,692	13,280,806
Net Position, Ending	$ 22,303,231	$ 17,141,692

See notes to financial statements

1. Summary of Significant Accounting Policies

The accounting policies of Holyoke Gas and Electric (Department) conform to accounting principles generally accepted in the United States of America as applicable to governmental units. The accepted standard-setting body for establishing governmental accounting and financial reporting principles is the Governmental Accounting Standards Board (GASB).

Reporting Entity

The financial statements present information on the activities of the Department, an enterprise fund of the City of Holyoke, Massachusetts (the City) and its component units, Holyoke Solar Cooperative and Massachusetts Clean Energy Cooperative Corporation.

The Department provides gas, electric, hydro and telecommunications services to its customers, substantially all of whom are local residents and commercial and industrial businesses. Approximately 69% and 71% of the Department's revenues were derived from its electric division in 2021 and 2020, respectively.

Blended Component Units

The Holyoke Solar Cooperative (Solar Coop) is a cooperative organized in Massachusetts, in December 2010 and is owned by the Department (its original Member). Solar Coop engages in transactions associated with the purchase, acquisition, distribution, sale, resale, supply and disposition of energy or energy-related services to wholesale or retail customers. The Solar Coop is included in the enterprise fund. The Solar Coop does not issue separate financial statements.

The Massachusetts Clean Energy Cooperative Corporation (Clean Energy Coop) was organized in Massachusetts, in March 2013. The initial members are the Department and the Massachusetts Municipal Wholesale Electric Company (MMWEC). The business of the Clean Energy Coop is managed by the board of directors, a majority of which consist of members of the Department's management or Commission. The Clean Energy Coop was formed to finance, purchase, own, lease or otherwise acquire, hold and use property; transact any business associated with the property; and the purchase, acquisition, generation, transformation, distribution, sale, resale, supply and provision of energy and telecommunications products and services, which will include, but is not limited to, the purchase and sale of the electrical capacity of the Hadley Falls Station hydroelectric generator unit #1 and #2 in Holyoke. The Clean Energy Coop is included in the enterprise fund. Separately issued financial statements of the Clean Energy Coop may be obtained from the Department's office.

The Cooperatives are organized under Chapters 157 and 164: Section 47C of the State of Massachusetts Statutes and are subject to the same federal and state laws and regulations applicable to municipal lighting plants or other public entities that provide those services.

All intercompany account balances and transactions have been eliminated in the basic financial statements.

Other Post-Employment Benefit (OPEB) Trust

The OPEB Trust fund is a fiduciary fund that is used to account for and report resources that are required to be held in trust for the members and beneficiaries of the OPEB plan. The OPEB Trust was established in October 2014.

Rate Regulation

The rates of the Department are approved by the Department's Board of Commissioners. Rate schedules are filed with the Massachusetts Department of Public Utilities (DPU). While the DPU exercises general supervisory authority over the Department, the rates are not subject to DPU approval.

Measurement Focus, Basis of Accounting and Financial Statement Presentation

The Department is presented as an enterprise and fiduciary fund of the City. Enterprise and fiduciary funds are used to account for operations that are financed and operated in a manner similar to private business or when the governing body has decided that the determination of revenues earned, costs, incurred and net income is necessary for management accountability. The OPEB trust fund is used to report resources that are held in trust by the Department for the members and beneficiaries of the defined benefit postemployment welfare plan. The financial statements have been presented using the economic resources measurement focus and the accrual basis of accounting. Under the accrual basis, revenues are recognized when earned and expenses are recorded when an obligation has been incurred.

Use of Estimates

The preparation of consolidated financial statements in conformity with accounting principles generally accepted in the United States of America requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the consolidated financial statements and the reported amounts of revenues and expenses during the reporting period. Actual results could differ from those estimates.

Assets, Deferred Outflows of Resources, Liabilities, Deferred Inflows of Resources and Net Position

Deposits and Investments

Cash and Cash Equivalents

For purposes of the statement of cash flows, the Department, and OPEB trust, considers all highly liquid investments with an initial maturity of three months or less when acquired to be cash equivalents.

Investments

Investments totaling $20,390 represent the cost of the Department's equity in New England HydroTransmission Corporation and New England Hydro-Transmission Electric Company. These investments represent 0.2653% (percent) of the issued common stock of these untraded companies. In addition, the Department has invested $168,000 with the Public Utility Mutual Insurance Company (PUMIC). See Note 13 for additional information related to PUMIC. These investments are carried at original cost.

Investments in debt and equity securities are recorded at fair value (See Note 2).

Investments of the fiduciary fund are limited to investing in assets as a prudent investor would, by considering purposes, terms, distribution requirements and other circumstances of the trust.

Restricted Assets

Mandatory segregations of assets are presented as restricted assets. Such segregations are required by bond agreements and other external parties. Current liabilities payable from these restricted assets are so classified.

Designated Accounts

Purchased power funds are on deposit with Massachusetts Municipal Wholesale Electric Company (MMWEC) to pay for energy and related services as required under existing agreements.

The Department established a rate stabilization reserve which will be used for rate stabilization in the development of future rates and allow the Department to remain competitive under various market conditions by either purchasing replacement power or using reserves to mitigate the Department's exposure. Each year the Department determines the amount to be charged or credited to the reserve. The Department has set aside funds which will be used to offset these reserves. The reserve balances at December 31, 2021 and 2020 are $40,415,009 and $37,915,009, respectively and are reported as deferred inflows of resources. In 2021 and 2020, the Department credited and charged a balance of $2,500,000 and 3,354,839, respectively.

Accounts Receivable

Accounts receivable are stated net of an allowance for uncollectible accounts of $749,267 at December 31, 2021 and 2020. Management provides for probable uncollectible amounts through a charge to earnings and a credit to the valuation allowance based on its collection history and its assessment of the current status of individual accounts. Balances that are still outstanding after management has used reasonable collection efforts are written off through a charge to the valuation allowance and a credit to accounts receivable.

Hi-Lite Assistance Loans

Hi-Lite assistance loans are receivables from residential and commercial customers for loans used to make energy efficient improvements to their property, secured by municipal liens. Loan amounts and terms vary based on the project type but are generally 3 to 5 years with 0% interest.

Materials, Supplies and Fuel

Materials, supplies and fuel are valued at the lower of cost or market utilizing the average cost method. All materials are intended to be used in operations and are not intended for resale.

Prepaid Expense

Certain payments to vendors reflect costs applicable to future accounting periods and are recorded as prepaid items. This includes the purchase of prepaid power.

Plant, Property and Equipment

Capital assets are generally defined as assets with an initial, individual cost of more than $5,000 and an estimated useful life in excess of five years. Additions to and replacements of plant, property and equipment are recorded at cost or the estimated acquisition value at the time of contribution. The cost of plant, property and equipment retired, less accumulated depreciation and salvage, is charged against revenue in the year retired. The cost of repairs and minor renewals is charged to maintenance expense.

Intangible Assets

Intangible assets are recorded at cost. Intangible assets subject to amortization include a franchise area fee to sell the electrical output associated with the December 2001 hydroelectric project purchase. Franchise fees are being amortized on a straight-line basis over the remaining lives of the respective licenses.

Line of Credit, Margin Credit Account

The Department is able to draw funds through the use of a margin account with their investment advisor. The investments held in the Department's investment account with their investment advisor are considered collateral for the borrowing. If the investments in the margin account decline in value, so does the value of the collateral supporting the borrowing and, as a result, the investment advisor may take action, such as issue a margin call or sell investments or other assets held in any of the Department's accounts held with the investment advisor. These funds received are recorded as a current liability and the subsequent investment as a restricted asset. In 2020 the Department paid off the margin account resulting in a zero balance as of December 31, 2021 and 2020. The margin line of credit is still open and available for the Department to use in the future.

Environmental Matters

Expenditures that result from the remediation of an existing condition caused by past operations and that do not contribute to current or future revenues are expensed. Liabilities are recognized for remedial activities when the cleanup is probable and the cost can be reasonably estimated. A related asset for pollution costs recoverable in future has been recorded according to the General Standards of Accounting for the Effects of Regulation included in GASB Statement No. 62 *Codification of Accounting and Financial Reporting Guidance Contained in Pre- November 30, 1989 FASB and AICPA Pronouncements.*

Pensions

For purposes of measuring the net pension liability and deferred outflows of resources related to pensions and pension expense, information about the fiduciary net position of the City of Holyoke Retirement System (the Plan) and additions to/deductions from the Plan's fiduciary net position have been determined on the same basis as they are reported by the Plan. For this purpose, benefit payments (including refunds of employee contributions) are recognized when due and payable in accordance with the benefit terms, investments are reported at fair value.

Net OPEB Liability (Asset)

For purposes of measuring the net OPEB liability (asset), deferred outflows and inflow of resources related to OPEB and OPEB expense, information about the fiduciary net position of the City of Holyoke's OPEB Plan (the Plan) administered to Department employees through the Department's Trust and additions to/deductions from the Plan's fiduciary net position have been determined on the same basis as they are reported by the Plan. For this purpose, the Plan recognizes benefit payments when due and payable in accordance with the benefit terms. Investments are reported at fair value.

Deferred Outflow of Resources

A deferred outflow of resources represents a consumption of net position that applies to a future period and will not be recognized as an outflow of resources (expense) until that future time.

Energy Tax

The Department is required to collect, on behalf of the State of Massachusetts, an energy tax based on 6.25% of gross sales to its commercial customers. The Department's policy is to exclude these energy taxes from revenue when collected and expenses when paid and instead, record the collection and payment of energy taxes through a liability account.

Compensated Absences

Substantially all employees receive compensation for vacations, holidays, illness and certain other qualifying absences. The number of days compensated in the various categories of absence is based generally on length of services. Compensated absences, which have been earned but not paid, have been accrued in the accompanying consolidated financial statements, based on current rates of pay.

Long-Term Obligations

Long-term debt and other obligations are reported as liabilities. Bond premiums, issuance costs, and gains/losses on bond refunding are being amortized using the effective-interest method over the lives of the bonds. The balance at year-end for premiums is shown as an increase in the liability section of the statement of net position. The Department uses regulatory accounting to defer and amortize issuance costs in a manner similar to how they will be recovered in rates.

Unearned Revenues

In prior years, the Department collected charges from customers that will be used to pay for future pollution remediation costs. In the event that fees collected are in excess of actual pollution remediation costs, these charges may require refunds to customers and are therefore classified as a liability on the statement of net position. The Department stopped collecting charges from customers on January 1, 2019 as management believes the amounts collected to date are sufficient to cover future pollution remediation costs.

Regulatory Deferral

Regulatory deferral amounts represent reimbursements on infrastructure projects and customer/developer contributions that will be depreciated and recognized as revenue in matching amounts over future periods.

Deferred Inflows of Resources

A deferred inflow of resources represents an acquisition of net position that applies to a future period and, therefore, will not be recognized as an inflow of resources (revenue) until that future time. Rate stabilization reserves are reported as deferred inflows of resources for regulated business-type activities.

Net Position

The difference between assets, deferred outflows of resources, liabilities and deferred inflows of resources is net position. There are three components of net position: net investment in capital assets, restricted and unrestricted.

Net investment in capital assets consists of capital assets, less accumulated depreciation, reduced by the outstanding balances of any bonds, mortgages, notes or other borrowings that are attributable to the acquisition, construction or improvement of those assets.

Net position is restricted when constraints placed on its use are either: (1) externally imposed by creditors [such as through debt covenants], grantors, contributors or laws or regulations of other governments; or (2) imposed by law through constitutional provisions or enabling legislation. The Department's restricted net position as of December 31, 2021 and 2020 is related to the bond debt fund requirements, collateral required under note payable and funds reserved for payments on note receivable.

Unrestricted net position represents the net amount of assets and liabilities that are not invested in property, plant and equipment or restricted for debt service.

When both restricted and unrestricted resources are available for use, it is the Department's policy to use restricted resources first, then unrestricted resources as they are needed.

Revenues and Expenses

Revenue Recognition

The Department distinguishes operating revenues and expenses from nonoperating items. Operating revenues and expenses generally result from providing services and producing and delivering goods in connection with the Department's principal ongoing operations. The principal operating revenues of the Department are charges to customers for sales and services. Operating expenses for an enterprise fund includes the cost of sales and services, administrative expenses and depreciation on capital assets. All revenues and expenses not making this definition are reported as nonoperating revenues and expenses.

Operating revenues are recognized on the basis of cycle billings rendered monthly, net of discounts. Revenues are not accrued for services delivered beyond such cycle billing dates.

Discounts reported for the year ended December 31, 2021 and 2020 that have directly reduced operating revenue in the statement of revenue, expenses and changes in net position are as follows:

	2021	2020
Gas	$ 2,164,158	$ 1,954,291
Electric	4,471,639	3,889,456
Total	$ 6,635,797	$ 5,843,747

Expense Allocation

Expenses associated with a particular division of the Department are charged to that division. For the years ended December 31, 2021 and 2020, shared expenses including administrative and supporting costs are allocated to each division as follows:

Gas	35.0 %
Electric and telecommunications	65.0 %

Depreciation

Depreciation is recorded on a straight-line basis using an annual rate of 3% of depreciable plant, property and equipment in service. The rate is in accordance with Massachusetts Department of Public Utilities regulations.

Effect of New Accounting Standards on Current Period Financial Statements

GASB has approved GASB Statement No. 87, *Leases*, Statement No. 91, *Conduit Debt Obligations*, Statement No.92, *Omnibus 2020*, Statement No. 94, *Public-Private and Public-Public Partnerships and Availability Payment Arrangements*, Statement No. 96, *Subscription-Based Information Technology Arrangements* and Statement No. 97, *Certain Component Units Criteria and Accounting and Financial Reporting For Internal Revenue Code Section 457 Deferred Compensation Plans – An Amendment of GASB Statements No. 14 and No. 84 and a Supersession of GASB Statement No. 32*.

When they become effective, application of these standards may restate portions of these financial statements.

Comparative Data

Certain amounts presented in the prior year data may have been reclassified in order to be consistent with the current year's presentation.

2. Deposits and Investments

The Department participates in a cash and investment pool maintained by the city. In addition, the Department holds certain cash separately from the pool.

Custody and use of restricted assets are subject to requirements and restrictions imposed under contractual agreements, bond indentures and the General Laws of the Commonwealth of Massachusetts and are not available for normal operating purposes. Postemployment benefit funds have been segregated by the Department to cover certain healthcare and life insurance benefits (See Note 10).

The Department invests various funds in debt and equity securities held by Flynn Financial Partners Ltd. and US Bank. All investments must be made in securities or deposits as authorized by Massachusetts General Laws, Chapter 44, Sections 54, 55 and 55B. Investments are stated at fair value.

The Department's deposits and investments as of December 31, 2021 were comprised of the following:

	Statement Balances	Carrying Value	Associated Risks
Demand deposits	$ 7,892,788	$ 5,740,487	Custodial credit risk
U.S. agencies, implicitly guaranteed	1,188,543	1,188,543	Credit risk, custodial credit risk, interest rate risk, concentration of credit risk
Mutual funds, bond funds	21,351,959	21,351,959	Credit risk, interest rate risk
Mutual funds, other than bond funds	65,525,920	65,525,920	N/A
Certificates of deposit (CD), negotiable	224,024	224,024	Credit risk, custodial credit risk, interest rate risk
State and local bonds	138,691	138,691	Custodial credit risk, credit risk, interest rate risk, concentration of credit risk
Total, Department	96,321,925	94,169,624	
OPEB Trust, demand deposits	21,454	21,454	Custodial credit risk
OPEB Trust, mutual funds, bond funds	1,300,539	1,300,539	Credit risk, Interest rate risk
OPEB Trust, mutual funds, other than bond funds	20,981,238	20,981,239	N/A
Total OPEB Trust	22,303,231	22,303,232	
Grand total	$ 118,625,156	$ 116,472,856	

Reconciliation to statement of net position:	
Cash and investments	$ 25,646,091
Redemption account	1,594,622
Accounts required under bond indenture/notes payable	19,173,749
Customer deposits	2,009,756
Purchased power accounts	383,374
Rate stabilization accounts	45,173,643
Other investments	188,390
OPEB Trust, statement of fiduciary net position (separate financial statement)	22,303,231
Total	$ 116,472,856

The Department's deposits and investments at as of December 31, 2020 were comprised of the following:

	Statement Balances	Carrying Value	Associated Risks
Demand deposits	$ 12,451,152	$ 12,389,095	Custodial credit risk
U.S. agencies, implicitly guaranteed	1,519,184	1,519,184	Credit risk, custodial credit risk, interest rate risk, concentration of credit risk
Mutual funds, bond funds	5,522,855	5,522,855	Credit risk, interest rate risk
Mutual funds, other than bond funds	59,503,400	59,503,400	N/A
Certificates of deposit (CD), negotiable	320,207	320,207	Credit risk, custodial credit risk, interest rate risk
Total, Department	79,316,798	79,254,741	
OPEB Trust, demand deposits	31	31	Custodial credit risk
OPEB Trust, mutual funds, bond funds	1,188,219	1,188,219	Credit risk, Interest rate risk
OPEB Trust, mutual funds, other than bond funds	15,953,442	15,953,442	N/A
Total OPEB Trust	17,141,692	17,141,692	
Grand total	$ 96,458,490	$ 96,396,433	

Reconciliation to statement of net position:	
Cash and investments	$ 21,638,639
Redemption account	2,760,424
Accounts required under bond indenture/notes payable	8,192,749
Customer deposits	1,602,639
Purchased power accounts	380,556
Rate stabilization accounts	44,491,344
Other investments	188,390
OPEB Trust, statement of fiduciary net position (separate financial statement)	17,141,692
Total	$ 96,396,433

Deposits in each local and area bank are insured by the FDIC in the amount of $250,000 for time and savings accounts (including NOW accounts) and $250,000 for demand deposit accounts (interest-bearing and noninterest-bearing). In addition, if deposits are held in an institution outside of the state in which the government is located, insured amounts are further limited to a total of $250,000 for the combined amount of all deposit accounts.

The Securities Investor Protection Corporation (SIPC), created by the Securities Investor Protection Act of 1970, is an independent government-sponsored corporation (not an agency of the U.S. government).

SIPC membership provides account protection up to a maximum of $500,000 per customer, of which $100,000 may be in cash. $500,000 of the Department's investments and $500,000 of the OPEB Trust investments are covered by SIPC. Additionally, through Lloyds of London, accounts have securities coverage subject to a $600 million aggregate firm limit. Coverage limits per customer are not available. The value of investments subject to Lloyds of London coverage was $1,147,713 in 2021 and $855,699 in 2020 for the Department; $0 in 2021 and 2020 for the OPEB trust.

Fair Value

The Department categorizes its fair value measurements within the fair value hierarchy established by generally accepted accounting principles. The hierarchy is based on the valuation inputs used to measure the fair value of the asset. Level 1 inputs are quoted prices in active markets for identical assets; Level 2 inputs are significant other observable inputs; Level 3 inputs are significant unobservable inputs.

The valuation methods for recurring fair value measurements as of December 31, 2021 and 2020 are as follows:

- Institutional bond quotes for U.S. government agency securities and state and local bonds
- Quoted market prices for identical assets for mutual funds, bond funds and mutual funds, other than bond funds
- Quoted market prices for similar assets for certificates of deposits

The valuation levels for investments held as of December 31, 2021 and 2020 are as follows:

	2021			
Investment Type	**Level 1**	**Level 2**	**Level 3**	**Total**
U.S. agencies, implicitly guaranteed	$ -	$ 1,188,543	$ -	$ 1,188,543
Mutual funds, bond funds	21,351,959	-	-	21,351,959
Mutual funds, other than bond funds	65,525,920	-	-	65,525,920
Certificate of deposit	-	224,024	-	224,024
State and local bonds		138,691		138,691
Total, HE	86,877,879	1,551,258	-	88,429,137
OPEB Trust, mutual funds, bond funds	1,300,539	-	-	1,300,539
OPEB Trust, mutual funds, other than bond funds	20,981,238	-	-	20,981,238
Total, OPEB Trust	22,281,777	-	-	22,281,777
Grand total	$ 109,159,656	$ 1,551,258	$ -	$ 110,710,914

Investment Type	Level 1	Level 2	Level 3	Total
U.S. agencies, implicitly guaranteed	$ -	$ 1,519,184	$ -	$ 1,519,184
Mutual funds, bond funds	5,522,855	-	-	5,522,855
Mutual funds, other than bond funds	59,503,400	-	-	59,503,400
Certificate of deposit	-	320,207	-	320,207
Total, HE	65,026,255	1,839,391	-	66,865,646
OPEB Trust, mutual funds, bond funds	1,188,219	-	-	1,188,219
OPEB Trust, mutual funds, other than bond funds	15,953,442	-	-	15,953,442
Total, OPEB Trust	17,141,661	-		17,141,661
Grand total	$ 82,167,916	$ 1,839,391	$ -	$ 84,007,307

Custodial Credit Risk

Deposits

Custodial credit risk is the risk that the Department's deposits may not be returned to the Department. Uninsured, uncollateralized, deposits subject to custodial credit risk were $6,420,564 in 2021 and $4,632,848 in 2020.

Investments

For an investment, custodial credit risk is the risk that, in the event of the failure of the counterparty, the Department will not be able to recover the value of their investments or collateral securities that are in the possession of an outside party. The Department's investment policy addresses credit risk by defining allowable investments.

Interest Rate Risk

Interest rate risk is the risk that changes in interest rates will adversely affect the fair value of an investment. The Department does not have a formal investment policy that limits investment maturities.

At December 31, 2021 and 2020, the Department's investments were as follows:

	2021				
		Maturity in Years			
	Fair Value	Less Than 1	1-4	5-10	Over 10
U.S. agencies, implicitly guaranteed	$ 1,188,543	$ 671,210	$ 517,333	$ -	$ -
Mutual funds, bond funds	21,351,959	21,351,959	-	-	-
OPEB - Mutual funds, bond funds	1,300,539	1,300,539	-	-	-
CDs, negotiable	224,024	224,024			-
State and local bonds	138,691	-	-	-	138,691
Total	$ 24,203,756-	$ 23,547,732	$ 517,333	$ -	$ 138,691

	2020				
		Maturity in Years			
	Fair Value	Less Than 1	1-4	5-10	Over 10
U.S. agencies, implicitly guaranteed	$ 1,519,184	$ 135,853	$ 962,420	$ 420,911	$ -
Mutual funds, bond funds	5,522,855	5,522,855	-	-	-
OPEB - Mutual funds, bond funds	1,188,219	1,188,219	-	-	-
CDs, negotiable	320,207	99,510	220,697		-
Total	$ 8,550,465	$ 6,946,437	$ 1,183,117	$ 420,911	$ -

Credit Risk

Credit risk is the risk that an issuer or other counterparty to an investment will not fulfill its obligations. The Department does not have a separate formal policy regarding credit risk.

As of December 31, 2021 and 2020, the Department's investments were rated as follows:

	2021		
Investment Type	Standard & Poor's	Moody's Investment Service	Composite
U.S. agencies, implicitly guaranteed	AA+	AAA	N/A
Mutual funds, bond funds	N/A	N/A	B to BBB
OPEB - Mutual funds, bond funds	N/A	N/A	B to BBB
CDs, negotiable	N/A	N/A	N/A

	2020		
Investment Type	Standard & Poor's	Moody's Investment Service	Composite
U.S. agencies, implicitly guaranteed	AA+	AAA	N/A
Mutual funds, bond funds	N/A	N/A	B to BBB
OPEB - Mutual funds, bond funds	N/A	N/A	B to BBB
CDs, negotiable	N/A	N/A	N/A

Concentration of Credit Risk

Concentration of credit risk is the risk of loss attributed to the magnitude of the Department's investment in a single issuer. In 2021 and 2020, there were no investments in any one issuer that represented greater than 5% of total investments.

3. Plant, Property and Equipment

Plant, property and equipment as of December 31, 2021 consist of the following:

	Balance January 1, 2021	Increase	Decrease	Balance December 31, 2021
Utility plant not being depreciated:				
Gas:				
Land	$ 236,856	$ -	$ -	$ 236,856
Construction in progress	900,057	3,713,844	3,585,006	1,028,895
	1,136,913	3,713,844	3,585,006	1,265,751
Electric/telecommunications:				
Land	4,405,918	2,090	-	4,408,008
Construction in progress	1,398,177	5,683,321	4,540,918	2,540,580
	5,804,095	5,685,411	4,540,918	6,948,588
Total utility plant not being depreciated	6,941,008	9,399,255	8,125,924	8,214,339
Utility plant being depreciated:				
Gas:				
Plant investment	54,557,833	3,390,449	488,009	57,460,273
Office furniture and equipment	1,646,791	64,601	167,859	1,543,533
Transportation and communication equipment	1,606,927	112,425	7,587	1,711,765
Other	404,294	83,589	1,694	486,189
	58,215,845	3,651,064	665,149	61,201,760
Electric/telecommunications:				
Plant investment	203,238,073	5,657,404	1,839,005	207,056,472
Office furniture and equipment	3,393,279	206,791	191,899	3,408,171
Transportation and communication equipment	5,650,937	42,082	5,648	5,687,371
Other	735,056	17,835	1,759	751,132
	213,017,345	5,924,112	2,038,311	216,903,146
Total utility plant being depreciated	271,233,190	9,575,176	2,703,460	278,104,906

Note: Immaterial differences may exist due to rounding.

	Balance January 1, 2021	Increase	Decrease	Balance December 31, 2021
Less accumulated depreciation:				
Gas:				
Plant investment	$ (28,450,166)	$ (1,547,162)	$ 318,189	$ (29,679,139)
Office furniture and equipment	(1,078,176)	(61,316)	163,623	(975,869)
Transportation and communication equipment	(1,328,599)	(105,415)	1,000	(1,433,014)
Other	(287,249)	(17,894)	1,694	(303,449)
	(31,144,190)	(1,731,787)	484,506	(32,391,471)
Electric/telecommunications:				
Plant investment	(73,481,794)	(5,865,577)	1,142,677	(78,205,694)
Office furniture and equipment	(2,244,961)	(153,935)	186,042	(2,212,854)
Transportation and communication equipment	(4,886,802)	(348,750)	11,465	(5,224,087)
Other	(514,714)	(36,256)	1,559	(549,411)
	(81,128,271)	(6,404,518)	1,341,743	(86,192,046)
Total accumulated depreciation	(112,272,461)	(8,136,305)	1,825,249	(118,583,517)
Total utility plant being depreciated, net:				
Gas	27,071,655	1,919,277	180,643	28,810,289
Electric	131,889,074	(480,406)	697,568	130,711,100
	158,960,729	1,438,871	878,211	159,521,389
Total utility plant, net:				
Gas	28,208,568	5,633,121	3,765,649	30,076,040
Electric	137,693,169	5,205,005	5,238,486	137,659,688
Net capital assets	$ 165,901,737	$ 10,838,126	$ 9,004,135	$ 167,735,728

Note: Immaterial differences may exist due to rounding.

Plant, property and equipment as of December 31, 2020 consist of the following:

	Balance January 1, 2020	Increase	Decrease	Balance December 31, 2020
Utility plant not being depreciated:				
Gas:				
Land	$ 214,304	$ 22,552	$ -	$ 236,856
Construction in progress	143,880	2,696,176	1,939,999	900,057
	358,184	2,718,728	1,939,999	1,136,913
Electric/telecommunications:				
Land	4,405,918	-	-	4,405,918
Construction in progress	566,833	3,503,877	2,672,533	1,398,177
	4,972,751	3,503,877	2,672,533	5,804,095
Total utility plant not being depreciation	5,330,935	6,222,605	4,612,532	6,941,008
Utility plant being depreciated:				
Gas:				
Plant investment	52,979,511	1,877,417	299,095	54,557,833
Office furniture and equipment	1,713,683	84,850	151,742	1,646,791
Transportation and communication equipment	1,627,158	144,306	164,537	1,606,927
Other	374,964	58,187	28,857	404,294
	56,695,316	2,164,760	644,231	58,215,845
Electric/telecommunications:				
Plant investment	200,228,686	3,969,059	959,672	203,238,073
Office furniture and equipment	3,707,562	157,079	471,362	3,393,279
Transportation and communication equipment	5,494,990	401,587	245,640	5,650,937
Other	753,777	-	18,721	735,056
	210,185,015	4,527,725	1,695,395	213,017,345
Total utility plant being depreciated	266,880,331	6,692,485	2,339,626	271,233,190

Note: Immaterial differences may exist due to rounding.

	Balance January 1, 2020	Increase	Decrease	Balance December 31, 2020
Less accumulated depreciation:				
Gas:				
Plant investment	$ (27,200,101)	$ (1,495,952)	$ 245,887	$ (28,450,166)
Office furniture and equipment	(1,180,212)	(49,706)	151,742	(1,078,176)
Transportation and communication equipment	(1,368,389)	(124,748)	164,538	(1,328,599)
Other	(285,653)	(30,454)	28,858	(287,249)
	(30,034,355)	(1,700,860)	591,025	(31,144,190)
Electric/telecommunications:				
Plant investment	(68,604,408)	(5,669,803)	792,417	(73,481,794)
Office furniture and equipment	(2,544,288)	(172,035)	471,362	(2,244,961)
Transportation and communication equipment	(4,705,084)	(427,358)	245,640	(4,886,802)
Other	(497,077)	(36,358)	18,721	(514,714)
	(76,350,857)	(6,305,554)	1,528,140	(81,128,271)
Total accumulated depreciation	(106,385,212)	(8,006,414)	2,119,165	(112,272,461)
Total utility plant being depreciated, net:				
Gas	26,660,961	463,900	53,206	27,071,655
Electric	133,834,155	(1,777,826)	167,255	131,889,074
	160,495,116	(1,313,926)	220,461	158,960,729
Total utility plant, net:				
Gas	27,019,148	3,182,625	1,993,205	28,208,568
Electric	138,806,906	1,726,051	2,839,788	137,693,169
Net capital assets	$ 165,826,054	$ 4,908,676	$ 4,832,993	$ 165,901,737

Note: Immaterial differences may exist due to rounding.

4. Note Receivable

	2021	2020
Note receivable from Holyoke Solar, LLC (separate nonrelated entity) due to the Solar Coop in monthly installments of $74,191 including interest at 5.25%, secured by the Solar Installation Property, matures December 2031.	$ 6,908,536	$ 7,420,633
Less amount due within one year	(539,639)	(512,097)
Note receivable, due after one year	$ 6,368,897	$ 6,908,536

The remaining interest due on the loan is approximately $1.9 million. The Holyoke Solar, LLC note and security agreement also requires the borrower to establish a Reserve Account to be held in an interest-bearing savings account equal to no less than 6 months of principal and interest debt service payments. The Solar Coop shall use the Reserve Account to cure any failure of the borrower to pay when due any principal or interest payment. If the Reserve Account is not used by the Solar Coop during the first 6 years, the Reserve Account shall be decreased to no less than 2 months of principal and interest debt service payments. The Reserve Account was established with a required balance of $444,737. The account balances at December 31, 2021 and 2020 were $148,271 and $453,021, respectively.

5. Other Receivables

Other receivables, all due within one year, consist of the following as of December 31, 2021 and 2020:

	2021	2020
Springfield Water and Sewer	$ 64,999	$ 54,353
Massachusetts Department of Transportation	889,259	848,331
Accrued interest receivable	10,226	8,920
Miscellaneous other receivables	862,666	1,719,689
Total	$ 1,827,150	$ 2,631,293

6. Intangible Assets

		2021	
	Life in Years	Gross Carrying Amount	Accumulated Amortization
2001 franchise fees	30	$ 2,000,000	$ 1,336,667

		2020	
	Life in Years	Gross Carrying Amount	Accumulated Amortization
2001 franchise fees	30	$ 2,000,000	$ 1,270,001

Aggregate amortization expense was $66,667 for the years ended December 31, 2021 and 2020. Estimated annual aggregate amortization expense is $66,667 for the ten years subsequent to 2021.

7. Long-Term Obligations

Revenue bonds, issued through Massachusetts Clean Energy Original issue amount is $69,040,000 and date of issue is December 2021. Bonds mature annually 2021-2038. Interest rates range from .567% to 2.985%.	$	69,040,000
General obligation bonds, issued through the City of Holyoke Original issue amount is $30,532,000 and date of issue is April 2012. Bonds mature annually 2013-2031. Interest rates from 2.0% to 5.0%.		-
Revenue bonds, Massachusetts Clean Energy Cooperative Corporation - Series 2013. Original issue amount is$49,885,000 and date of issue is April 2013. Bonds mature annually 2015-2032. Interest rates range from 3.0% to 5.0%.		-
Less amount due within one year		(5,510,000)
Bonds payable, due after one year	$	63,530,000

Principal maturing and interest payments are anticipated to be as follows:

	Principal	Interest	Total
Years ending December 31:			
2022	$ 5,510,000	$ 707,064	$ 6,217,064
2023	5,145,000	1,180,372	6,325,372
2024	5,820,000	1,147,135	6,967,135
2025	5,885,000	1,086,607	6,971,607
2026	5,960,000	1,006,100	6,966,100
2027-2031	31,510,000	3,335,884	34,845,884
2032-2036	7,485,000	688,533	8,173,533
2037-2038	1,725,000	77,610	1,802,610
Total	$ 69,040,000	$ 9,229,305	$ 78,269,305

The Department outstanding revenue bonds contain

1. a provision that in the event of default not remedied, the Trustee may declare the principal of all the Bonds then Outstanding and interest accrued thereon to be immediately due and payable; and

2. a provision that in the event of default not remedied, upon demand of the Trustee, all monies, securities and funds held by the Cooperative and pledged under the Bond Resolution and after receipt thereof, all revenues from the net capability of the Hadley Falls facility.

Revenue Bonds are payable solely from and secured solely by, the Revenues of MCEC derived from the sale of the Net Capability of the Hadley Falls Facility.

The Department outstanding General Obligation Bonds do not contain event of default and / or termination provisions with possible finance-related consequences.

The Department is required to satisfy certain bond covenant requirements in connection with the bonds payable. In addition, the notes payable from direct placement detailed on the following page also have funding requirements. The following funds are required as part of the bond and note agreements:

	2021	2020
Revenue bonds:		
Debt service reserve fund	$ 5,899,696	$ 4,575,461
Redemption account:		
Reserve and contingency fund	706,470	603,799
Principal account	787,143	1,212,500
Bond interest fund	101,009	944,125
Hadley Falls construction account	10,159,429	-
Clean renewable energy bond:		
Debt service reserve fund	-	260,202
Subtotal related to bonds	17,653,747	7,596,087
Notes payable:		
Collateral account	2,966,279	3,208,815
Reserve fund	148,345	148,271
Subtotal related to notes	3,114,624	3,357,086
Total funds required under bond indenture/ note payable	$ 20,768,371	$ 10,953,173

Notes payable:	
Note payable to bank, secured by all assets of the Holyoke Solar Cooperative, monthly payments of $6,346 including interest at 4.47%, matures in September 2031.	$ 599,499
Note payable to bank, secured by all assets of the Holyoke Solar Cooperative, monthly payments of $29,820 including interest at 4.00%, matures in September 2031.	2,892,136
Note payable to bank, secured by all assets of the Holyoke Solar Cooperative, monthly payments of $29,470 including interest at 3.40%, matures in September 2031. A pledge of securities as collateral, with a value of $3,208,815 at December 31, 2021 is also required under this note.	2,966,279
Note payable to bank, secured by revenues of the Department with a lien on all business assets on Holyoke Solar Cooperative and a pledge of the service contract between the Department and Holyoke Solar Cooperative, monthly payments of $54,667 including interest at 3.30%, matures in April 2038.	8,244,916
Note payable to bank, secured by all assets of Holyoke Solar Cooperative, monthly payments of $4,707 including interest at 3.250%, matures January 2026.	215,478
Less amount due within one year	(984,892)
Notes payable, due after one year	$ 13,933,416

Principal maturing and interest payments are anticipated to be as follows:

	Principal	Interest	Total
Years ending December 31:			
2022	$ 984,892	$ 520,882	$ 1,505,774
2023	1,021,697	484,077	1,505,774
2024	1,058,600	447,174	1,505,774
2025	1,099,467	406,306	1,505,773
2026	1,088,087	365,906	1,453,993
2027-2031	5,926,657	1,187,561	7,114,218
2032-2036	2,884,664	395,358	3,280,022
2037-2038	854,244	20,375	874,619
Total	$ 14,918,308	$ 3,827,639	$ 18,745,947

The outstanding notes from direct placements contain:

1. a provision that in an event of default, outstanding amounts become immediately due and payable; and/or

2. a provision that in an event of default, the borrower shall reimburse the bank for any reasonable cost incurred by the Bank in connection to the collection and enforcement of the provisions of the loan agreement; and/or

3. a provision that in the event of default, all deposits, securities and other property in the possession of the bank belonging to the borrower shall be treated as collateral to secure payment of the notes; and

4. a provision that in the event of default, the entire outstanding principal balance of the notes shall bear interest, from the date of default at the default rate of 5%.

Changes in Long-Term Liabilities

Long-term liability activities for the years ended December 31, 2021 are as follows:

	Balance January 1, 2021	Additions	Reductions	Balance December 31, 2021	Current Portion
Long-term bonds and loans:					
Bonds payable	$ 58,640,000	$ 69,040,000	$ 58,640,000	$ 69,040,000	$ 5,510,000
Premium on bonds	5,502,488	-	5,502,488	-	-
Notes payable	15,603,734	260,081	945,507	14,918,308	984,892
Total long-term bonds and loans	79,746,222	69,300,081	65,087,995	83,958,308	6,494,892
Other long-term liabilities:					
Net pension liability	29,829,651	-	6,980,005	22,849,646	-
Compensated absences	3,856,574	206,806	-	4,063,380	367,561
Unearned revenue	2,782,163	-	110,820	2,671,343	-
Net OPEB liability (asset)	2,700,503	-	4,596,665	(1,896,162)	-
Reserve fund for note receivable	148,291	-	3,917	144,374	-
Total long-term liabilities	$ 119,063,404	$ 69,506,887	$ 76,779,402	$ 111,790,889	$ 6,862,453

Long-term liability activities for the years ended December 31, 2020 are as follows:

	Balance January 1, 2020	Additions	Reductions	Balance December 31, 2020	Current Portion
Long-term bonds and loans:					
Bonds payable	$ 62,593,334	$ -	$ 3,953,334	$ 58,640,000	$ 3,930,000
Premium on bonds	6,313,303	-	810,815	5,502,488	-
Notes payable	16,457,171	-	853,437	15,603,734	900,904
Leases payable	42,488	-	42,488	-	-
Total long-term bonds and loans	85,406.296	-	5,660,074	79,746,222	4,830,904
Other long-term liabilities:					
Net pension liability	34,387,346	-	4,557,695	29,829,651	-
Compensated absences	3,564,439	292,135	-	3,856,574	429,982
Net OPEB liability	5,807,616	-	3,107,113	2,700,503	-
Unearned revenue	2,871,654	-	89,491	2,782,163	-
Reserve fund for note receivable	444,737	-	296,446	148,291	-
Total long-term liabilities	$ 132,482,088	$ 292,135	$ 13,710,819	$ 119,063,404	$ 5,260,886

Revenue Debt

The Department has pledged future revenues, net of certain operating expenses to repay revenue bonds issued in 2013. Proceeds from the bonds provided financing for improvements to the Hadley Falls generating station. The bonds are payable solely from revenues generated by the power purchase agreement with MMWEC through 2032. Annual principal and interest payments on the bonds are expected to require 100% of the Clean Energy Coop future gross revenues from MMWEC. The principal and interest remaining to be paid on the bonds is $78,269,306. Principal and interest paid in 2021 and 2020 were $6,109,605 and $4,313,750, respectively. Total customer net revenues in 2021 and 2020 were $4,841,131 and $4,313,500, respectively. Customer revenues began in 2015 to coincide with the first bond principal payment due.

Advance Refunding

On November 29, 2021, Massachusetts Clean Energy Cooperative Revenue Bonds, Series 2021 were issued in the amount of $69,040,000 with average interest rate ranges of 0.576% – 2.985% to refund $53,660,000 of outstanding bonds with an average interest rate of 4.0%. The net proceeds were used to purchase U.S government securities. Those securities were deposited in an irrevocable trust with an escrow agent to provide future debt service payments on the old bonds. As a result, the old bonds are considered defeased and the liability for the old bonds has been removed from the statement of net position. The amount defeased as of December 31, 2021 was $56,715,000.

The cash flow requirements on the old bonds prior to the advance refunding was $71,434,125 from 2022 through 2032. The cash flow requirements on the new bonds are $64,316,583 from 2022 through 2032. The advance refunding resulted in an economic gain of $4,900,938.

8. Blended Component Units

The following schedules provide details of the blended component units' balances, activities and eliminations.

Combining Schedule of Net Position
December 31, 2021

	HGE	Holyoke Solar	Mass Clean Energy	Eliminations	Total
Assets					
Current assets:					
Cash and investments	$ 16,637,705	$ 8,963,353	$ 45,033	$ -	$ 25,646,091
Restricted assets:					
Redemption account	-	-	1,594,622	-	1,594,622
Customer accounts receivable, net	7,961,808	22,824	-	-	7,984,632
Note receivable, current portion	-	539,639	-	-	539,639
Materials and supplies	3,705,386	-	-	-	3,705,386
Fuel for electric generation and gas in storage	767,682	-	-	-	767,682
Prepaid expense	3,029,318	-	52,446,085	(52,446,077)	3,029,326
Other receivables	1,822,524	4,626	-	-	1,827,150
Total current assets	33,924,423	9,530,442	54,085,740	(52,446,077)	45,094,528
Noncurrent assets:					
Restricted assets:					
Accounts required under bond indenture/note payable	-	3,114,624	16,059,125	-	19,173,749
Customers' deposits	2,009,756	-	-	-	2,009,756
Net OPEB asset	1,896,162	-	-	-	1,896,162
Other receivables, after one year	-	6,368,897	-	-	6,368,897
Hi-Lite assistant loans	1,217,536	-	-	-	1,217,536
Advances to other funds	431,000	8,460,396	-	(8,891,396)	-
Other assets:					
Purchased power accounts	383,374	-	-	-	383,374
Rate stabilization accounts	45,173,643	-	-	-	45,173,643
Regulatory asset debt issuance cost	-	-	717,159	-	717,159
Costs recoverable in future, pollution	84,800	-	-	-	84,800
Other investments	188,390	-	-	-	188,390
Intangible assets	663,333	-	-	-	663,333
Capital assets:					
Plant, property and equipment in service	282,749,770	-	-	-	282,749,770
Construction in progress	3,569,475	-	-	-	3,569,475
Total capital assets	286,319,245	-	-	-	286,319,245
				-	
Less accumulated depreciation	(118,583,517)	-	-	-	(118,583,517)
Net capital assets	167,735,728	-	-	-	167,735,728
Total noncurrent assets	219,783,722	17,943,917	16,776,284	(8,891,396)	245,612,527
Total assets	253,708,145	27,474,359	70,862,024	(61,337,473)	290,707,055
Deferred Outflows of Resources					
OPEB related amounts	286,616	-	-	-	286,616
Pension related amounts	7,164,440	-	-	-	7,164,440
Total deferred outflows	7,451,056	-	-	-	7,451,056

Combining Schedule of Net Position
December 31, 2021

	HGE	Holyoke Solar	Mass Clean Energy	Eliminations	Total
Liabilities					
Current liabilities:					
Accounts payable	$ 5,824,072	$ 23,644	$ 134,489	$ -	$ 5,982,205
Accrued liabilities	589,331	-	-	-	589,331
Current portion, accrued compensated absences	367,561	-	-	-	367,561
Current portion, accrued environmental costs	114,800	-	-	-	114,800
Liabilities payable from restricted assets:					
Current portion, bonds and notes payable	-	984,892	5,510,000	-	6,494,892
Customers' deposits	1,618,089	-	-	-	1,618,089
Accrued interest	-	-	101,009	-	101,009
Total current liabilities	8,513,853	1,008,536	5,745,498	-	15,267,887
Long-term liabilities:					
Bonds payable, long term	-	-	63,530,000	-	63,530,000
Plus unamortized premium on bonds payable	-	-	-	-	-
Total bonds payable	-	-	63,530,000	-	63,530,000
Notes payable, long-term	-	13,933,416	-	-	13,933,416
Accrued compensated absences	3,695,819	-	-	-	3,695,819
Unearned revenue	55,117,420	-	-	(52,446,077)	2,671,343
Advances from other funds	8,456,405	148,365	431,000	(8,891,396)	144,374
Net pension liability	22,849,646	-	-	-	22,849,646
Total long-term liabilities	90,119,290	14,081,781	63,961,000	(61,337,473)	106,824,598
Total liabilities	98,633,143	15,090,317	71,183,335	(61,337,473)	122,092,485
Deferred Inflows of Resources					
Regulatory deferral	4,231,257	-	-	-	4,231,257
Pension related amounts	7,627,060	-	-	-	7,627,060
OPEB related amounts	2,861,214	-	-	-	2,861,214
Rate stabilization reserve	40,415,009	-	-	-	40,415,009
Gain on refunding	-	-	1,476,837	-	1,476,837
Total deferred inflows of resources	55,134,540	-	1,476,837	-	56,611,377
Net Position					
Net investment in plant, property and equipment	167,735,728	-	-	(68,817,804)	98,917,924
Restricted for debt service	-	2,129,732	1,748,820	-	3,878,552
Restricted OPEB	1,896,162	-	-	-	1,896,162
Restricted for purchase of future power capacity	-	-	10,159,429	(10,159,429)	-
Unrestricted (deficit)	(62,240,372)	10,254,310	(12,229,560)	78,977,233	14,761,611
Total net position (deficit)	$ 107,391,518	$ 12,384,042	$ (321,311)	$ -	$ 119,454,249

Combining Schedule of Revenues, Expenses and Changes in Net Position Year Ended December 31, 2021

	HGE	Holyoke Solar	Mass Clean Energy	Eliminations	Consolidated Total
Operating Revenues	$ 74,439,506	$ 313,205	$ 4,841,131	$ (5,154,336)	$ 74,439,506
Operating Expenses					
Operation and maintenance	57,429,769	169,078	2,955,110	(5,154,336)	55,399,621
Depreciation, plant and equipment	8,036,027	-	-	-	8,036,027
Total operating expenses	65,465,796	169,078	2,955,110	(5,154,336)	63,435,648
Operating income	8,973,710	144,127	1,886,021	-	11,003,858
Nonoperating Other Revenues (Expenses):					
Investment income, net of fees	2,924,848	864,088	13,825	(282,649)	3,520,112
Net gain (loss) on investments	1,628,830	492,679	46,281	-	2,167,790
Interest expense	(758,448)	(555,618)	(1,246,828)	282,649	(2,278,245)
Miscellaneous income (expense)	918,945	368,953	-	(131,201)	1,156,697
Amortization of intangible assets	(66,667)	-	-	-	(66,667)
Net gain (loss), disposal of assets	(1,457,019)	-	-	-	(1,457,019)
Net gain (loss), merchandise jobbing	(25,888)	-	-	-	(25,888)
Taxes, other	(222,141)	-	-	131,201	(90,940)
Total other revenues (expenses)	2,942,460	1,170,102	(1,186,722)	-	2,925,840
Change in net position before transfers	11,916,170	1,314,229	699,299	-	13,929,698
Transfers					
Payments in lieu of taxes, City of Holyoke	(1,194,152)	-	-	-	(1,194,152)
Change in net position	10,722,018	1,314,229	699,299	-	12,735,546
Net Position (Deficit), Beginning	96,669,500	11,069,813	(1,020,610)	-	106,718,703
Net Position (Deficit), Ending	$ 107,391,518	$ 12,384,042	$ (321,311)	$ -	$ 119,454,249

Condensed Combining Schedule of Cash Flows
Year Ended December 31, 2021

	HGE	Holyoke Solar	Mass Clean Energy	Eliminations	Total
Net Cash Flows From (Used in)					
Operating activities	$ 12,966,288	$ 504,586	$ 4,820,429	$ -	$ 18,291,303
Investing activities	4,478,319	2,138,097	60,106	-	6,676,522
Noncapital financing activities	(1,194,152)	-	-	-	(1,194,152)
Capital and related financing activities	(12,673,026)	(1,083,093)	5,373,853	-	(8,382,266)
Net increase (decrease) in cash and cash equivalents	3,577,429	1,559,590	10,254,388	-	15,391,407
Cash and Cash Equivalents, Beginning	60,416,963	9,365,606	7,444,392	-	77,226,961
Cash and Cash Equivalents, Ending	$ 63,994,392	$ 10,925,196	$ 17,698,780	$ -	$ 92,618,368

The following schedules provide details of the blended component units' balances, activities and eliminations.

Combining Schedule of Net Position
December 31, 2020

	HGE	Holyoke Solar	Mass Clean Energy	Eliminations	Total
Assets					
Current assets:					
Cash and investments	$ 14,099,598	$ 7,430,534	$ 108,507	$ -	$ 21,638,639
Restricted assets:					
Redemption account	-	-	2,760,424	-	2,760,424
Customer accounts receivable, net	8,955,661	11,403	-	-	8,967,064
Note receivable, current portion	-	512,097	-	-	512,097
Materials and supplies	3,019,112	-	-	-	3,019,112
Fuel for electric generation and gas in storage	591,807	-	-	-	591,807
Prepaid expense	2,911,148	-	35,212,948	(35,212,944)	2,911,152
Other receivables	2,625,558	5,735	-	-	2,631,293
Total current assets	32,202,884	7,959,769	38,081,879	(35,212,944)	43,031,588
Noncurrent assets:					
Restricted assets:					
Accounts required under bond indenture/note payable	260,202	3,357,086	4,575,461	-	8,192,749
Customers' deposits	1,602,639	-	-	-	1,602,639
Net OPEB asset	-	-	-	-	-
Other receivables, after one year	-	6,908,536	-	-	6,908,536
Hi-Lite assistant loans	1,588,961	-	-	-	1,588,961
Advances to other funds	431,000	8,618,273	-	(9,049,273)	-
Other assets:					
Purchased power accounts	380,556	-	-	-	380,556
Rate stabilization accounts	44,491,344	-	-	-	44,491,344
Regulatory asset debt issuance cost	-	-	-	--	
Costs recoverable in future, pollution	37,700	-	-	-	37,700
Other investments	188,390	-	-	-	188,390
Intangible assets	729,999	-	-	-	729,999
Capital assets:					
Plant, property and equipment in service	275,875,964	-	-	-	275,875,964
Construction in progress	2,298,234	-	-	-	2,298,234
Total capital assets	278,174,198	-	-	-	278,174,198
Less accumulated depreciation	(112,272,461)	-	-	-	(112,272,461)
Net capital assets	165,901,737	-	-	-	165,901,737
Total noncurrent assets	215,612,528	18,883,895	4,575,461	(9,049,273)	230,022,611
Total assets	247,815,412	26,843,664	42,657,340	(44,262,217)	273,054,199
Deferred Outflows of Resources					
OPEB related amounts	403,079	-	-	-	403,079
Pension related amounts	8,903,897	-	-	-	8,903,897
Total deferred outflows	9,306,976	-	-	-	9,306,976

Combining Schedule of Net Position
December 31, 2020

	HGE	Holyoke Solar	Mass Clean Energy	Eliminations	Total
Liabilities					
Current liabilities:					
Accounts payable	$ 6,076,412	$ 21,823	$ -	$ -	$ 6,098.235
Accrued liabilities	667,532	-	-	-	667,532
Current portion, accrued compensated absences	429,982	-	-	-	429,982
Current portion, accrued environmental costs	67,700	-	-	-	67,700
Liabilities payable from restricted assets:					
Current portion, bonds and notes payable	1,505,000	900,904	2,425,000	-	4,830,904
Customers' deposits	1,290,386	-	-	-	1,290,386
Accrued interest	298,476	-	944,124	-	1,242,600
Total current liabilities	10,335,488	922,727	3,369,124	-	14,627,339
Long-term liabilities:					
Bonds payable, long term	18,885,000	-	35,825,000	-	54,710,000
Plus unamortized premium on bonds payable	1,449,663	-	4,052,825	-	5,502,488
Net bonds payable	20,334,663	-	39,877,825	-	60,212,488
Notes payable, long-term	-	14,702,830	-	-	14,702,830
Accrued compensated absences	3,426,592	-	-	-	3,426,592
Unearned revenue	37,995,107	-	-	(35,212,944)	2,782,163
Advances from other funds	8,618,273	148,291	431,000	(9,049,273)	148,291
Net pension liability	29,829,651	-	-	-	29,829,651
Total long-term liabilities	102,904,789	14,851,121	40,308,825	(44,262,217)	113,802,518
Total liabilities	113,240,277	15,773,848	43,677,949	(44,262,217)	128,429,857
Deferred Inflows of Resources					
Regulatory deferral	3,366,251	-	-	-	3,366,251
Pension related amounts	4,343,415	-	-	-	4,343,415
OPEB related amounts	1,587,942	-	-	-	1,587,942
Rate stabilization reserve	37,915,009	-	-	-	37,915,009
Total deferred inflows of resources	47,212,617	-	-	-	47,212,617
Net Position					
Net investment in plant, property and equipment	144,062,074	-	-	(50,921,096)	93,140,978
Restricted for debt service	(38,273)	2,456,182	3,966,760	-	6,384,669
Restricted OPEB	-	-	-	-	-
Restricted for purchase of future power capacity	-	-	-	-	-
Unrestricted (deficit)	(47,354,306)	8,613,634	(4,987,370)	50,921,096	7,193,054
Total net position (deficit)	$ 96,669,495	$ 11,069,816	$ (1,020,610)	$ -	$ 106,718,701

Combining Schedule of Revenues, Expenses and Changes in Net Position Year Ended December 31, 2020

	HGE	Holyoke Solar	Mass Clean Energy	Eliminations	Consolidated Total
Operating Revenues	$ 73,775,704	$ 320,605	$ 4,313,500	$ (4,634,105)	$ 73,775,704
Operating Expenses					
Operation and maintenance	59,725,627	169,921	2,954,138	(4,634,105)	58,215,581
Depreciation, plant and equipment	7,968,632	-	-	-	7,968,632
Total operating expenses	67,694,259	169,921	2,954,138	(4,634,105)	66,184,213
Operating income	6,081,445	150,684	1,359,362	-	7,591,491
Nonoperating Other Revenues (Expenses):					
Investment income, net of fees	2,200,488	868,606	11,625	(329,216)	2,751,503
Net gain (loss) on investments	3,029,101	620,660	42,910	-	3,692,671
Interest expense	(1,132,397)	(616,088)	(1,331,680)	329,216	(2,750,949)
Miscellaneous income (expense)	778,529	104,109	-	(135,249)	747,389
Amortization of intangible assets	(66,667)	-	-	-	(66,667)
Net gain (loss), disposal of assets	(634,491)	-	-	-	(634,491)
Net gain (loss), merchandise jobbing	9,440	-	-	-	9,440
Taxes, other	(215,916)	-	-	135,249	(80,667)
Total other revenues (expenses)	3,968,087	977,287	(1,277,146)	-	3,668,228
Change in net position before transfers	10,049,532	1,127,971	82,217	-	11,259,720
Transfers					
Payments in lieu of taxes, City of Holyoke	(1,250,966)	-	-	-	(1,250,966)
Change in net position	8,798,566	1,127,971	82,217	-	10,008,754
Net Position (Deficit), Beginning	87,870,931	9,941,844	(1,102,827)	-	96,709,948
Net Position (Deficit), Ending	$ 96,669,497	$ 11,069,815	$ (1,020,610)	$ -	$ 106,718,702

Condensed Combining Schedule of Cash Flows
Year Ended December 31, 2020

	HGE	Holyoke Solar	Mass Clean Energy	Eliminations	Total
Net Cash Flows From (Used in)					
Operating activities	$ 7,232,680	$ 237,074	$ 4,293,770	$ -	$ 11,763,524
Investing activities	5,289,203	2,234,119	54,534	-	7,577,856
Noncapital financing activities	(1,250,966)	-	-	-	(1,250,966)
Capital and related financing activities	(9,746,034)	(1,418,943)	(4,313,750)	-	(15,478,727)
Net increase (decrease) in cash and cash equivalents	1,524,883	1,052,250	34,554	-	2,611,687
Cash and Cash Equivalents, Beginning	58,892,080	8,900,326	7,409,838	-	75,202,244
Cash and Cash Equivalents, Ending	$ 60,416,963	$ 9,952,576	$ 7,444,392	$ -	$ 77,813,931

9. Retirement Plans

General Information About the Pension Plan

Substantially all full-time employees participate in the Holyoke Contributory Retirement System, a cost sharing multiple employer defined benefit public employee retirement system. The system is partially funded by employee contributions. The Plan provides pension benefits, deferred allowances and death and disability benefits. Retirement allowance is based on the following factors: age, length of creditable service, level of salary and group classification. Age at retirement and group classification determine a benefit rate. Percentages are specified in Chapter 32 of the Massachusetts General Laws. Participants may elect to receive their retirement in one of three optional forms of payment.

Member employers are required by state statutes to make contributions to the Plan. Contributions are determined by the Commonwealth of Massachusetts Division of Public Employee Retirement Administration (PERA).

Covered employees are required by state statute to contribute a fixed percentage of their earnings into the Plan. The percentage varies from 5 to 9% depending upon date of hire. All employees hired after January 1, 1979 contribute an additional 2% on all gross regular earnings over $30,000 per year.

Members hired on or after April 2, 2012 are covered by the provisions of Chapter 32 as amended by Chapter 176 of the Acts of 2011 and Chapter 139 of the Acts of 2012.

The Plan issues a publicly available financial report that includes financial statements and required supplementary information. This report may be obtained by writing or calling the Plan as follows: Attn: Anthony Dulude, Executive Director, Holyoke Retirement Board, City Hall Annex - Room 207, Holyoke, Massachusetts 01040, 413 534 2179.

Pension Liabilities, Pension Expense and Deferred Outflows of Resources Related to Pensions

At December 31, 2021, the Department reported a liability of $22,849,646, for its proportionate share of the net pension liability. The net pension liability was measured as of December 31, 2020 and the total pension liability used to calculate the net pension liability was determined by an actuarial valuation as of January 1, 2020. No material changes in the assumptions or benefit terms occurred between the actual valuation date and the measurement date. The Department's proportion of the net pension liability was based on the Department's share of appropriations of the pension plan relative to the appropriations of all participating employers. At December 31, 2021 the Department's proportion was 22.600785% which was a decrease of 0.440609% from its proportion measured as of January 1, 2020.

At December 31, 2020, the Department reported a liability of $29,829,651, for its proportionate share of the net pension liability. The net pension liability was measured as of December 31, 2019 and the total pension liability used to calculate the net pension liability was determined by an actuarial valuation as of January 1, 2019. No material changes in the assumptions or benefit terms occurred between the actual valuation date and the measurement date. The Department's proportion of the net pension liability was based on the Department's share of appropriations of the pension plan relative to the appropriations of all participating employers. At December 31, 2020 the Department's proportion was 23.0413940% which was an increase of 0.289777% from its proportion measured as of January 1, 2020.

For the year ended December 31, 2021 and 2020, the Department recognized pension expense of $2,044,176 and $5,468,094, respectively.

At December 31, 2021, the Department reported deferred outflows and deferred inflows of resources from the following sources:

	2021	
	Deferred Outflows of Resources	**Deferred Inflows of Resources**
Net differences between projected and actual earnings on pension plan	$ -	$ 6,568,594
Differences between projected and actual experiences		578,974
Changes of actuarial assumptions	1,946,438	-
Changes in proportion and differences between employer contributions and proportionate share of contributions	1,218,942	479,492
Employer contributions subsequent to the measurement date	3,999,060	-
Total	$ 7,164,440	$ 7,627,060

At December 31, 2020, the Department reported deferred outflows and deferred inflows of resources from the following sources:

	2020	
	Deferred Outflows of Resources	Deferred Inflows of Resources
Net differences between projected and actual earnings on pension plan	$ -	$ 3,184,890
Differences between projected and actual experiences	-	1,158,525
Changes of actuarial assumptions	3,169,362	-
Changes in proportion and differences between employer contributions and proportionate share of contributions	1,789,198	-
Employer contributions subsequent to the measurement date	3,945,337	-
Total	$ 8,903,897	$ 4,343,415

Deferred outflows related to pension resulting from the Department's employer contributions subsequent to the measurement date will be recognized as a reduction of the net pension liability in the year ended December 31, 2021. $3,999,060 is reported for the Department. Other amounts reported as deferred outflows of resources and deferred inflows of resources related to pension will be recognized in pension expense as follows:

Years ending December 31:	
2022	$ (1,104,310)
2023	(180,167)
2024	(1,989,593)
2025	(1,187,610)
Thereafter	-
Total	$ (4,461,680)

Actuarial Assumptions

The total pension liability was determined by an actuarial valuation as of January 1, 2020 and 2019, using the following actuarial assumptions, applied to all periods included in the measurement:

Inflation	3.25%
Salary increases	4:00 - 4.50%
Investment rate of return	7.25%
Cost of living adjustments	3% of first $14,000
Pre-retirement	RP-2014 Blue Collar Employee Mortality Table set forward one year for females projected generationally using Scale MP-2017
Healthy retiree	RP-2014 Blue Collar Healthy Annuitant Mortality Table set forward one year for females projected generationally using Scale MP-2017
Disabled retiree	RP-2014 Blue Collar Healthy Annuitant Mortality Table set forward one year projected generationally using Scale MP-2017

The long term expected rate of return on pension plan investments was determined using a building-block method in which best estimate ranges of expected future real rates of return (expected returns, net of pension plan investment expense and inflation) are developed for each major asset class. These ranges are combined to produce the long-term expected rate of return by weighting the expected future real rates of return by the target asset allocation percentage and by adding expected inflation. Best estimates of arithmetic real rates of return for each major asset class included in the pension plan's target asset allocation as of December 31, 2021 and 2020 are summarized in the following table:

Asset Class	2021 Long-Term Expected Real Rate of Return	2020 Long-Term Expected Real Rate of Return
Domestic equity	6.28 %	6.15 %
International developed markets equity	7.00	6.78
International emerging markets equity	8.82	8.65
Core fixed income	0.38	1.11
Real estate	3.50	4.33
Hedge fund, GTAA, risk parity	2.35	3.19
Private equity	10.11	9.99

Discount Rate

The discount rate used to measure the total pension liability was 7.25% for December 31, 2021 and December 31, 2020. The projection of cash flows used to determine the discount rate assumed Plan member contributions will be made at the current contribution rate and the City of Holyoke Retirement system contributions will be made at rates equal to the actuarially determined contribution rates. Based on those assumptions, the pension plan's fiduciary net position was projected to be available to make all projected future benefit payments of current Plan members. Therefore, the long-term expected rate of return on pension plan investments was applied to all periods of projected benefit payments to determine the total pension liability.

Sensitivity of the Net Pension Liability to Changes in the Discount Rate

The following presents the net pension liability of the Department, calculated using the discount rate of 7.25%, as well as what the Department's net pension liability would be if it were calculated using a discount rate that is 1-%age point lower or 1-percentage point higher than the current rate.

The sensitivity analysis as of December 31, 2021 follows:

	1% Decrease to Discount Rate (6.25%)	Current Discount Rate (7.25%)	1% Increase to Discount Rate (8.25%)
The Department's proportionate share of the net position liability	$ 34,842,851	$ 22,849,646	$ 12,756,699

The sensitivity analysis as of December 31, 2020 follows:

	1% Decrease to Discount Rate (6.25%)	Current Discount Rate (7.25%)	1% Increase to Discount Rate (8.25%)
The Department's proportionate share of the net position liability	$ 41,804,343	$ 29,829,651	$ 19,752,086

10. Other Postemployment Benefits, Holyoke Gas and Electric

General Information About the OPEB Plan

Plan Description

As part of the Department's Fiduciary Funds, the Department's policy is to provide certain healthcare and life insurance benefits to eligible retirees, their dependents or their survivors through the City of Holyoke's single employer postemployment welfare benefit plan.

The Department created a trust in 2014 to administer these benefits. The trust accounts for the portions of the active members retirees' premiums paid by the Department for health insurance, dental coverage and life insurance. Since the Department has established a separate trust to segregate assets to fund the their portion of the City of Holyoke’s single employer plan, the disclosures that follow, are consistent with an agent multiemployer plan.

Benefits Provided

Medical and prescription drug benefits are provided to all eligible retirees through a variety of Plans offered by Blue Cross Blue Shield of Massachusetts and Health New England. The Holyoke Gas and Electric Department also pays 50% of the retiree life insurance premium and 50% of the dental premium (non-Medicare retirees only).

Employees covered by benefit terms at December 31, 2021 and 2020, the following employees were covered by the benefit terms:

	2021	2020
Inactive plan members or beneficiaries currently receiving benefit payments	191	191
Active plan members	148	148
Total members	339	339

Contributions

For the year ended December 31, 2021 and 2020, the Department's average contribution rate was 23.41% and 19.77% of covered-employee payroll. Plan members are not required to contribute to the Plan.

Investments

Investment Policy

It is the policy of the Department to pursue an investment strategy that reduces risk through the prudent diversification of the portfolio across a broad selection of distinct asset classes. Investments are limited to investing in assets as a prudent investor would, by considering purposes, terms, distribution requirements and other circumstances of the trust. The following were the Department's investment allocations as of December 31, 2021 and 2020:

Asset Class	2021 Allocation	2020 Allocation
Mutual funds, ETFs and closed-end funds	99.90 %	99.99 %
Cash and cash equivalents	0.10	0.01
Total	100.00 %	100.00 %

Net OPEB Liability (Asset)

The Department's net OPEB liability (asset) was measured as of December 31, 2021 and the total OPEB liability used to calculate the net OPEB liability (asset) was determined by an actuarial valuation as of December 31, 2021.

The components of the net OPEB liability (asset) of the Department at December 31, 2021 and 2020, were as follows:

	2021	2020
Total OPEB liability	$ 20,407,069	$ 19,842,195
Plan fiduciary net position	22,303,231	17,141,692
Department's net OPEB liability (asset)	$ (1,896,162)	$ 2,700,503
Plan fiduciary net position as a percentage of the total OPEB liability (asset)	109.29 %	86.39 %

Actuarial Assumptions

The total OPEB liability (asset) was determined by an actuarial valuation as of December 31, 2021, using the following actuarial assumptions, applied to all periods included in the measurement:

Discount rate	6.25%
Salary increases	Service-related increases for Group 1: 6.0% per year decreasing over 9 years to 4.25% per year Service-related increases for Group 4: 7.0% per year decreasing over 6 years to 4.75% per year
Investment rate of return	6.25%
Non-Medicare medical/prescription drug cost Healthcare cost trend rates	6.00% per year graded down by the Getzen model to an ultimate rate of 3.98% per year
Medicare medical/prescription drug cost Healthcare cost trend rates	6.00% per year graded down by the Getzen model to an ultimate rate of 3.98% per year
Dental/administrative Healthcare cost trend rates	6.00% per year graded down by the Getzen model to an ultimate rate of 3.98% per year
Mortality rates	PubG.H-2010 Mortality Table with MP-2021 Projection Scale

Below are the actuarial assumptions from the January 1, 2020 actuarial valuation.

Discount rate	6.25%
Salary increases	Service-related increases for Group 1: 6.0% per year decreasing over 9 years to 4.25% per year Service-related increases for Group 4: 7.0% per year decreasing over 6 years to 4.75% per year
Investment rate of return	6.25%
Non-Medicare medical/prescription drug cost Healthcare cost trend rates	5.50% per year graded down by the Getzen model to an ultimate rate of 4.04% per year
Medicare medical/prescription drug cost Healthcare cost trend rates	5.50% per year graded down by the Getzen model to an ultimate rate of 4.04% per year
Dental/administrative Healthcare cost trend rates	5.50% per year graded down by the Getzen model to an ultimate rate of 4.04% per year
Mortality rates	PubG.H-2010 Mortality Table with MP-2020 Projection Scale

The long term expected rate of return on pension plan investments was determined using a building-block method in which best estimate ranges of expected future real rates of return (expected returns, net of plan investment expense and inflation) are developed for each major asset class. These ranges are combined to produce the long-term expected rate of return by weighting the expected future real rates of return by the target asset allocation percentage and by adding expected inflation. Best estimates of arithmetic real rates of return for each major asset class included in the pension plan's target asset allocation as of December 31, 2021 and 2020 are summarized in the following table:

Asset Class	2021 Long-Term Expected Real Rate of Return	2020 Long-Term Expected Real Rate of Return
Closed-end funds	6.25 %	6.25 %

Discount Rate

The discount rate is a blend of the long-term expected rate of return on OPEB Trust assets and a yield or index rate for 20-year, tax-exempt general obligation municipal bonds with an average rate of AA/Aa or higher as shown in the Bond Buyer 20-Bond General Obligation Index 2.06% and 2.12% as of December 31, 2021 and 2020, respectively). The blending is based on the sufficiency of projected assets to make projected benefit payments.

Changes in Net OPEB Liability (Asset)

	Total OPEB Liability (a)	Plan Fiduciary Net Position (b)	Net OPEB Liability (Asset) (a) - (b)
Balance at December 31, 2020	$ 19,842,195	$ 17,141,692	$ 2,700,503
Changes for the year:			
Service cost	570,325	-	570,325
Interest	1,211,804	-	1,211,804
Differences between expected and actual experience	(285,049)	-	(285,049)
Changes in assumptions	(356,356)	-	(356,356)
Contributions, employer	-	3,396,100	(3,396,100)
Contributions, employee	403,490	403,490	-
Net investment income	-	2,411,103	(2,411,103)
Benefit payments	(979,339)	(979,339)	-
Administrative expense	-	(69,815)	69,815
Net changes	564,874	5,161,539	(4,596,665)
Balance at December 31, 2021	$ 20,407,069	$ 22,303,231	$ (1,896,162)

	Total OPEB Liability (a)	Plan Fiduciary Net Position (b)	Net OPEB Liability (a) - (b)
Balance at December 31, 2019	$ 19,088,422	$ 13,280,806	$ 5,807,616
Changes for the year:			
Service cost	500,313	-	500,313
Interest	1,162,953	-	1,162,953
Differences between expected and actual experience	(269,324)	-	(269,324)
Changes in assumptions	(50,171)	-	(50,171)
Contributions, employer	-	2,708,768	(2,708,768)
Contributions, employee	406,537	406,537	-
Net investment income	-	1,792,023	(1,792,023)
Benefit payments	(996,535)	(996,535)	-
Administrative expense	-	(49,907)	49,907
Net changes	753,773	3,860,886	(3,107,113)
Balance at December 31, 2020	$ 19,842,195	$ 17,141,692	$ 2,700,503

Sensitivity of the Net OPEB Liability (Asset) to Changes in the Discount Rate

The following presents the net OPEB liability (asset) of the Department, as well as what the Department's net OPEB liability (asset) would be if it were calculated using a discount rate that is 1-percentage point lower (5.25%) or 1-percentage-point higher (7.25%) than the current discount rate:

The sensitivity analysis as of December 31, 2021 follows:

	1% Decrease (5.25%)	Discount Rate (6.25%)	1% Increase (7.25%)
Net OPEB liability (Asset)	$ 995,966	$ (1,896,162)	$ (4,242,732)

The sensitivity analysis as of December 31, 2020 follows:

	1% Decrease (5.25%)	Discount Rate (6.25%)	1% Increase (7.25%)
Net OPEB liability	$ 5,619,938	$ 2,700,503	$ 343,866

Sensitivity of the Net OPEB Liability (Asset) to Changes in the Healthcare Cost Trend Rates

The following presents the net OPEB liability (asset) of the Department, as well as what the Department's net OPEB liability (asset) would be if it were calculated using healthcare cost trend rates that are 1-percentage-point lower or 1-percentage-point higher than the current healthcare cost trend rates:

The sensitivity analysis as of December 31, 2021 follows:

	1% Decrease	Healthcare Cost Trend Rates	1% Increase
Net OPEB liability (Asset)	$ (4,515,963)	$ (1,896,162)	$ 1,379,697

The sensitivity analysis as of December 31, 2020 follows:

	1% Decrease	Healthcare Cost Trend Rates	1% Increase
Net OPEB liability	$ 237,987	$ 2,700,503	$ 5,784,770

OPEB Expense and Deferred Outflows of Resources Related to OPEB

For the year ended December 31, 2021 and 2020, the Department recognized OPEB expense of $189,169 and $666,254. At December 31, 2021 and 2020, the Department reported deferred outflows of resources related to OPEB from the following sources.

	2021	
	Deferred Outflows of Resources	**Deferred Inflows of Resources**
Net differences between projected and actual earnings on pension plan	$ 110,106	$ 534,920
Changes of actuarial assumptions	176,510	373,390
Net differences between projected and actual investment earnings on pension plan investment	-	1,952,905
Total	$ 286,616	$ 2,861,214

	2020	
	Deferred Outflows of Resources	**Deferred Inflows of Resources**
Net differences between projected and actual earnings on pension plan	$ 154,846	$ 375,864
Changes of actuarial assumptions	248,233	97,999
Net differences between projected and actual investment earnings on pension plan investment	-	1,114,079
Total	$ 403,079	$ 1,587,942

Deferred outflows of resources related to OPEB will be recognized in OPEB expense as follows:

Years ending December 31:	
2022	$ (591,418)
2023	(814,187)
2024	(610,726)
2025	(423,388)
2026	(133,066)
Thereafter	(1,813)
Total	$ (2,574,598)

Funding Policy

The Department is not required to provide funding for OPEB, other than the pay-as-you go amount necessary to provide current benefits to retirees and eligible beneficiaries/dependents. The cost of providing these benefits was $996,535 for 191 retirees in 2020 and $979,339 in 2021 for 191 retirees. In 2020 and 2021, the Department contributed assets into a separate legal trust, Holyoke Gas and Electric OPEB Trust, for the payment of future OPEB obligations. Contributions were $2,820,251 in 2021 and $2,118,770 in 2020.

11. Related-Party Transactions

The Massachusetts Clean Energy Cooperative (Clean Energy Coop) signed a power sales contract in April 2013 with its member Massachusetts Wholesale Electric Company (MMWEC). Through this contract, MMWEC will purchase the net electrical capacity of the Hadley Falls Facility from the Clean Energy Coop at a monthly charge as defined in the contract. There were no sales to MMWEC during 2021 and 2020.

There is also an agency contract between the Clean Energy Coop and MMWEC, whereby MMWEC will act as agent for the Clean Energy Coop in the performance of its administrative obligations.

The Department transacted business with Tighe & Bond for engineering services in the amount of $8,333 in 2021 and $101,844 in 2020. One of the Department's commissioners has a financial interest in this company, requiring disclosure.

12. Commitments and Contingences

Purchased Power Contracts

Short-Term Power

On a continuing basis, the Department enters into several short-term power supply contracts for either the purchase or sale of capacity, energy, renewable certificates, or ancillary services with various suppliers. This includes bilateral purchases to meet Department’s shortfall position during the summer months of 2022 through 2026, where commitments were made by the end of 2020 in the amount of $155,558 for 2022 and $333,205 for the period from 2023-2026.

Massachusetts Renewable Energy Certificates (RECs)

On a continuing basis, the Department enters into REC contracts for the sale of Massachusetts Class I, Massachusetts Class II and Maine Existing RECs from its hydro units. These commitments were made by the end of 2021. The summary of the resulting revenues to the Department by year and based on the total certificates sold is shown in the table below:

	2021		2022		2023		2024		2025	
Contract Date	Revenues	Total Certificates	Revenues	Total Certificates	Revenues	Total Certificates	Revenues	Total Certificates	Revenues	Total Certificates
2021	254,654	6,488	1,361,813	51,000	827,813	28,500	621,563	21,000	642,350	22,050

Canal Hydro Power

In November 2013, the Department entered into an agreement to provide electricity to the Open Square facility and purchase any excess electricity from the operation of the Open Square D and G wheels at a monthly charge as defined in the agreement. The Department does not have any liability associated with these energy purchases as any excess energy beyond contract water rights is at Department discretion under terms with the customer are currently on a month-to-month basis.

Solar Power

In December 2010, the Department, through its subsidiary Holyoke Solar Cooperative, signed a 20-year solar Power Purchase Agreement (PPA) with Holyoke Solar, LLC. The Department has agreed to purchase the electricity produced by two grid-connected solar power facilities which will vary between $265,000 and $425,000 annually. After the initial term, this agreement can be renewed for two consecutive five-year terms. In conjunction with this PPA, the Department is leasing, to Holyoke Solar, LLC, the property on which the solar power facility is located at $100 per usable acre per year for the first 20 years. After the initial term under the PPA, the rate shall be $3,000 per usable acre per year subject to a 2.5% annual escalation.

In June 2011, the Department signed a 20-year solar Power Sales Agreement with Rivermoor-Citizens Holyoke, LLC. The Department agreed to purchase the electricity produced by the photovoltaic solar electric generation system for an annual payment of between $48,000 - $72,000 beginning in February 2013. After the initial term, this agreement shall automatically renew for successive one-year terms, up to a maximum of ten such renewal terms, unless terminated by either party.

In December 2014, the Department signed a 25-year solar Power Sales Agreement with Healthy Planet Partners, LLC. The annual energy payment will vary between $54,200 and $61,200 over a twenty-five (25) year contract term beginning October 2015.

The Department contracted for several 20-year solar PPA's during 2015 and 2016 with various solar developers and executed interconnection only agreements with a few others. Two C2 Special Solutions Group solar projects had COD of December 2016 under twenty (20) year PPA's signed in October 2015 – with annual total energy payments that will vary between $101,000 and $104,000. The Department contracted for several 20-year solar PPA's with various solar developers. Below is a summary for each solar project, which became commercial in 2017 or 2018.

Date of PPA	System Name	Annual Energy Payment	Commercial Operation Date
July 2016	Mt. Tom Solar	$303,460 to $335,460 over term	02/03/17
October 2016	AEGIS	$48,366 to $53,466 over term	01/04/17
October 2016	Gary Rome	$37,943 to $41,944 over term	01/06/17
December 2016	Conklin	$47,745 to $49,689 over term	02/24/17
January 2017	Riverside Roof	$7,686 to $10,012 over term	05/08/17
June 2017	Walnut Roof	$7,686 to $9,616 over term	11/22/17
June 2017	Hadley Mills	$22,915 to $28,902 over term	12/29/17
September 2017	Jackson Street	$7,987 to $8,786 over term	03/15/18
November 2017	Boys & Girls Club	$11,531 to $12,683 over term	04/20/18
October 2015 and reassigned December 2017	Kelly Way 2	$50,547 to $51,792 over term	06/04/18
March 2018	YMCA	$12,907 to $13,940 over term	12/21/18

Long-Term Power Transactions

In August 2018, the Department signed an eight-year contract through December 2029 with NextEra Energy Power Marketing to purchase on-peak physical energy and clean nuclear tags each year at an estimated cost of $16,211,849. In November 2020, the Department extended this contract for another six (6) years from January 2030 through December 2035 at an estimated cost of $11,846,265.

In September 2018, the Department executed a thirty-seven (37) month contract starting October 1, 2019 and ending October 31, 2022 with Nextera Energy Power Marketing for around-the-clock energy. The annual energy payment will be around $1,427,927 and for the 10 months remaining to the contract, the total future commitment is $1,185,875. At the same time, the Department executed a 37-month First Amendment to the above contract with the Massachusetts Green High Performance Computing Center, Inc. locking in the Energy Only piece of the rate and extending the term to cover this transaction.

In November 2020, the Department extended this contract with NextEra Energy Power Marketing for another four (4) years from November 2022 through October 2026 and acquired clean nuclear tags with the purchase at an estimated cost of $5,700,004.

In October 2020, the Department executed a five (5) year around-the-clock physical power and Hydro Quebec System Mix clean energy Tags contract starting November 2020 and ending October 2025 with Hydro Quebec through MMWEC. The annual energy payment will be around $911,101 and for the 46 months remaining to the contract, the total future commitment is $3,492,616.

In December 2013, the Department signed a twenty-five (25) year PPA for energy and capacity out of the Hancock Wind Project, located in Hancock County, Maine. The annual energy payment will be about $813,200 for this project that had an estimated commercial operation date of December 2016.

In October 2015, the Department contracted with MMWEC to participate in a new MMWEC owned simple cycle 55 MW peaking unit located in Peabody, MA through the Predevelopment phase. All requirements have been completed in order to participate in the ISO-NE 2021/22 Forward Capacity Auction (FCA) which was held on February 5, 2018. The Department contracted with MMWEC in 2017 prior to the FCA to participate in this project for up to the life of unit with expected COD beginning June 2023. HG&E's estimated portion of construction costs is approximately $3,300,000. As the project is MMWEC owned, the Department will not carry project debt on its books. The annual total costs will vary between $290,832 and $322,269 over the thirty (30) estimated year life of unit.

In December 2015, the Department contracted with Scuderi Clean Energy, LLC under a twenty (20) year PPA for output from a natural gas generating facility. Expected Commercial Operation is unknown at this time. The Department mitigated market and development risk by ensuring interconnection costs are born by other party and that rates under PPA are discounted to full wholesale energy and resulting load reduction cost savings (where and if applicable).

In September 2017, the Department contracted with Mt. Tom Solar, LLC under a twenty (20) year PPA for a lithium-ion battery-based energy storage system (ESS) located at the Mt Tom Solar facility. Testing and limited operation was completed in 2018 with fixed capacity payments beginning in June 2018. The Commercial Operation date was achieved in March 2019 after all city permitting. The annual fixed capacity payment will be $360,000 and for the 16 years and 5 months remaining to the contract, the total future commitment is $5,910,000.

In February 2020, HG&E contracted with Holyoke BESS, LLC under a fifteen (15) year PPA. This is our second utility-scale energy storage project totaling 4.99 MW / 12 MWh with an expected commercial operation date in August 2021. This will be located across from our North Canal Substation. This will act as a load reducer to lower capacity and transmission costs. The annual capacity and transmission savings will be split between parties. The annual Department Payment will be around $648,318 and the total future commitment will be around $9,724,764

In June 2021, HG&E contracted with Holyoke Energy Storage 1, LLC under a fifteen (15) year PPA. This will be our third utility scale energy storage project totaling 4.80 MW/ 14.40 MWh with an expected commercial operation date in June of 2023. This will be located on Cabot Street and will act as a load reducer to lower capacity and transmission costs. The annual capacity and transmission savings will be split between parties. The annual Department Payment will be amount around $991,660 and the total future commitment will be around $14,875,000.

In October 2021, HG&E contracted with Holyoke Energy Storage 2, LLC under a twenty (20) year PPA. This will be our fourth utility scale energy storage project totaling 4.75 MW/ 14.25 MWh with an expected commercial operation date in June of 2024. This will be located on Cabot Street and will act as a load reducer to lower capacity and transmission costs. The annual capacity and transmission savings will be split between parties. The annual Department Payment will be amount $770,800 and the total future commitment will be around $15,416,000

Long-Term Capacity Transaction

In January 2016, the Department contracted with PSEG through MMWEC under a five (5) year Capacity Load Obligation Transfer contract. This capacity hedge began June 1, 2019 and ends May 31, 2024 and protects against rising capacity costs in ISO-NE’s Rest of System capacity zone in which the Department is located. The annual capacity payment will be $1,395,000 per year and for the 2 years and 5 months remaining to the contract, the total future commitment is $3,371,250.

Massachusetts Municipal Wholesale Electric Company

The Department is a Participant in certain Projects of the Massachusetts Municipal Wholesale Electric Company (MMWEC), a public corporation and a political subdivision of the Commonwealth of Massachusetts, created as a means to develop a bulk power supply for its Members and other utilities. MMWEC is authorized to construct, own or purchase ownership interests in, and to issue revenue bonds to finance, electric facilities (Projects). MMWEC has acquired ownership interests in electric facilities operated by other entities and also owns and operates its own electric facilities. MMWEC operates the Stony Brook Intermediate Project and the Stony Brook Peaking Project, both fossil-fueled power plants.

MMWEC has the Nuclear Mix No 1 Project, Nuclear Project Three, Nuclear Project Four, Nuclear Project Five and Project Six, which comprise an 11.6% ownership interest in the Seabrook Station nuclear generating unit operated by NextEra Energy Seabrook, LLC and a 4.8% ownership interest in the Millstone Unit 3 nuclear unit, operated by Dominion Nuclear Connecticut, Inc. The operating license for Seabrook Station extends to March 15, 2050. The operating license for the Millstone Unit 3 nuclear unit extends to November 25, 2045.

The Department is also a Participant in MMWEC Project 2015A, a capacity reliability resource in Peabody, Massachusetts. Project 2015A is under construction as of December 31, 2021. As of December 31, 2021, the Light Department has contributed $471,186 for design and construction costs for Project 2015A.

MMWEC sells all of the capability (Project Capability) of each of its Projects to its Members and other utilities (Project Participants) under Power Sales Agreements (PSAs). The Light Department has entered into PSAs with MMWEC. Under the PSAs the Department is required to make certain payments to MMWEC payable solely from Municipal Light Department revenues. Among other things, the PSAs require each Project Participant to pay its pro rata share of MMWEC's costs related to the Project, which costs include debt service on the revenue bonds issued by MMWEC to finance the Project. In addition, should a Project Participant fail to make any payment when due, other Project Participants of that Project may be required to increase (step-up) their payments and correspondingly their Participant's share of that Project's Project Capability. Project Participants have covenanted to fix, revise and collect rates at least sufficient to meet their obligations under the PSAs. Each Participant is unconditionally obligated to make payments due to MMWEC whether or not the Project(s) is completed or operating and notwithstanding the suspension or interruption of the output of the Project(s).

Pursuant to the PSAs, the MMWEC Project Participants are liable for their proportionate share of the costs associated with decommissioning the plants, which are funded through monthly Project billings, as needed. Also, the Millstone and Seabrook Project Participants are liable for their proportionate share of the uninsured costs of a nuclear incident that might be imposed under the Price-Anderson Act (Act). Originally enacted in 1957, the Act has been renewed several times. In July 2005, as part of the Energy Policy Act of 2005, Congress extended the Act until the end of 2025.

MMWEC is involved in various legal actions. In the opinion of management, the outcome of such litigation or claims will not have a material adverse effect on the financial position of the company.

The total capital expenditures and annual capacity, fuel and transmission costs (which include debt service and decommissioning expenses as discussed above), and amount of required debt service payments (if applicable) under the PSAs associated with the Department's Project Capability of the Projects in which it participates for the years ended December 31, 2021 and 2020, respectively are listed in the table(s) below:

Projects	Percentage Share	Total Capital Expenditures 2021	Capacity, Fuel and Transmission Billed 2021	Capacity, Fuel and Transmission Billed 2020
Stony Brook Peaking Project	2.8342 %	$ 1,755,560	$ 113,110	$ 107,051
Sony Brook Intermediate Project	0.0000	-	-	-
Nuclear Mix No. 1, Seabrook	7.2615	746,628	31,142	34,057
Nuclear Mix No. 1, Millstone	7.2615	4,523,502	482,544	431,421
Nuclear Project No. 3, Millstone	6.3500	9,622,466	840,735	756,156
Nuclear Project No. 4, Seabrook	6.1180	18,598,217	700,934	766,231
Nuclear Project No. 5, Seabrook	2.9821	2,453,277	87,908	95,860
Project No. 6, Seabrook	0.0000	-	-	-
Project 2015A-Capacity Resources	3.8790	1,224,802	-	-
Project 2020A-Ludlow Solar	0.0000	-	-	-
		$ 38,924,452	$ 2,256,373	$ 2,190,776

Years Ended	Percentage Share	Total Project 2015A Debt Service 4.5200%	Total Project 2020A Debt Service 0.0000%	Total Project Debt Service
2022	- %	$ 114,451	$ -	$ 114,451
2023	-	114,451	-	114,451
2024	-	166,319	-	166,319
2025	-	166,026	-	166,026
2026	-	165,850	-	165,850
2027-2031	-	827,393	-	827,393
2032-2036	-	826,081	-	826,081
2037-2041	-	825,424	-	825,424
2042-2046	-	822,893	-	822,893
2047-2051	-	820,466	-	820,466
Total		$ 4,849,354	$	$ 4,849,354

Telecommunications Contracts

The Department has entered into long-term contracts for dedicated point-to-point data lines and Internet Access services from several companies. These contracts have three-year terms.

In 2021, The Department entered into a three-year contract with Lumen to provide 20Gig of Internet Services. The Department also entered into a five-year contract with WG&E to provide point-to-point services to Westfield Bank. The Department entered into a three-year contract with Fiber Sonic to provide point-to-point services to multiple locations.

In 2020, The Department entered into a five-year contract with Cooley Dickinson Hospital to provide Colocation Services. The Department also entered into a five-year contract renewal with PeoplesBank to increase their Internet from 100M to 200M.

In 2019, The Department entered into a five-year contract renewal with Cross Roads a division of Chicopee Electric Light to increase wholesale internet from 2 gigs to 3 gigs. The Department also entered into a five-year contract renewal with PeoplesBank to provide router management.

In 2018, the Department entered into a five-year contract with Cross Roads a division of Chicopee Electric Light and a one-year contract with Fiber Sonic a division of South Hadley Electric Light.

In 2017, the Department entered into a five-year contract with Fiber Connect, LLC to provide network operator services.

In 2002, the Department entered into a lease with Fiber Technologies Networks, LLC (Fibertech) for use of the Department's fiber optic lines. The lease provides for an annual payment per route mile for 20 years with an option to renew for an additional five years.

The Department has long-term contracts which range from one to five years with customers for telecommunications services.

Environmental Protection and Other Issues

In 1990, the Massachusetts Department of Environmental Protection (MDEP) sent a notice of responsibility to the Department and other parties regarding the presence of coal tar on property known as the gas works, adjacent to the Connecticut River. An investigation of the site has revealed concentrations of contaminants on the site and MDEP classified the area as a priority site. A second notice of responsibility was issued in September 1993 for gas tar deposits in the Connecticut River, effectively separating the gas works into a land site and a river site.

The current estimate for the remaining clean-up of only the land site is approximately $115,000. No estimate is currently available for the river site. However, the cost of clean-up may be significant and material to the financial statements. The measurement of the accrual for remediation costs is subject to uncertainty, including the evolving nature of environmental regulations and the difficulty in estimating the extent and type of remediation activity that will be utilized. The utility is also in negotiations with another counterparty under a similar order to fund part of the clean-up efforts. A final agreement as to the cost-sharing methodology between the parties has not been reached. The impact of these negotiations may be material to the financial statements but cannot be estimated.

Sources of Labor Supply

57% of the Department's labor force is covered under a collective bargaining agreement between the City of Holyoke Gas and Electric Department and the Holyoke Municipal Gas, Light & Power Guild, Inc. The agreement expires March 31, 2023.

Line of Credit, Margin Account

As of December 31, 2021, the Department had funds of $0 on an open line of credit facility (securitized by portfolio assets on deposit) from our investment adviser, LPL Financial. During the FY 2019, the Department fully paid off the December 31, 2018 balance of $2,771,987. While currently at $0, the Department does, from time to time, access this line if and where beneficial. The current interest rate on the line of credit is 2.5%, which is a negotiated 4.5% discount off of LPL's base lending rate for balances over $1,000,000. The base interest rate, while stable for the past 4 years, may be subject to change at any time and is based upon commercially recognized interest rates, industry conditions relating to extension of credit and general market conditions.

13. Risk Management

Claims and Judgments

The Department is exposed to various risks of loss related to torts; theft of, damage to or destruction of assets; errors and omissions; workers compensations; and health care of its employees. The Department participates in a public entry risk pool called the PUMIC to provide coverage for the above-mentioned risks except for workers compensation. The following details the coverage through the PUMIC. Settled claims have not exceeded the risk pool coverage in any of the past three years. There were no significant reductions in coverage compared to the prior year.

Public Entity Risk Pool

Public Utility Mutual Insurance Company (PUMIC)

The PUMIC is a liability insurance company, which is owned by its members. The PUMIC was formed in 1997 to provide general insurance to members of the Public Utility Risk Management Association (PURMA). PURMA is a 501(c)(6) not-for-profit association whose members include municipal utilities and rural cooperatives.

The PUMIC is self-insured up to a maximum of $1,000,000 of each insurance risk. Losses paid by the PUMIC plus administrative expenses will be recovered through premiums to the participating pool of municipal utilities and rural cooperatives.

Management of each organization consists of a board of directors comprised of representatives elected by the participants. The Department has an employee participating as a board member in each of the organizations.

Financial statements of PUMIC and PURMA can be obtained directly from PUMIC's offices.

The initial investment in PUMIC is refundable upon withdrawal from the organization and has been reported at the original amount of $168,000.

For general liability purposes, the Department is self-insured up to $50,000, has self-insurance trust coverage in the amount of $500,000 and general liability insurance through the risk pool for $500,000 to $25,000,000 per occurrence. The Department was also self-insured for workers compensation up to $250,000 per occurrence through December 31, 2014. The Department has since moved to commercial insurance for workers compensation.

14. Subsequent Events

The Department evaluated subsequent events through April 29, 2022, the date that the financial statements were available to be issued, for events requiring recording or disclosure in the financial statements.

The Holyoke Solar Cooperative entered into a loan agreement on April 21, 2022 for $4,700,000 to finance 100% of equipment costs associated with the design, supply and installation of a 225 MVA UPS (Uninterruptible Power System) to support the data center of MIT Lincoln Laboratory Supercomputing Center. The Note has qualified as a tax-exempt loan, ensuring a fixed interest rate of 4.34%. If the Note loses the status of a tax-exempt loan, the interest rate going forward would increase to 6.25%. The principal balance is to be amortized over a 10-year amortization schedule, and principal and interest are to be paid in monthly installments of $48,493.83.

REQUIRED SUPPLEMENTARY INFORMATION

Holyoke Gas and Electric

Schedule of Proportionate Share of the Net Pension Liability (Unaudited)
City of Holyoke Retirement System
Last 10 Fiscal Years*

The required supplementary information presented below represents the proportionate information for the enterprise funds included in this report.

	2021	2020	2019	2018	2017	2016	2015
Holyoke Gas and Electric's proportion of the net pension liability	22.6007850%	23.0413940%	22.7516170%	21.8667720%	21.0663720%	20.7392330%	20.4671670%
Holyoke Gas and Electric's proportionate share of the net pension liability	$ 22,849,646	$ 47,212,617	$ 34,387,346	$ 25,930,197	$ 30,715,656	$ 30,700,334	$ 27,426,467
Holyoke Gas and Electric's covered employee payroll	12,794,112	12,976,188	12,629,315	11,779,347	11,381,012	10,862,753	10,776,026
Plan fiduciary net position as a percentage of the total pension liability	71.73%	71.79%	64.90%	71.67%	64.26%	62.55%	64.47%

* The amounts presented for each fiscal year were determined as of the calendar year-end that occurred within the fiscal year.

Schedule of Contributions - Pension
City of Holyoke Retirement System
Last 10 Fiscal Years *

The required supplementary information presented below represents the proportionate information for the enterprise funds included in this report.

	2021	2020	2019	2018	2017	2016	2015
Contractually required contributions	$ 3,907,249	$ 3,983,422	$ 3,958,373	$ 3,856,839	$ 3,711,165	$ 3,596,091	$ 3,526,919
Contributions in relation to the contractually required contributions	(3,907,249)	(3,983,422)	(3,958,373)	(3,856,839)	(3,711,165)	(3,596,091)	(3,526,919)
Contributions deficiency (excess)	-	-	-	-	-	-	-
Holyoke Gas and Electric's covered-employee payroll	13,370,925	12,794,112	12,976,188	12,629,315	11,779,347	11,381,012	10,862,753
Contributions as a percentage of covered-employee payroll	29.22%	31.13%	30.50%	30.54%	31.51%	31.60%	32.47%

* The amounts presented for each fiscal year were determined as of the calendar year-end that occurred within the fiscal year.

Holyoke Gas and Electric

Schedule of Changes of the Net OPEB Liability (Asset) (Unaudited)
City of Holyoke Retirement System
Last 10 Fiscal Years *

	2021	2020	2019	2018	2017
Total OPEB Liability (Asset)					
Service cost	$ 570,325	$ 500,313	$ 518,484	$ 594,872	$ 526,946
Interest cost	1,211,804	1,162,953	1,119,602	1,008,278	998,426
Differences between expected and actual experience	(285,049)	(269,324)	(222,610)	289,069	-
Changes of assumptions	(356,356)	(50,171)	(83,641)	463,399	-
Benefit payments, including refunds of member contributions	(575,849)	(589,998)	(579,319)	(574,584)	(824,241)
Net change in total OPEB lability	564,875	753,773	752,516	1,781,034	701,131
Total OPEB Liability, Beginning	19,842,195	19,088,422	18,335,906	16,554,872	15,853,741
Total OPEB Liability, Ending	$ 20,407,070	$ 19,842,195	$ 19,088,422	$ 18,335,906	$ 16,554,872
Plan Fiduciary Net Position					
Contribution, employer	$ 3,396,100	$ 2,708,768	$ 2,559,063	$ 1,774,584	$ 2,024,241
Net investment income (loss)	2,341,288	1,742,116	1,866,028	(593,694)	840,362
Benefit payments, including refunds of member contributions	(575,849)	(589,998)	(579,319)	(574,584)	(824,241)
Net change in fiduciary net position	5,161,539	3,860,886	3,845,772	606,306	2,040,362
Plan Fiduciary Net Position, Beginning	17,141,692	13,280,806	9,435,034	8,828,728	6,788,366
Plan Fiduciary Net Position, Ending	$ 22,303,231	$ 17,141,692	$ 13,280,806	$ 9,435,034	$ 8,828,728
Net OPEB Liability (Asset)					
Net OPEB liability (asset)	$ (1,896,161)	$ 2,700,503	$ 5,807,616	$ 8,900,872	$ 7,726,144
Plan's fiduciary net position as a percentage of the total OPEB liability	109.90%	86.39%	69.58%	51.46%	53.33%
Covered-employee payroll	14,508,827	13,698,697	13,115,000	12,520,427	12,187,515
Net OPEB liability (asset) as a percentage of covered-employee payroll	N/A	19.71%	44.28%	71.09%	63.39%

* The amounts presented for each fiscal year were determined as of the calendar year-end that occurred within the fiscal year.
GASB Statement No. 74 was implemented effective January 1, 2017, and therefore only four years are available for disclosure.

Holyoke Gas and Electric

Schedule of Contributions - Other Post-Employment Benefits (Unaudited)
City of Holyoke Retirement System
Last 10 Fiscal Years *

	2021	2020	2019	2018	2017
Actuarially determined contribution	$ 580,935	$ 1,279,538	$ 1,732,455	$ 1,974,179	$ 1,978,662
Contributions in relation to the actuarially determined contribution	3,396,100	2,708,768	2,559,063	1,774,584	2,024,241
Contribution deficiency (excess)	$ (2,815,165)	$ (1,429,230)	$ (826,608)	$ 199,595	$ (45,579)
Covered-employee payroll	14,508,827	13,698,697	13,115,000	12,520,427	12,187,515
Contributions as a percentage of covered-employee payroll	23.41%	19.77%	19.51%	14.17%	16.61%
Annual Weighted Rate of Return on OPEB plan investments	13.02%	12.52%	18.32%	-5.97%	11.37%

* The amounts presented for each fiscal year were determined as of the calendar year-end that occurred within the fiscal year.
GASB Statement No. 74 was implemented effective January 1, 2017, and therefore only four years are available for disclosure.

Changes of benefit terms: Effective January 1, 2020 the Cost of Living Adjustment (COLA) base was increased from $12,000 to $14,000. There were no changes of benefit terms for any participating employer in the City of Holyoke Retirement System for the years 2015 – 2019.

Changes of assumptions:

The following changes were effective January 1, 2021:

> None

The following changes were effective January 1, 2020:

> The investment return assumption was lowered from 7.50% to 7.25

The following changes were effective January 1, 2018:

> Salary increases was lowered from 4.25% - 4.75% to 4.00% - 4.50%
> The inflation assumption was lowered from 3.50% - 3.25%
> The investment return assumption was lowered from 7.625% to 7.50%
> The mortality assumption for healthy retirees changed from RP-2000 Healthy Annuitant Mortality Table projected using Scale BB2D from 2009, to RP-2014 Blue Collar Healthy Annuitant Mortality Table set forward one year for females projected generationally using Scale MP-2017
> The mortality assumption for disabled retirees changed from the RP-2000 Healthy Annuitant Mortality Table projected generationally using Scale BB2D from 2015, to RP-2014 Blue Collar Healthy Annuitant Mortality Table set forward one year projected generationally using Scale MP-2017

The following changes were effective January 1, 2016:

> The investment return assumption was lowered from 7.75% to 7.625%
> The mortality assumption for non-disabled participants was changed from the RP-2000 Employee and Healthy Annuitant Mortality Tables projected generationally using Scale AA from 2010 to the RP-2000 Employee and Healthy Annuitant Mortality Tables projected generationally using Scale BB2D from 2009
> The mortality assumption for disabled participants was changed from the RP-2000 Healthy Annuitant Mortality Table set forward three years for males only projected generationally using Scale AA from 2010 to the RP-2000 Healthy Annuitant Mortality Table projected generationally using Scale BB2D from 2015.

Factors significantly affecting trends in the amounts reported:

Inflation	3.50% for FY2020 - FY2017
Salary increases	Service-related increases for Group 1: 6.0% per year decreasing over 9 years to 4.25% per year for FY2020 - FY2017 Service-related increases for Group 4: 7.0% per year decreasing over 6 years to 4.75% per year for FY2020 – FY2017
Investment rate of return	6.25% for FY2020 – FY2017
Healthy Mortality Rates	PubG.H-2010 Mortality Table with MP-2020 Projection Scale for FY2020. PubG.H-2010 Mortality Table with MP-2018 Mortality Scale for FY2019 and FY2018.RP-2000 Healthy Annuitant Mortality Table projected generationally with Scale BB2D from 2009 for FY2017.

Significant Methods and assumptions used in calculating actuarially determined contributions:

Valuation Date	Actuarially determined contribution for fiscal year ending December 31, 2020 was determined with the December 31, 2020 actuarial valuation. The fiscal year ending December 31, 2019 and 2018 were both determined with the December 31, 2018 actuarial valuation. The fiscal year ending December 31, 2017 was determined with the June 30, 2015 actuarial valuation.
Actuarial cost method	Entry Age Actuarial Cost Method for FY2020 – FY2018. Projected Unit Credit Method for FY2017.
Amortization method	Level percent of payroll for FY2020 – FY2017
Remaining amortization period	6 years from December 31, 2020 for FY2020. 6 years from December 31, 2018 for FY2019 and FY2018. 7 years from December 31, 2015 for FY2017.
Asset valuation method	Market value for FY2020 – FY2017
Discount rate	6.25% for FY2020 – FY2017
Inflation	3.50% for FY2020 - FY2017
Health care trend rates* *Non-Medicare medical/prescription drug*	5.5% per year graded down by the Getzen model to an ultimate rate of 4,04% per year for FY2020. 6.00% per year graded down by the Getzen model to an ultimate rate of 3.84% per year for FY2019. 6.50% per year graded down by the Getzen model to an ultimate rate of 3.84% per year for FY2018. 10.0%, then 7.5% decreasing by 0.5% for 5 years to an ultimate level of 5.0% per year for FY2017.
Medicare medical/prescription drug	5.5% per year graded down by the Getzen model to an ultimate rate of 4.04% per year for FY2020. 6.00% per year graded down by the Getzen model to an ultimate rate of 3.84% per year for FY2019. 5.5%, then 7.5% decreasing by 0.5% for 5 years to an ultimate level of 5.0% per year for FY2018. 10.0%, then 7.5% decreasing by 0.5% for 5 years to an ultimate level of 5.0% per year for FY2017.
Dental/Administrative	5.5% per year graded down by the Getzen model to an ultimate rate of 4.04% per year for FY2020. 6.00% per year graded down by the Getzen model to an ultimate rate of 3.84% per year for FY2019. 5.0% for FY2018 and FY2017.
Contributions	Retiree contributions for medical and prescription drug coverage are expected to increase with medical trend for FY2020 – FY2017.

**Trends reflect known increases for the first year*

SUPPLEMENTARY INFORMATION

Holyoke Gas and Electric

Schedules of Operating Revenues and Expenses - Gas Division
Years Ended December 31, 2021 and 2020

	2021	2020
Operating Revenues		
Residential	$ 10,060,774	$ 9,412,029
Commercial	9,159,467	8,194,170
Industrial	2,334,624	1,977,948
Municipal	706,886	665,127
Departmental sales	56,603	48,033
Sales for resale	511,907	205,870
Uncollectible accounts	(120,519)	(131,136)
Total operating revenues	$ 22,709,742	$ 20,372,041
Cost of Gas Sold		
Purchases, natural gas	$ 9,227,452	$ 7,608,977
Liquid natural gas processed	446,863	365,725
Environmental response	110,820	89,491
Supplies and expenses	181,271	180,572
Total cost of gas sold	$ 9,966,406	$ 8,244,765
Distribution		
Salaries and wages:		
System control and load dispatch	$ 387,379	$ 361,080
Supervision and engineering	429,736	378,896
Customer installation	608,494	591,865
Operation	656,624	687,982
Maintenance	1,233,783	1,097,490
Supplies and expenses	1,382,289	1,791,820
Total distribution	$ 4,698,305	$ 4,909,133
Customer Accounts		
Salaries and wages:		
Meter reading	$ 45,783	$ 60,955
Accounting and collection	139,723	134,301
Supplies and expenses	109,017	79,250
Total customer accounts	$ 294,523	$ 274,506
General and Administrative		
Salaries	$ 1,000,280	$ 973,850
Pensions and benefits	1,265,410	2,344,229
Insurance	134,714	131,242
General supplies and expenses	770,960	762,818
Total general and administrative	$ 3,171,364	$ 4,212,139

Holyoke Gas and Electric

Schedules of Operating Revenues and Expenses - Electric and Telecommunications Divisions
Years Ended December 31, 2021 and 2020

	2021	2020
Operating Revenues		
Electric sales:		
Residential	$ 15,306,842	$ 14,698,372
Commercial	25,965,347	22,418,614
Industrial	5,106,473	5,198,569
Municipal	2,829,986	2,500,549
Interdepartmental	267,786	252,274
Water	6,300	6,300
Renewable energy revenue	1,591,551	2,093,340
Cobble Mountain operation, net	647,709	718,030
Telecommunication sales	2,780,993	2,490,235
Uncollectible accounts, electric/hydro	(270,399)	(326,952)
Uncollectible accounts, telecommunications	(2,824)	(507)
Rate stabilization funds(deferred)/utilized in the current period	(2,500,000)	3,354,839
Total operating revenues	$ 51,729,764	$ 53,403,663
Cost of Electricity/Steam/Water Sold		
Purchases, electricity	$ 12,640,601	$ 13,843,153
Salaries and wages:		
Production	1,362,905	1,308,001
Maintenance	1,815,035	1,644,030
Supplies and expenses	2,793,900	2,873,315
Cost of water sold	395,133	385,223
Total cost of electricity/steam/water sold	$ 19,007,574	$ 20,053,722
Electric Transmission		
Salaries and wages	$ 987,475	$ 886,127
Supplies and expenses	320,722	277,956
Transmission by others	2,812,736	2,464,002
Total electric transmission	$ 4,120,933	$ 3,628,085
Distribution		
Electric:		
Salaries and wages:		
Lines, equipment and street lights	$ 3,062,334	$ 3,003,706
Customer installations	267,190	275,883
Supplies and expenses	3,189,986	3,268,958
Telecommunications distribution	1,785,306	1,630,395
Total distribution	$ 8,304,816	$ 8,178,942
Customer Accounts		
Salaries and wages:		
Meter reading	$ 85,265	$ 108,770
Accounting and collection	259,484	249,415
Supplies and expenses	197,234	134,681
Total customer accounts	$ 541,983	$ 492,866
General and Administrative		
Electric:		
Salaries	$ 1,820,409	$ 1,776,744
Pensions and benefits	2,490,704	4,898,821
Insurance	563,489	506,895
General supplies and expenses	1,846,130	1,802,132
Telecommunications general and administrative	603,133	746,877
Total general and administrative	$ 7,323,865	$ 9,731,469