Justice Institute
BRITISH COLUMBIA

LEARNING THAT TAKES YOU BEYOND

JIBC 2022 PSO Climate Change Accountability Report

May 31, 2023

Land Acknowledgement

Justice Institute of British Columbia (JIBC) respectfully acknowledges that our campuses are located on the unceded Traditional Territories of the Qayqayt, Musqueam, and Coast Salish Peoples, the Katzie and Kwantlen First Nations, the Sto:lo Nation, the Sylix/Okanagan Nation, and the Lands of the Xwsepsum (Esquimalt) and Lekwungen (Songhees) ancestors and families.

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Declaration Statement

This PSO Climate Change Accountability Report for the period January 1, 2022, to December 31, 2022, summarizes the Justice Institute of British Columbia's greenhouse gas (GHG) emissions profile, total offsets to reach net-zero emissions, actions undertaken in 2022 to minimize GHG emissions and plans to continue reducing emissions in 2023 and beyond.

By June 30, 2023, the 2022 Climate Change Accountability Report will be posted on JIBC's website at www.jibc.ca

Executive Summary

JIBC's Commitment to Energy Management and Carbon Reduction

Justice Institute of British Columbia (JIBC) is Canada's leading public, post-secondary safety educator with a mission to develop dynamic justice and public safety professionals through its exceptional applied education, training, and research. Each year, about 36,000 students study online or at one of JIBC's six campuses in New Westminster, Maple Ridge, Chilliwack, Pitt Meadows, Vancouver Island, and the Okanagan.

JIBC is committed to a carbon neutral future. The organization aims to reduce its carbon footprint and improve its sustainability performance by participating in energy management and sustainability programs and ensuring environmentally responsible practices. As part of this commitment, JIBC's Strategic Energy Management Plan outlines its goal to reduce total electricity and fuel energy use at its New Westminster and Maple Ridge campuses by 50 percent by the 2029/2030 fiscal year, compared to the 2008/2009 baseline year. Energy consumption and greenhouse gas emissions measurement, tracking and reporting support these efforts.

2022 Greenhouse Gas Emissions and Offsets

In 2022, JIBC's greenhouse gas emissions totalled 690 tonnes of carbon dioxide equivalent (tCO_2e). Pages 7 to 9 describe JIBC's total GHG emissions trends from 2015 – 2022, as well as avoided emissions at the New Westminster and Maple Ridge campuses since the 2008/09 base period. While total emissions have increased 10 percent since 2015, avoided GHG emissions at the New Westminster and Maple Ridge campuses total approximately 1,596 tCO_2e.

In 2022, stationary sources accounted for 84 percent of JIBC's total annual emissions, followed by mobile (13 percent) and paper sources (3 percent). Page 9 further describes this breakdown. Offsets to be retired for the 2022 Reporting Year total $17,250 and are summarized in the 2022 GHG Emissions and Offset Summary Table on page 13.

Emissions Reductions Actions

As part of JIBC's commitment to reduce its energy consumption and associated emissions, measures are prioritized and selected based on payback and emissions reduction potential. As a result, most projects in 2022 focused on reducing stationary energy use, JIBC's largest contributing source of GHG emissions, followed by projects in the mobile and paper use categories. These projects are detailed on page 10. Page 15 highlights one project in particular: the pump upgrade to Water Treatment B System at the Maple Ridge campus, which is now a fully electric, low carbon system.

Projects planned for 2023 and beyond look at all three sources and build on the work, learning and success of projects to date. These projects are described on page 11.

Climate Risk Management

Increasingly, JIBC campuses feel the impact of climate events from flooding, wildfires and extreme temperatures. Wildfires and associated smoke have particularly affected staff, faculty, and students. Both 2022 and future risk management measures focus on mitigating the impacts of this type of event and are described on page 14.

General Sustainability Initiatives

General sustainability initiatives are described on page 14 and include a battery recycling collection and pickup program, as well as participation in the Sustainability Tracking and Assessment Rating System (STARS) program.

Overview

About JIBC

Justice Institute of British Columbia (JIBC) is a public, post-secondary educational institution founded in 1978. JIBC is Canada's leading public safety educator with a mission to develop dynamic justice and public safety professionals through its exceptional applied education, training, and research. Each year, about 36,000 students study at one of JIBC's six campuses in British Columbia or through online distance education at locations in more 130 sites across Canada and around the world. JIBC's six campuses are located in New Westminster, Maple Ridge, Pitt Meadows, Chilliwack, Vancouver Island, and the Okanagan.

JIBC's Commitment to Energy Management and Carbon Reduction

JIBC is committed to reducing its carbon footprint and improving sustainability through environmentally responsible practices. Since 2008, JIBC has continued to implement operational changes that result in significant reductions in energy consumption. Energy consumption is monitored at all campuses to identify usage trends and ensure buildings operate at optimal conditions for the season. Tracking energy usage allows JIBC to gauge the effectiveness of energy-efficiency strategies, which are designed to reduce GHG emissions and ultimately achieve carbon neutrality.

As part of this commitment, JIBC participates in BC Hydro's Energy Manager Associate Program, which assists JIBC with the ongoing maintenance of its Strategic Energy Management Plan (SEMP). The SEMP supports JIBC's commitment to energy efficiency and conservation by providing a framework for reducing energy consumption and its associated environmental impact.

As part of its SEMP, JIBC is committed to reducing its total electricity and fuel energy use at the New Westminster and Maple Ridge campuses by 50 percent by the 2029/2030 fiscal year, as compared to the 2008/2009 baseline year. These energy consumption reductions will help to reduce GHG emissions from stationary sources, which is currently JIBC's largest source of emissions.

Greenhouse Gas Emissions Overview

Emissions Trends

Figure 1 illustrates JIBC's total annual GHG emissions trend from 2015 – 2022 in comparison to annual heating degree days (HDDs). As the graph shows, energy consumption increased alongside HDDs from 2015 to 2017. While HDDs remained higher than 2015 levels, energy conservation measures in 2018 and 2019 helped to reduce total energy consumption and associated greenhouse gas emissions. In early 2020 the COVID-19 pandemic struck, reducing onsite activity, and associated stationary, mobile, and paper GHG emissions. Most onsite activities resumed in September 2021 bringing with them an increase in energy consumption and emissions.

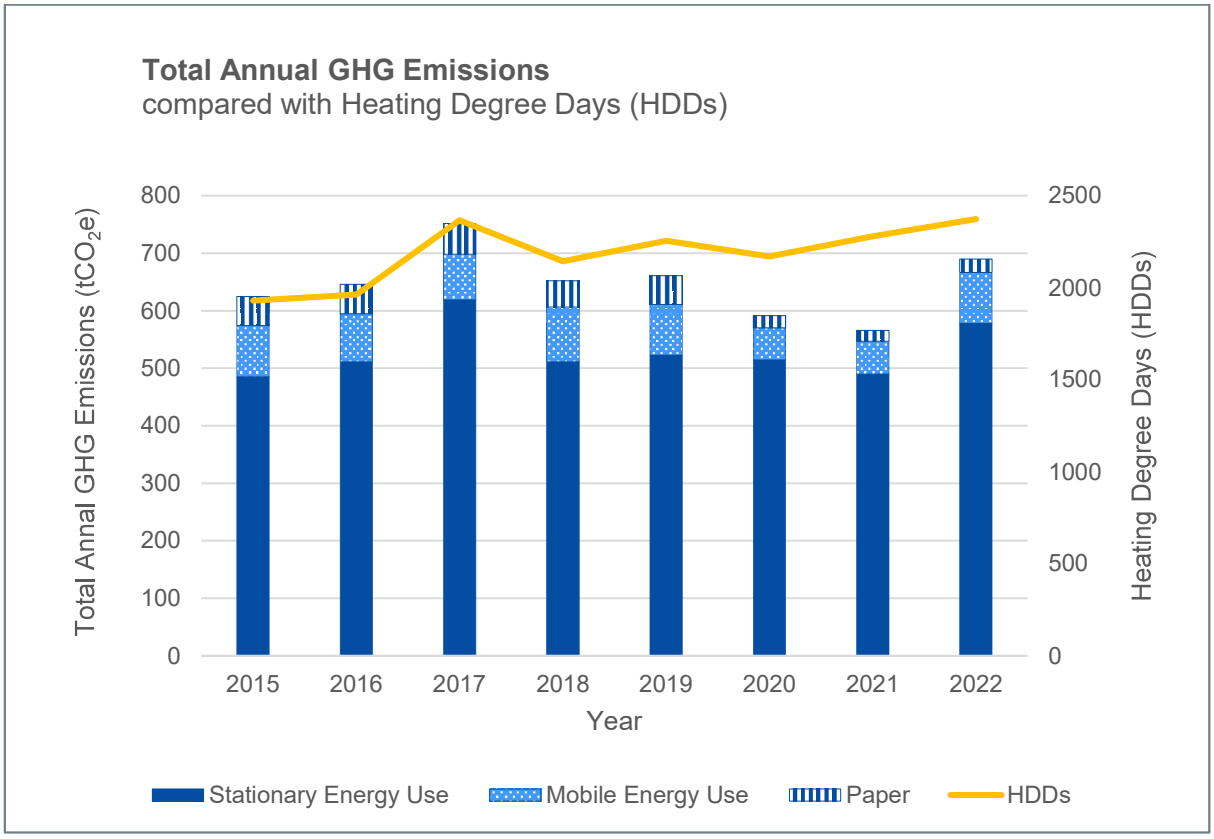

Figure 1. JIBC's Total Annual GHG Emissions Compared with Heating Degree Days from 2015-2022

Figure 2 illustrates this story from the perspective of annual carbon offsets. While offsets increased in 2022, the overall trend line continues to decrease.

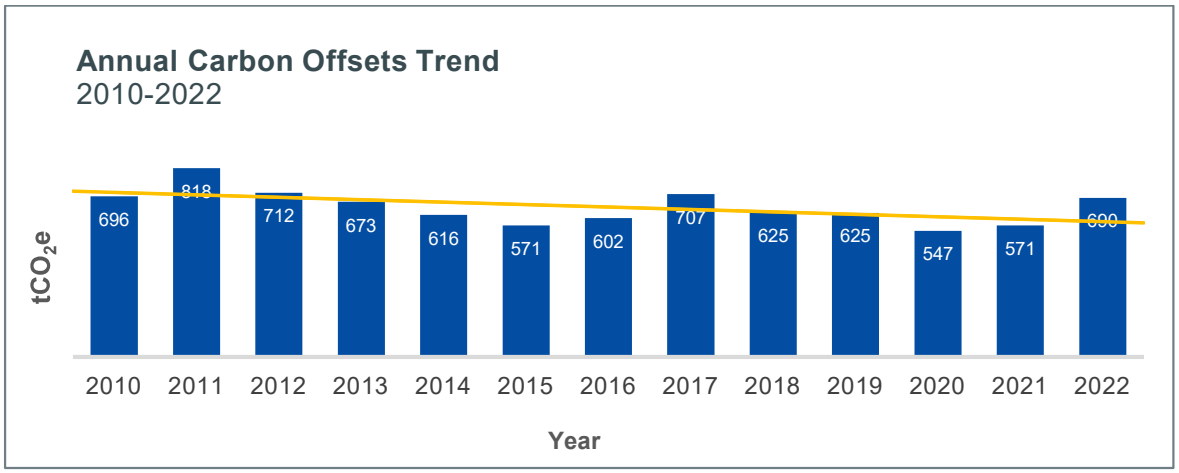

Figure 2. JIBC's Annual Offsets Trend from 2010-2022

JIBC's most recent Strategic Energy Management Plan (SEMP) from September 2022 focuses on the New Westminster and Maple Ridge campuses. Pulled from this SEMP, Figure 3 shows cumulative GHG emissions avoidance for stationary sources at the New Westminster and Maple Ridge campuses since the 2008/09 base period. As can be seen, at the end of Fiscal Year 2021/22, the cumulative GHG emissions avoidance since the base period is positive, representing a decrease in emissions in comparison to the base period. The cumulative GHG emission avoidance by the end of Fiscal Year 2021/22 is approximately 1,596 tonnes of carbon dioxide equivalent (tCO_2e). This is largely due to reductions in natural gas usage as a result of past energy conservation measures.

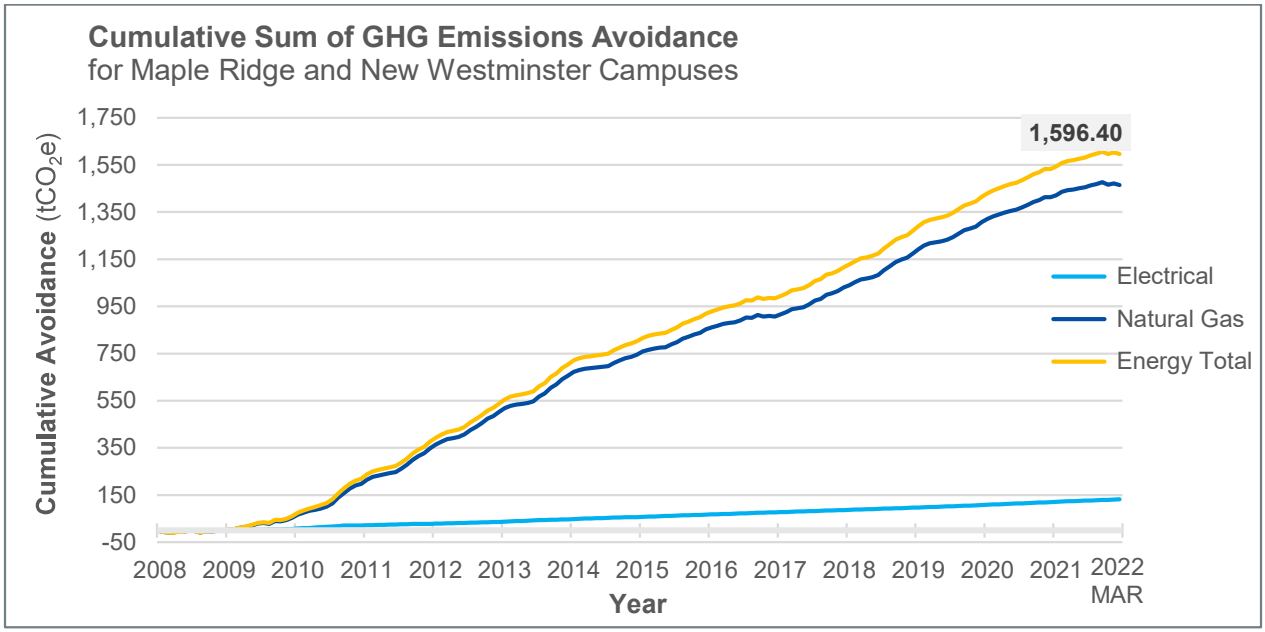

Figure 3. Cumulative Sum of GHG Emissions Avoidance for Stationary Sources at New Westminster and Maple Ridge Campuses Since the 2008/09 Base Period.

2022 Emissions

As Figure 1 describes, JIBC's 2022 total GHG emissions increased by 10 percent compared to 2015 levels and 21 percent compared to 2021 levels. This aligns with HDDs and a return to campus post COVID-19 pandemic. As Figure 3 helps to illustrate, these numbers are lower than they would have been without the benefit of previously implemented energy conservation measures.

GHG Emissions by Source

Stationary Sources

Stationary sources accounted for 578 tCO_2e or approximately 84 percent of JIBC's total 690 tCO_2e in 2022. This represents the biggest source of GHG emissions for JIBC. Emissions are related to the use of natural gas for building heating, ventilation, and kitchen appliances, and electricity for building cooling, fans, lighting, elevators, plug and server loads.

Mobile Sources

The second greatest source of emissions, vehicles accounted for 88 tCO_2e or approximately 13 percent of JIBC's total emissions in 2022. JIBC currently has a 100 percent gasoline and diesel-powered fleet, with most vehicles used for instructional purposes and a smaller portion used for maintenance and support roles.

Paper

Paper consumption accounted for 24 tCO_2e or approximately 3 percent of JIBC's total emissions in 2022. This represents the smallest source of JIBC's total emissions. JIBC's Administrative Services Group monitors large volume paper users.

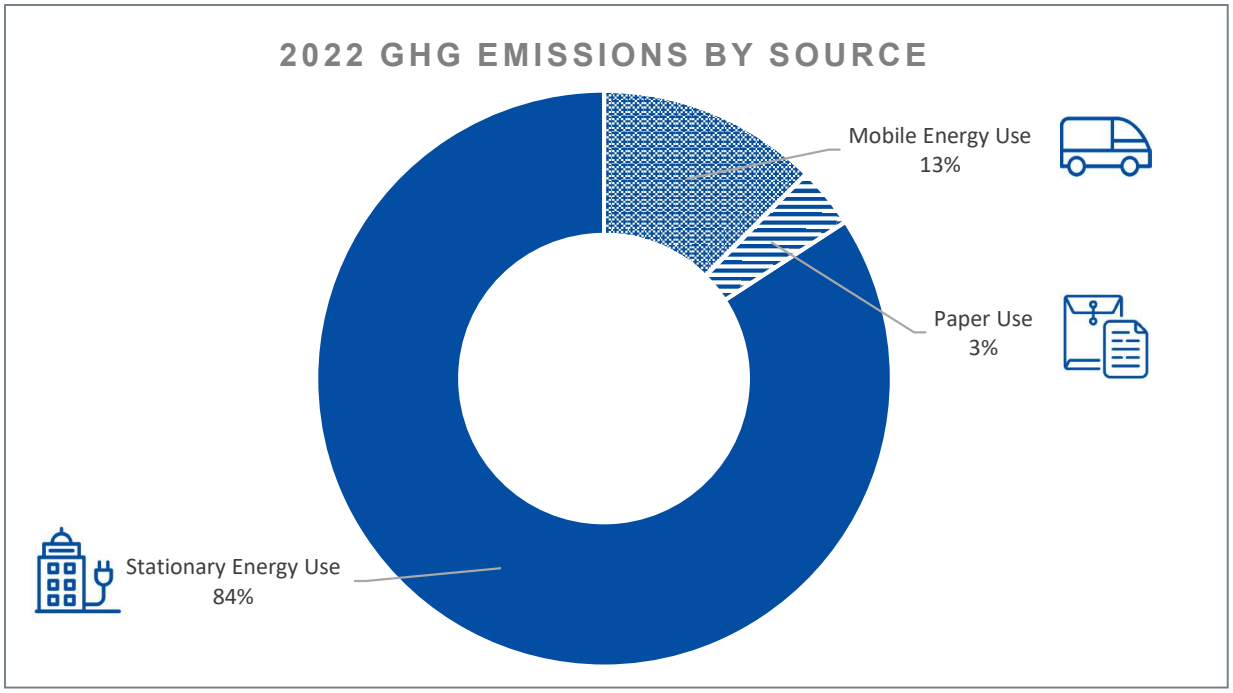

Figure 4. Breakdown of JIBC's 2022 GHG Emissions by Source

As part of JIBC's commitment to reduce its energy consumption and associated emissions, measures are prioritized and selected based on payback and emissions reduction potential. As a result, most projects in 2022 focused on reducing stationary energy use, JIBC's largest contributing source of GHG emissions, followed by projects in the mobile and paper use categories. These projects are described in the tables below.

Stationary Sources	
Building	
New Westminster Campus	• Replaced the glass roof in the atrium.
Computers & Equipment	
All Campuses	• Ongoing replacement of physical servers with virtual servers. • Ongoing upgrading of network switches to energy-efficient types. • Ongoing replacement of desktop computers with more energy efficient models.
Lighting	
Maple Ridge Campus	• Replaced remaining fluorescent lighting with LED lighting fixtures. • Installed new LED lighting at campus entranceway

Mechanical	
Maple Ridge Campus	• Replaced demand pumps for the Water Treatment B System, with a pump package with variable speed drive control and eliminated a diesel motor pump. This pump system is now a 100 percent electric, low carbon system. • Replaced existing cooling units in the classroom building and fitness trailer with more energy efficient units.
New Westminster Campus	• Replaced existing cooling units in the server room with more energy efficient units.
Strategic Energy Management	
All Campuses	• Participated in BC Hydro's Energy Manager Associate Program, which supports a strategic approach to energy management and organizational change to reduce energy waste and costs and improve energy efficiency. • Participated in BC Hydro's Energy Wise Network Program, which supports organizational behaviour change.

Mobile Sources

EV's & Infrastructure	
New Westminster Campus	• Completed an EV charging station feasibility study.

Paper Consumption

Reduction	
All Campuses	• Ongoing review of administrative processes to reduce unnecessary paper-based filing and forms.

Summary of Future Greenhouse Gas Emission Reduction Actions

Projects planned for 2023 and beyond look at all three sources and build on the work, learning and success of projects to date. These projects are described in the tables below.

Stationary Sources

Electrical	
New Westminster and Maple Ridge Campuses	• 2023/24 LED lighting survey to identify any non-LED lighting that can be upgraded.
New Westminster Campus	• 2024/25 installation of photovoltaic solar panels.
Mechanical	
Maple Ridge Campus	• 2023/24 upgrade of Water Treatment A System to replace 150HP electric motor-driven pump with 30HP package pump system with variable speed drive control.
	• 2023/24 installation of vehicle bay overhead door heater shut off switches.
New Westminster Campus	• 2024/25 installation of destratification fans in the main building and gym areas. • 2024/25 installation of variable speed drives to chilled water pumps.
Strategic Energy Management	
All Campuses	• Continued participation in BC Hydro's Energy Manager Associate Program, which supports a strategic approach to energy management and organizational change to reduce energy waste and costs and improve energy efficiency. • Continued participation in BC Hydro's Energy Wise Network Program, which supports organizational behaviour change.

Mobile Sources

EV's & Infrastructure	
New Westminster Campus	• 2024/25 fleet vehicle replacement with more fuel efficient and/or electric vehicles. • 2024/25 EV charging station installation.

Paper Consumption

Reduction	
All Campuses	• Ongoing review of administrative processes to reduce unnecessary paper-based filing and forms.

2022 GHG Emissions and Offset Summary Table

In accordance with the Carbon Neutral Government Regulation, JIBC recorded activities generating direct and indirect greenhouse gas emissions. In 2022, JIBC realized direct and indirect greenhouse gas emissions measured in tonnes per carbon dioxide equivalent (tCO2e) in the categories of stationary fuel combustion, mobile fuel combustion and office paper.

JIBC 2022 GHG Emissions and Offsets	
GHG Emissions created in Calendar Year 2022	
Total BioCO_2	3
Total Emissions (tCO_2e)	693
Total Offsets (tCO_2e)	690
Adjustments to Offset Required GHG Emissions Reported in Prior Years	
Total Offsets Adjustment (tCO_2e)	0
Grand Total Offsets for the 2022 Reporting Year	
Grand Total Offsets (tCO_2e) to be Retired for 2022 Reporting Year	690
Offset Investment ($25 per tCO_2e)	$17,250

Retirement of Offsets

In accordance with the requirements of the Climate Change Accountability Act and Carbon Neutral Government Regulation, JIBC is responsible for arranging for the retirement of the offset obligation reported above for the 2022 calendar year, together with any adjustments reported for past calendar years. JIBC hereby agrees that in exchange for the Ministry of Environment and Climate Change Strategy (the Ministry) ensuring that these offsets are retired on JIBC's behalf, JIBC will pay, within 30 days, the associated invoice to be issued by the Ministry in an amount equal to $25 per tonne of offsets retired on its behalf plus GST.

Climate Risk Management

Increasingly, JIBC has felt the impact of climate events from flooding, wildfires and extreme temperatures. Wildfires and associated smoke have particularly affected campus staff, faculty and students. In 2022, the Institute installed air purifiers at its Okanagan, Vancouver Island and Chilliwack campuses to mitigate the impact of both current and future events.

In 2023, JIBC plans to continue mitigating risk related to wildfire and smoke events. The Institute will review the feasibility of monitoring outdoor air quality at select campuses, which will allow for a more comprehensive response to air quality issues.

Other Sustainability Initiatives

In 2022, JIBC continued its battery recycling collection and pickup program for lower mainland campuses. This initiative will continue into 2023.

A key focus for 2023 is participation in the STARS program, the Sustainability Tracking and Assessment Rating System administered by the Association for the Advancement of Sustainability in Higher Education (AASHE). Participation in this program will provide JIBC with a holistic framework to align its sustainability strategy and emissions targets.

Success Story

Water Treatment B System Upgrade

JIBC's Maple Ridge campus includes a fire training area designed for hands-on firefighting practice. Among its unique simulation training props are buildings, train cars and a ship structure that are all regularly set ablaze for firefighters to practice in real-life conditions. There are two water treatment plant systems, A and B, which serve the fire training facilities.

System B provides firefighting water to training pads and was originally constructed in 1983 with upgrades in 2001 and 2006. The purpose of the system is to provide a full circuit water system. After applying water to a live fire, the dirty water with particles is collected within a settling pond, pumped through filters for purification and then into a storage tank for reuse. The original system included both electric and diesel motor fire pumps, as well as an electric motor jockey pump. It is a unique setup that requires the equipment to operate in short bursts of high flow rate. Water quality testing also requires specialized equipment without many options available.

JIBC worked with contractors to find more energy efficient equipment that would meet the system's unique and specific needs. The organization replaced the original system with a variable speed drive and electric booster pump package, allowing it to "right-size" an oversized pump and eliminate the diesel pump to create a fully electric system. The new system saves approximately 8,100 kWh per year in energy and 85 kW per year in demand. In addition, the project acted as a pilot for the upcoming upgrade to System A, which is estimated to save an additional 12,450 kWh/year in energy savings and 700 kW/year in demand.

Executive Sign-off

Mike Proud Digitally signed by Mike Proud Date: 2023.05.31 08:18:36 -07'00'	May 31, 2023
Signature	Date
Mike Proud	Vice President, Finance & Operations
Name (please print)	Title