



ENGINEERING AND PUBLIC WORKS

# ANNUAL SUSTAINABILITY REPORT



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2021



# ANNUAL SUSTAINABILITY

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# INTRODUCTION

Welcome to the inaugural Engineering and Public Works (EPW) sustainability report. The intent of the report is to share a snapshot of what EPW, with the leadership and direction of the Public Works and Facilities Committee (PWFC), has done over the 2021 fiscal year to advance CBJ sustainability goals. Our work is rooted in the 2021 CBJ Assembly Sustainable Community goal to maintain a resilient social, economic, and environmental habitat for existing population and future generators.

Sometimes we get so busy getting things done, we forget to take a step back and celebrate how our work fits into the bigger picture of creating a resilient and sustainable community. This report will document CBJ energy usage so we can track our progress over time – both by providing a rolling 5 year history of CBJ wide energy usage and highlighting buildings that are big energy users and due for upgrades. The report also highlights recent projects that have been completed that lower the energy usage of our facilities. RecycleWorks is a division of EPW with the mission to provide cost effective and environmentally sound services to help conserve natural resources and minimize the environmental impact of our waste. You will find data on what we recycle or responsibly dispose of, how much, and how that has changed.

I hope you enjoy the report, but more importantly I hope it provokes you to think about how we can work together to make changes, big and small, to sustain our vibrant, healthy and thriving

**Katie Koester** Engineering & Public Works Director

*Photo above: PWFC Chair Michelle Hale and EPW Director Katie Koester in one of the department's electric Chevy Bolts*

# ENERGY OVERVIEW

## Usage Tracking Metrics

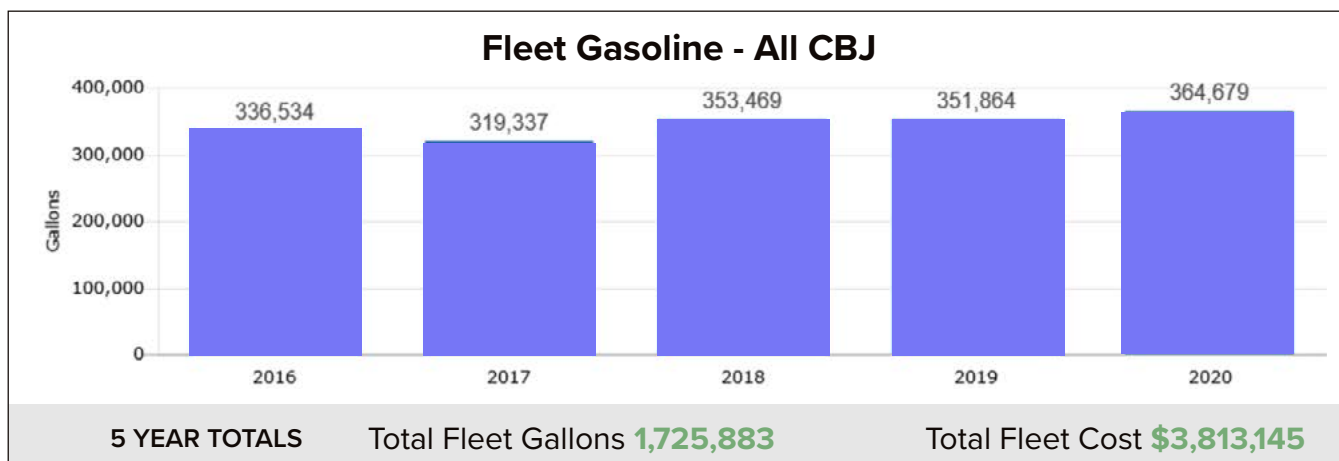
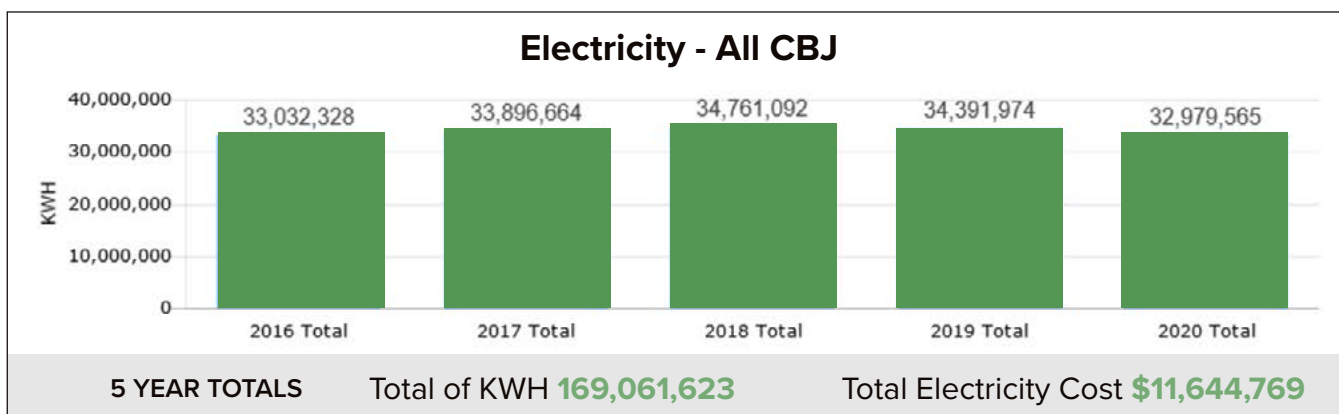
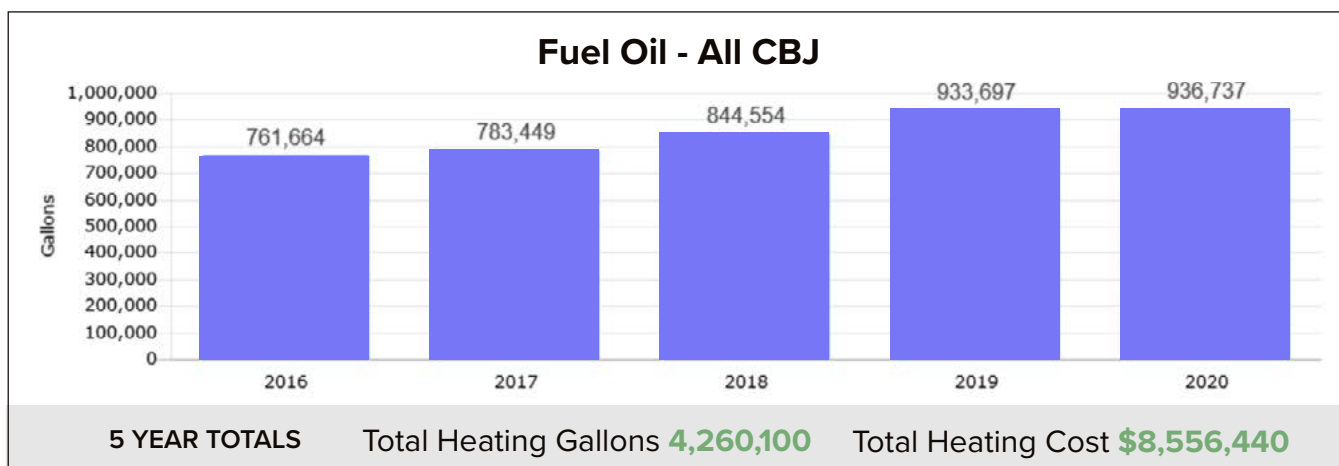
ONE OF THE JUNEAU RENEWABLE ENERGY STRATEGY (JRES) recommendations to move the community toward 80% renewable energy is to implement a CBJ energy management plan. To that end CBJ Building Maintenance is tracking energy use (including both electricity and fuel) at several energy intensive CBJ facilities. Having this data available allows us to measure our performance from year to year as we make both small and large energy efficiency adjustments to the facilities. Through the hard work of Building Maintenance, CBJ has recently begun using Energy Star's Portfolio Manager to calculate metrics that will be invaluable for measuring our facility energy performance. These metrics will also allow us to compare our performance with energy use at similar facilities throughout the nation.

Metric	Feb 2019	Feb 2020	Change
Site EUI (kBtu/ft <sup>2</sup> )	148.2	140.8	-7.40 (-5.00%)
Weather Normalized Site EUI (kBtu/ft <sup>2</sup> )	150.1	147.0	-3.10 (-2.10%)
Total GHG Emissions Intensity (kgCO <sub>2</sub> e/ft <sup>2</sup> )	6.6	6.6	0.00 (0.00%)
Total GHG Emission (Metric Tons CO <sub>2</sub> e)	240.3	238.9	-1.40 (-0.60%)

## Energy Use Intensity (EUI)

ONE OF THE KEY METRICS being tracked is called Energy Use Intensity (EUI) which measures the total amount of energy used by a facility per square foot of building footprint. We are tracking the EUI for several CBJ facilities with upcoming energy efficiency improvement projects including the Glacier Fire Station and the Eagle Valley Center to get some baseline data we can compare with after the projects are complete. We are also tracking EUI for facilities like City Hall where energy efficiency improvements are sorely needed. To see an example of how the EUI can help measure the impact of efficiency improvements, consider the Treadwell Arena's recent conversion from incandescent to LED lighting. The table above shows the EUI for the rink before and after the lighting conversion.

According to the Juneau Climate Action & Implementation Plan (JCAIP), municipal government accounts for 4.5% of total energy use in a community. The Assembly set a sustainability goal for 2021 to “develop a strategy to measure track and reduce CBJ energy consumption.” The following bar charts demonstrate Borough wide how much we consume in energy. Many factors drive these numbers: adding square footage to a building, heating system upgrades, or even the weather. Nevertheless, the annualized data provides an overview of how we are doing as an organization, helping start conversations about how we can reduce our energy consumption. CBJ actions on energy use and tracking will contribute to advancing the recommendations in JRES and JCAIP.





# PROJECT HIGHLIGHTS



## Augustus Brown Pool

**STRUCTURAL IMPROVEMENTS WITH ENERGY BENEFITS** have been a key part of capital planning at the City & Borough. Augustus Brown Pool was among these plans, receiving a new roof in 2021. The project removed compromised insulation and replaced it with new and improved insulating materials with 2.5 times the R value resulting in less heat loss through the roof. Further upgrades to the building exterior and mechanical controls have been funded which will further improve efficiency.



## Sayéik Gastineau Community School

**SAYÉIK GASTINEAU COMMUNITY SCHOOL** received a partial roof replacement over the main wing that provides additional insulation to make the building more energy efficient.



## Did You Know...

**THE CITY & BOROUGH OF JUNEAU** recycles all used asphalt when repaving projects? The old asphalt is ground up and used on CBJ roads to fill potholes, as base for road reconstruction, on gravel roads to reduce dust and maintenance, and for trail surfacing.

# PROJECT HIGHLIGHTS



## Building Updates

**MARIE DRAKE SCHOOL** has made recent improvements that will decrease building energy usage. New HVAC controls were installed that allow for improved control of outdoor air supply, supply air temperature reset, demand control ventilation, and variable speed fan operation. A new domestic hot water heater was also installed. It is a heat pump type water heater that will operate along with an electric water heater, replacing domestic hot water heating previously provided by oil fired boilers. The heat pump water heater in combination with the electric water heater provides an increase in efficiency of over 200% from the domestic hot water heating system.

**WE ARE CONSERVATIVELY  
PROJECTING A SAVINGS OF  
5,000 GALLONS OF FUEL OIL ANNUALLY**



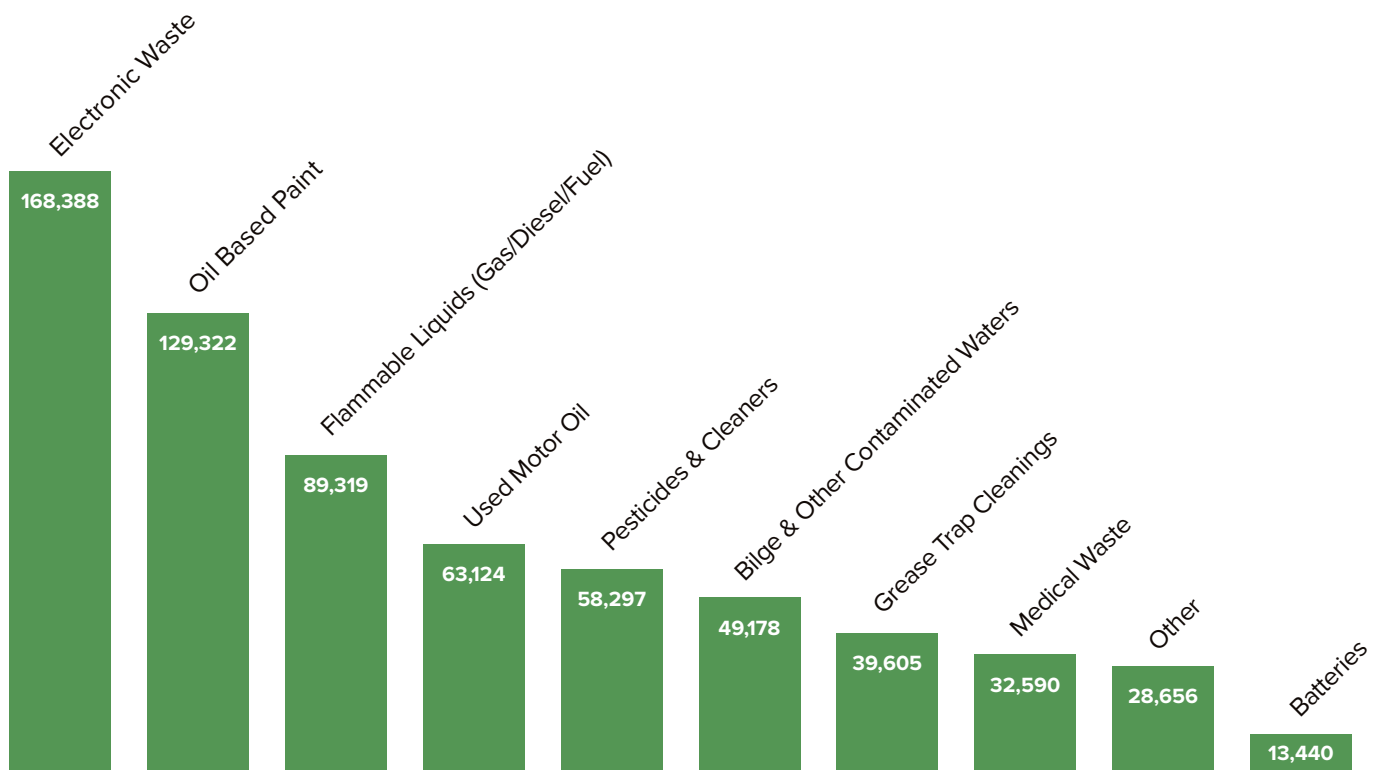
## Energy Efficiency Tech

**THE JUNEAU POLICE STATION AND DOWNTOWN LIBRARY** both have new control software for their HVAC systems, which will allow modern and energy efficient control sequences to reduce ventilation air flow when the occupancy is below peak. With these two projects we are conservatively projecting a savings of 5,000 gallons of fuel oil annually.



The CBJ RecycleWorks program provides recycling, junk vehicle, and household hazardous waste services to residents and businesses in Juneau.

OUR GOAL IS TO PROVIDE **COST EFFECTIVE** AND ENVIRONMENTALLY SOUND SERVICES THAT HELP CONSERVE NATURAL RESOURCES AND **MINIMIZE** THE ENVIRONMENTAL IMPACT OF OUR SOLID WASTE.



Pounds of Household Hazardous and Electronic Waste Collected in FY21



# Program Usage

**LOOKING BACK OVER THE LAST SEVERAL YEARS**, the usage of the RecycleWorks programs varies substantially. It can be difficult to predict program usage as they can rely on a number of factors - it has been particularly challenging considering how the pandemic has shifted the behaviors of the public. We hope by continuing to gather this data and reviewing it alongside relevant conditions, we can establish a model to assist in the accurate projection of program usage. Below, you'll see how the Recycling Program was used in FY21.

## ALUMINUM CANS

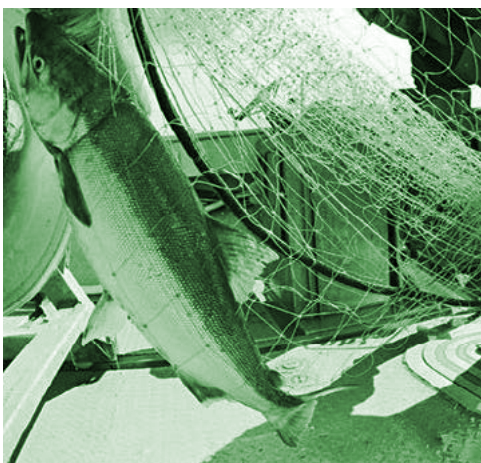
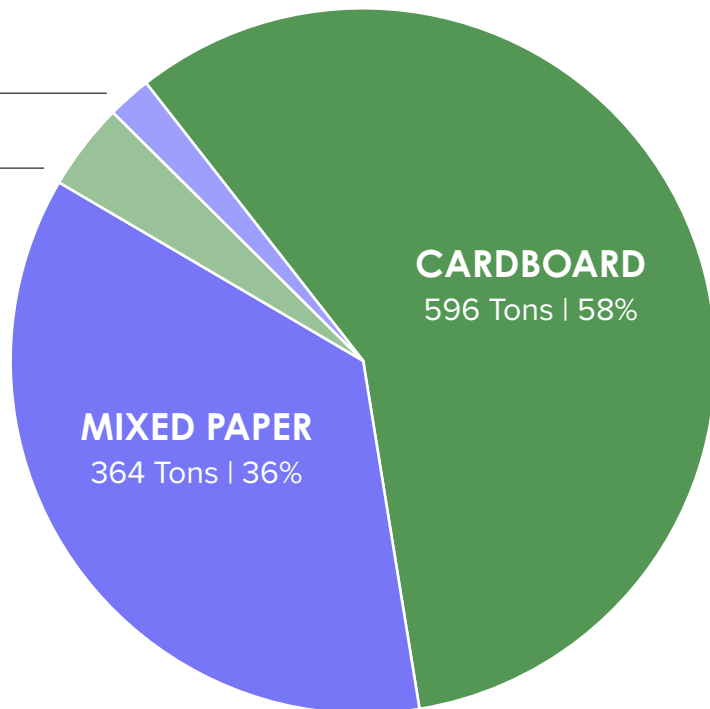
17 Tons | 2%

## PLASTICS (1&2)

45 Tons | 4%

### Tons of **Recyclable Material** Collected in FY21

In addition, 319 tons of glass were collected at the recycling center and reused locally at the landfill.



## Gillnet Collection Program

**CBJ IS WORKING WITH** Net Your Problem (<https://www.netyourproblem.com/>) to offer free net recycling to local fishers. Derelict fishing gear can have major negative impacts on marine life and the environment if abandoned. This program offers a pathway to give nets a second life.



Capital Transit is dedicated to providing safe, reliable, low cost transportation in Juneau to ensure that all citizens have the ability to engage in the community. Capital Transit provides a reliable alternative to reduce the presence of automobiles.

## ELECTRIFICATION OF THE CAPITAL TRANSIT FLEET IS MADE POSSIBLE BY THE STATE OF ALASKA

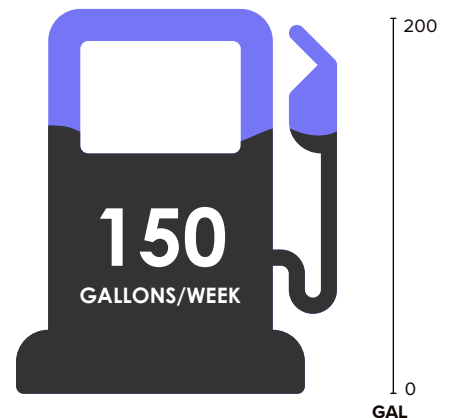


### Electric Bus

**IN APRIL OF 2020** Mayor Beth Weldon Joined Governor Dunleavy and Juneau sustainability advocates in christening the first electric bus in full service in Alaska. Electrification of the Capital Transit fleet is made possible by the State of Alaska who administers the LoNo grant program, a Federal Transit Authority grant that provides funding for transit agencies for zero emission and low-emission busses and infrastructure.

### Energy Consumption

**DURING THE SUMMER MONTHS**, the Proterra electric bus can travel 170 miles per charge. A diesel bus operates on average 5.8 mile/gallon. That means for every day the electric bus is in service, we save 29 gallons of fuel. Currently the bus runs 5 days a week—a savings of approximately 150 gallons per week.











# ON THE HORIZON

There are many exciting projects that the Department has been working on under the leadership and direction of the Public Works and Facilities Committee (PWFC). Look for updates on these efforts in future reports!



## Energy Efficiency Upgrades

**IN 2020, JUNEAU VOTERS** approved a \$15m bond to put Juneau to work by advancing capital improvement projects. The bond prioritized deferred maintenance projects that would improve the energy efficiency of City facilities. Those projects included heat pumps at Glacier Fire Station and Eagle Valley Center, LED lighting replacement at Savikko Park and roof replacements at Treadwell Arena, Dzantik’l Heeni and Riverbed schools. These projects will be completed over the next 2 years and we are looking forward to highlighting them in future Annual Reports.



## Electric Vehicle Charging

**MORE STATIONS ARE ON THE WAY!** Juneau is already a leader in per capita electric vehicle ownership, and more people are choosing to go electric each year. To support the growing needs for charging within the community, we are working with community partners to identify cost effective and convenient locations to install additional public vehicle chargers.





## Solid Waste

**WHAT WE THROW AWAY** is part of sustainability and with limited landfill capacity, PWFC has taken a deep dive into how CBJ can influence this without owning the waste stream or the landfill. There is hope! Look for increased communication from Waste Management on odor control measures though PWFC. Longer term, PWFC is hoping to work with the private sector to increase composting and together with the community work on a zero waste plan to reduce what ends up in the landfill in the first place.





## CONTACT US

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