

Whakatane District Council

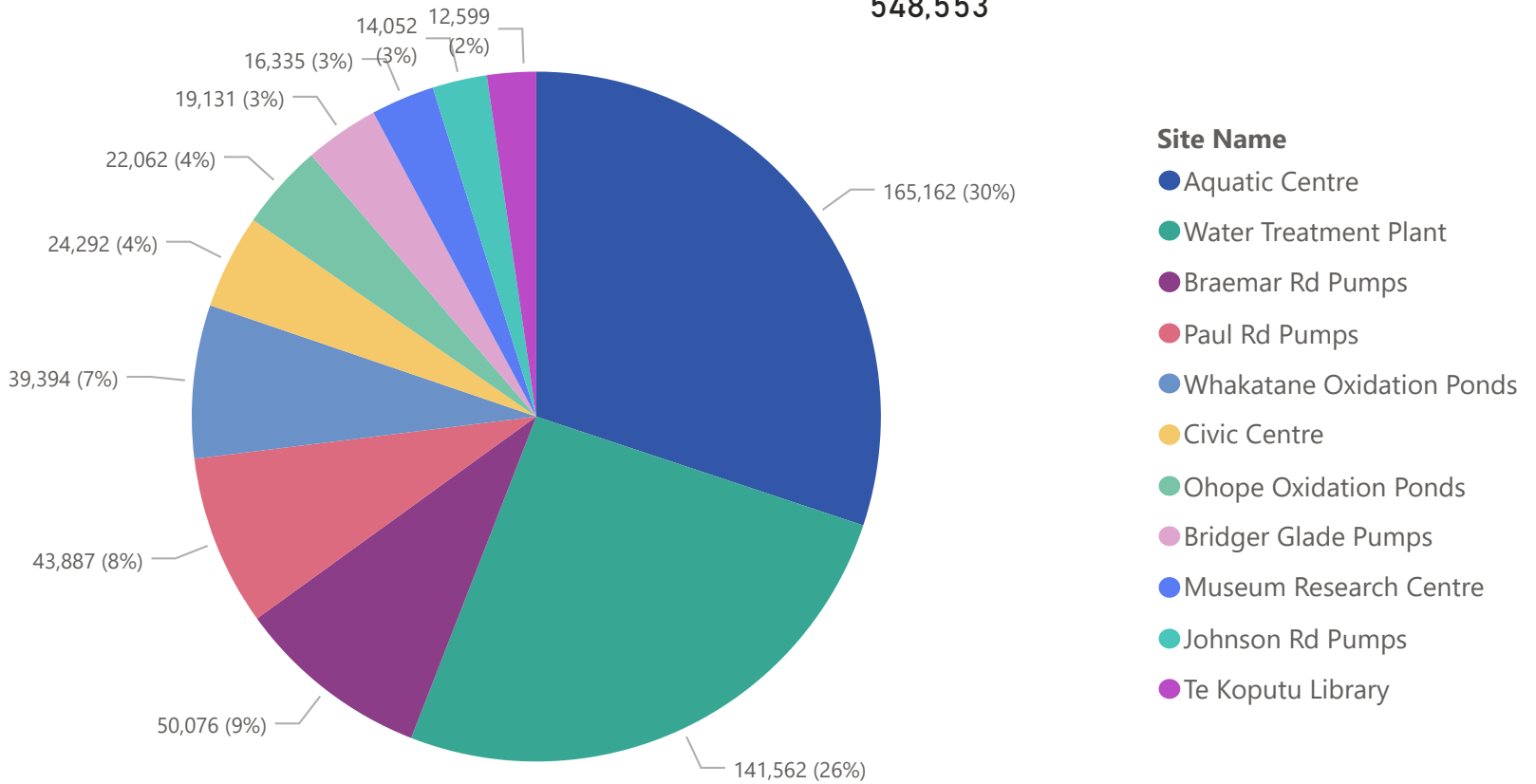
Summary

<p>\$1,024</p> <p>Monthly Energy Cost Savings</p>	<p>26,975</p> <p>Elec. Savings (kWh/mo)</p>	<p>5%</p> <p>Elec. Savings (%)</p>	<p>48,520</p> <p>R12M Electricity Savings (kWh/yr)</p>	<p>-2,009</p> <p>CO2e Savings (kg/mo)</p>
<p>\$45,286</p> <p>R12M Energy Cost Savings</p>	<p>-25,526</p> <p>Gas. Savings (kWh/mo)</p>	<p>-58%</p> <p>Gas. Savings (%)</p>	<p>574,619</p> <p>R12M Gas Savings (kWh/yr)</p>	<p>90,656</p> <p>R12M CO2e Savings (kg/yr)</p>

Total Energy (kWh/Month)

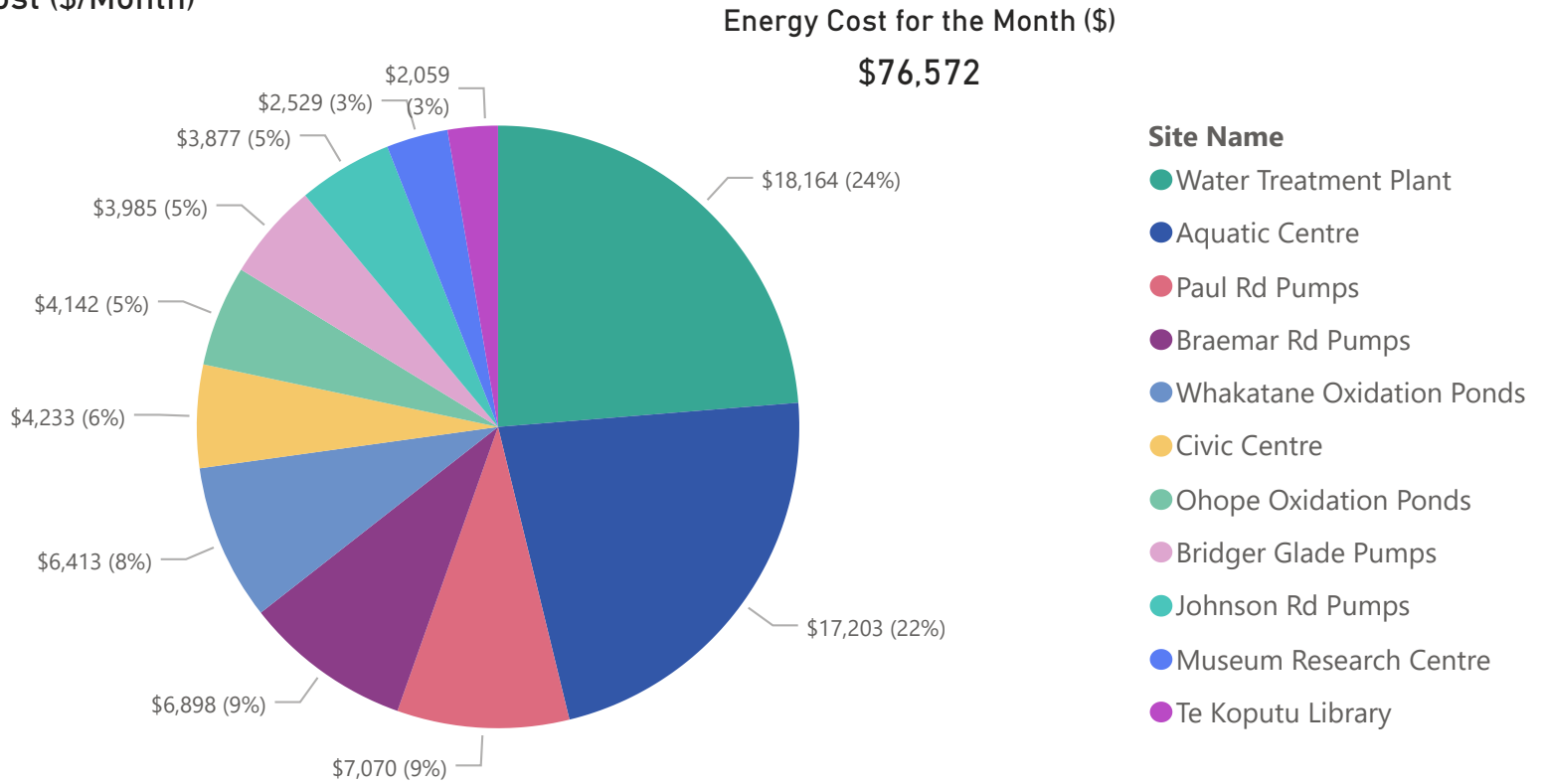
Total Energy Used for the Month (kWh)

548,553

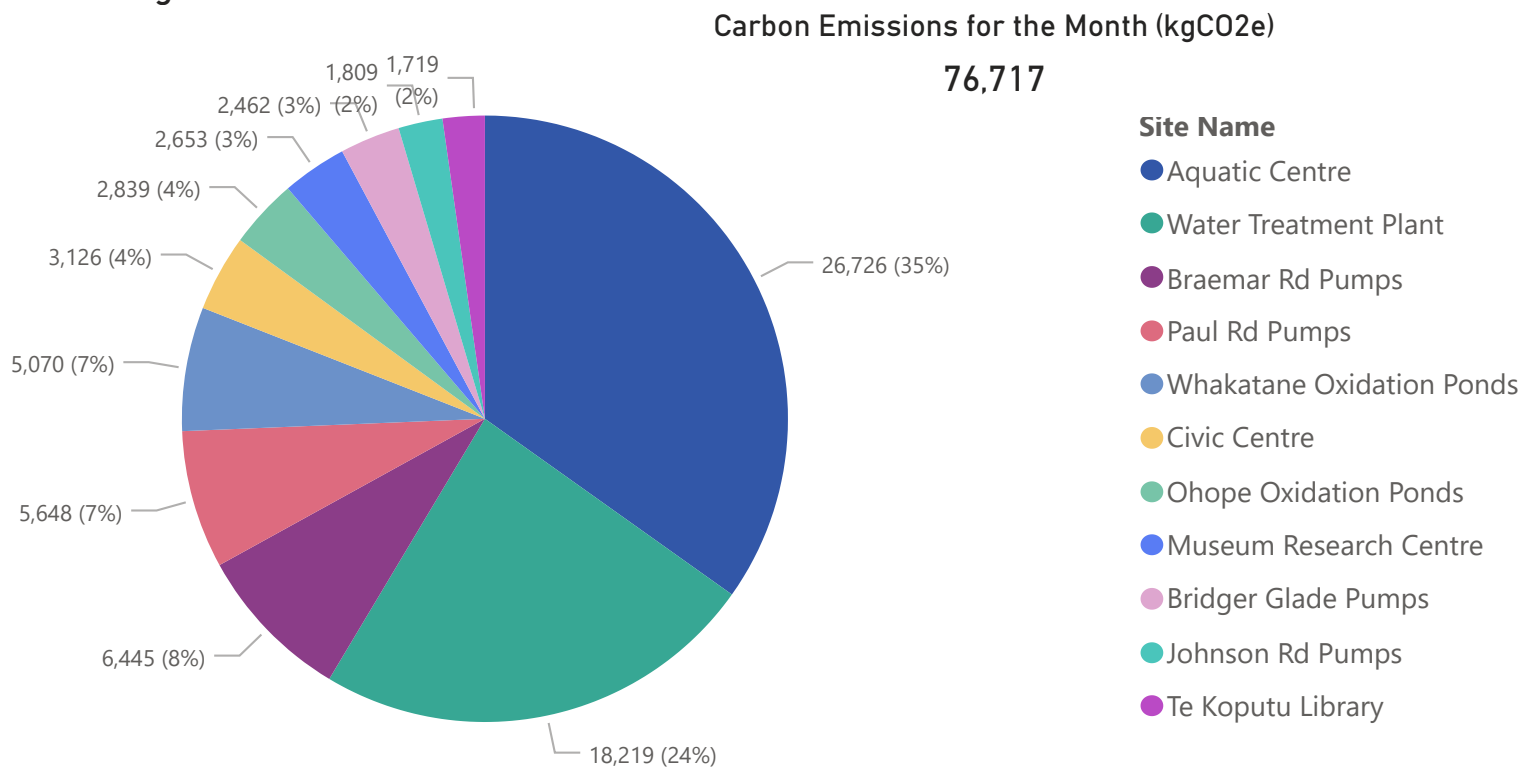


Whakatane District Council Summary

Energy Cost (\$/Month)



Carbon Emissions (kgCO2e/Month)



Whakatane District Council

Civic Centre

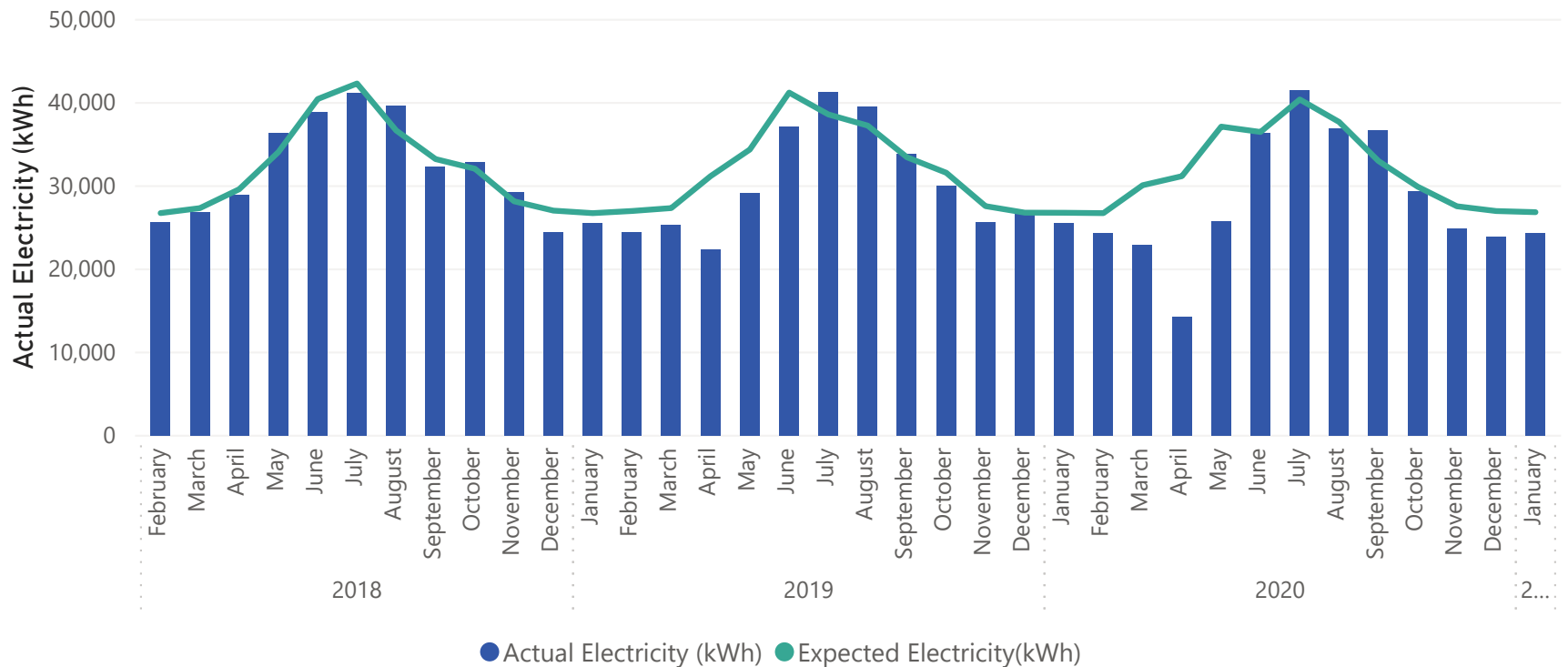
<p>\$289 Monthly Energy Cost Savings</p>	<p>2,577 Elec. Savings (kWh/mo)</p>	<p>10% Elec. Savings (%)</p>	<p>43,003 R12M Electricity Savings (kWh/yr)</p>	<p>332 CO2e Savings (kg/mo)</p>
<p>\$4,710 R12M Energy Cost Savings</p>				<p>5,535 R12M CO2e Savings (kg/yr)</p>

Comments:

Since heating was manually turned off, following an inadvertant change in the heating control scheme in September, energy performance has improved. Energy use in January was less than baseline, following a similar pattern of decreased usage that has been seen since October.

A seasonal trend can be observed, with summer monthly using the less electricity than winter months. Compared to January 2020, January 2021 used approximately 5% less electricity.

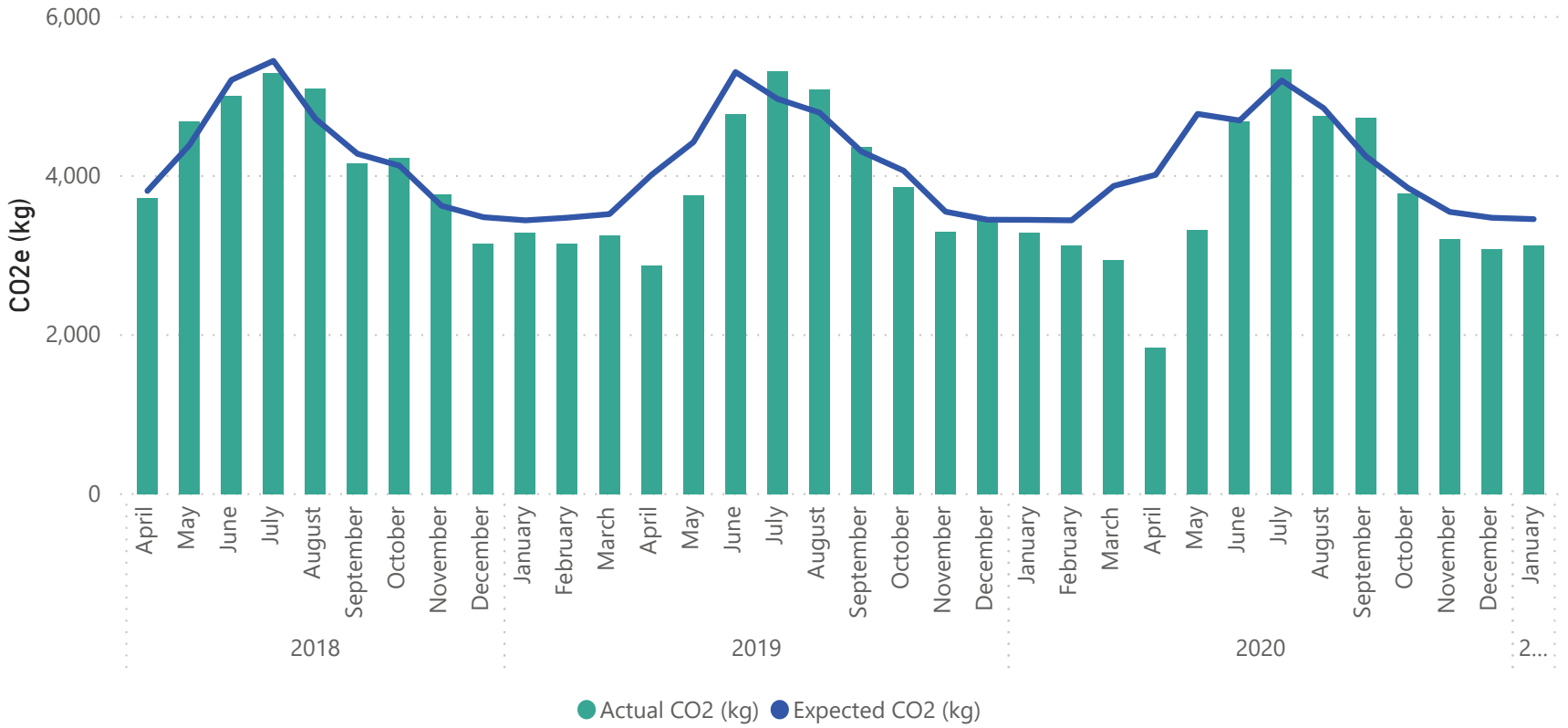
Civic Centre Electricity Use Compared to Baseline (kWh)



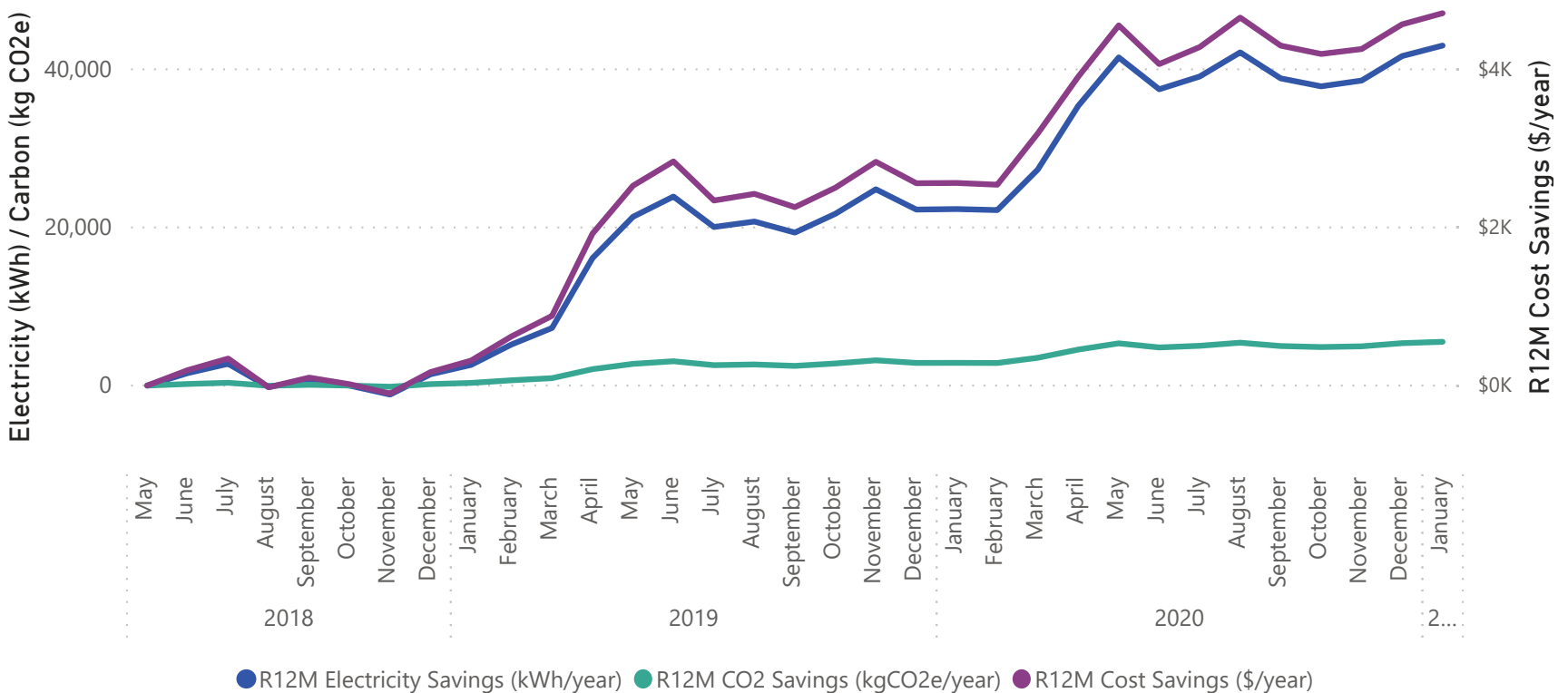
Whakatane District Council

Civic Centre

Civic Centre Carbon Emissions Compared to Baseline (kg CO2e)



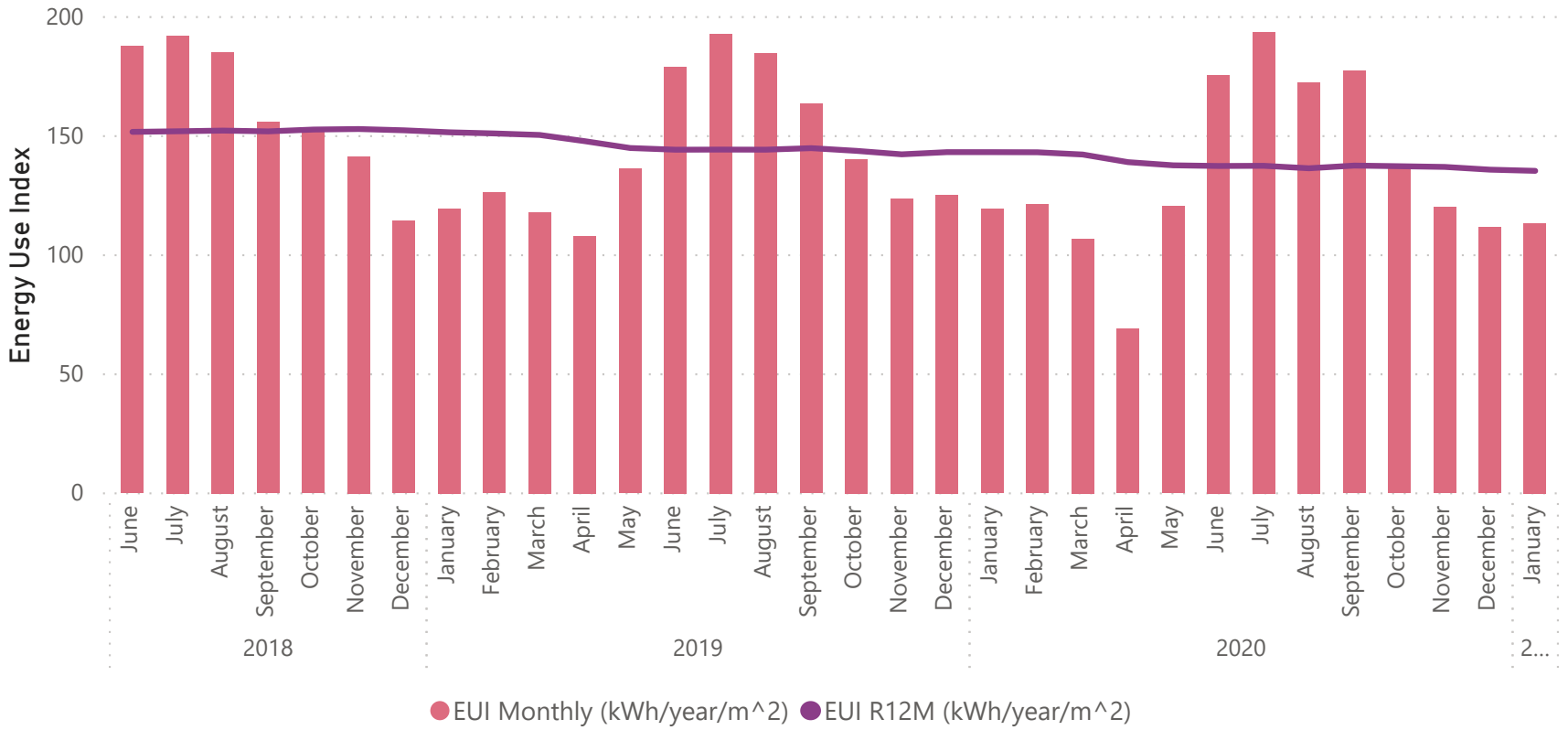
Civic Centre Cumulative Rolling 12 Month Savings



Whakatane District Council

Civic Centre

Civic Centre Energy Use Index by Month Compared to Rolling 12-Month Values



Whakatane District Council

Aquatic Centre

<p>-\$1,349</p> <p>Monthly Energy Cost Savings</p>	<p>8,239</p> <p>Elec. Savings (kWh/mo)</p>	<p>7%</p> <p>Elec. Savings (%)</p>	<p>-145,149</p> <p>R12M Electricity Savings (kWh/yr)</p>	<p>-5,579</p> <p>CO2e Savings (kg/mo)</p>
<p>\$25,370</p> <p>R12M Energy Cost Savings</p>	<p>-30,780</p> <p>Gas. Savings (kWh/mo)</p>	<p>-98%</p> <p>Gas. Savings (%)</p>	<p>570,713</p> <p>R12M Gas Savings (kWh/yr)</p>	<p>64,000</p> <p>R12M CO2e Savings (kg/yr)</p>

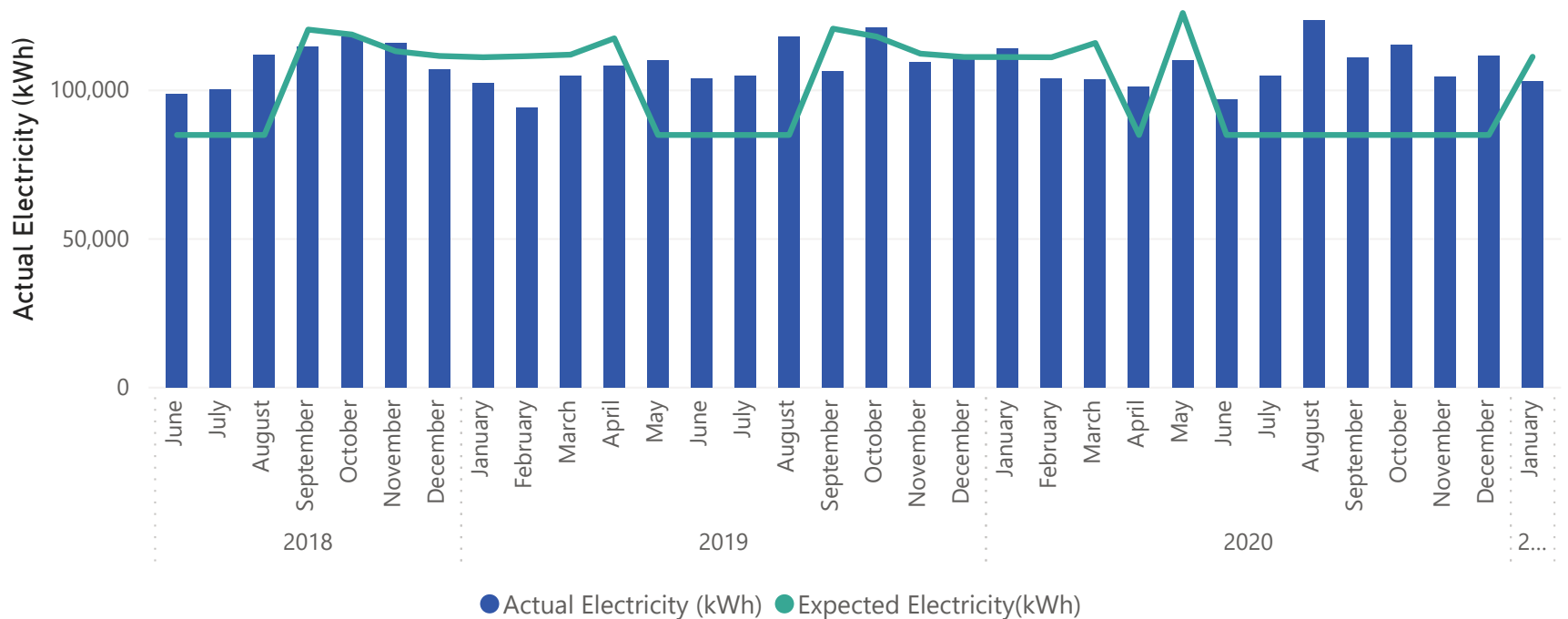
Comments:

The Aquatic Centre's outdoor pool re-opened on 5 January. For the month of January, a baseline was used which includes outdoor pool use.

Electricity use was similar to months when the outdoor pool was not in use and almost identical usage compared to November 2020. There may be some contractor electricity during the upgrades.

Natural gas use was twice the expected baseline use this month, which can be attributed to heating the outdoor pool using the gas boilers.

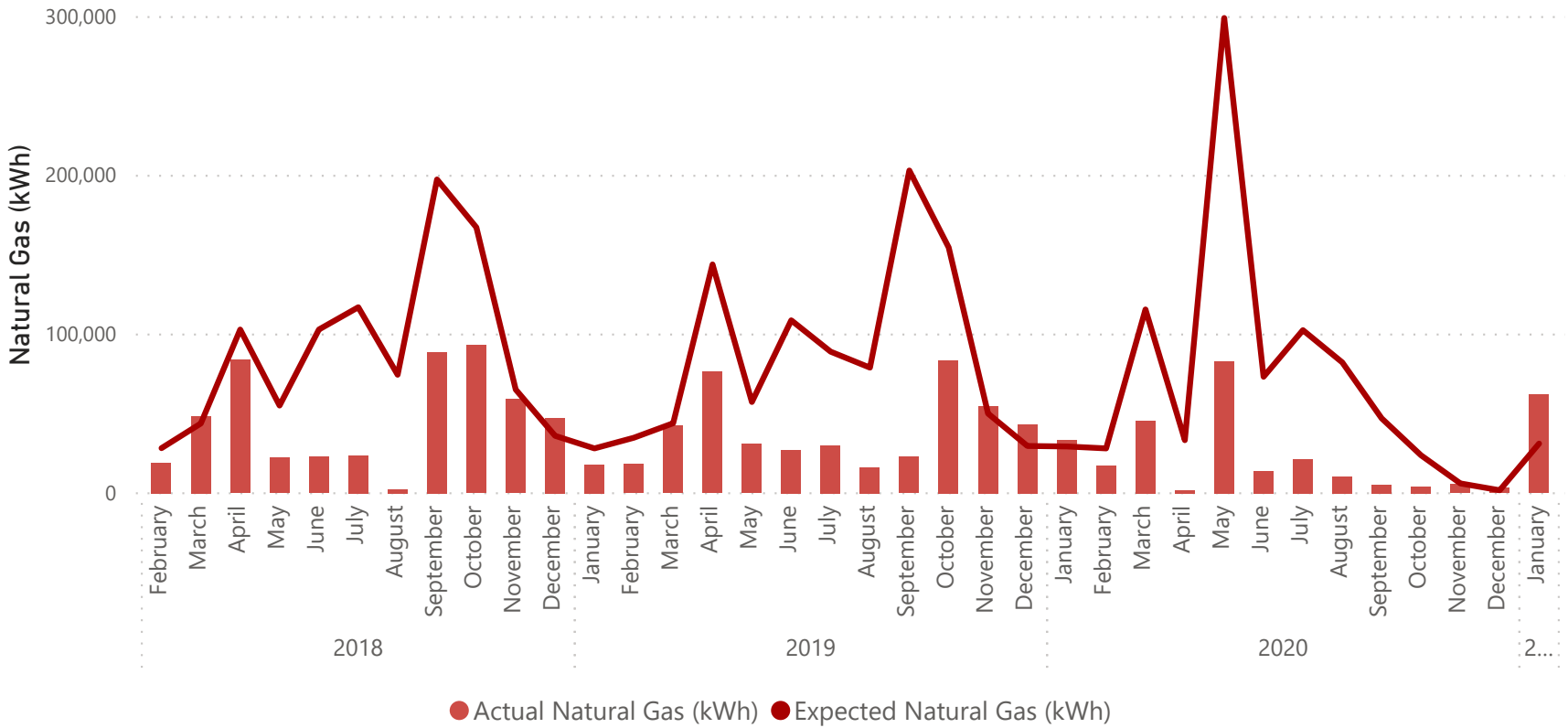
Aquatic Centre Electricity Use Compared to Baseline (kWh)



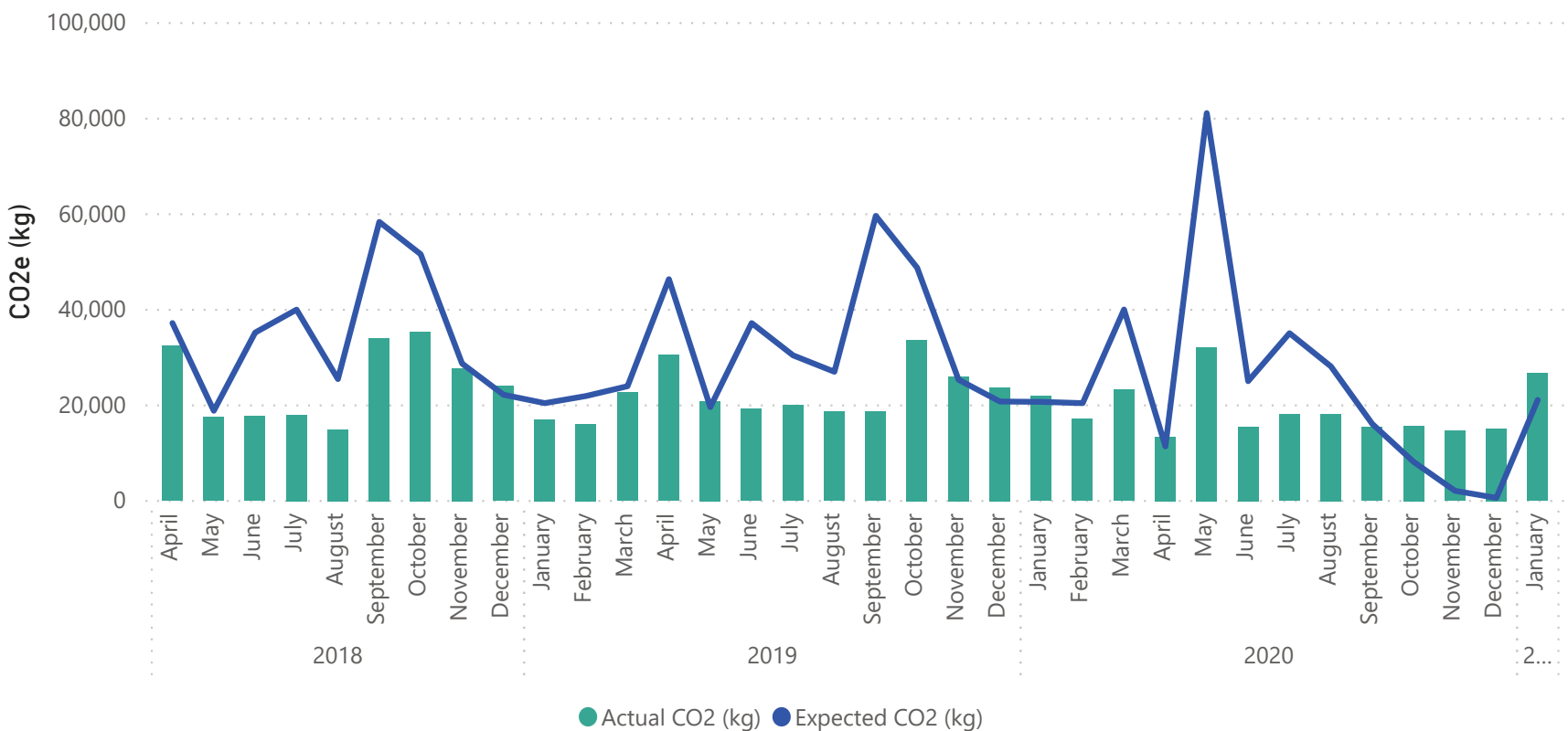
Whakatane District Council

Aquatic Centre

Aquatic Centre Natural Gas Compared to Baseline (kWh)



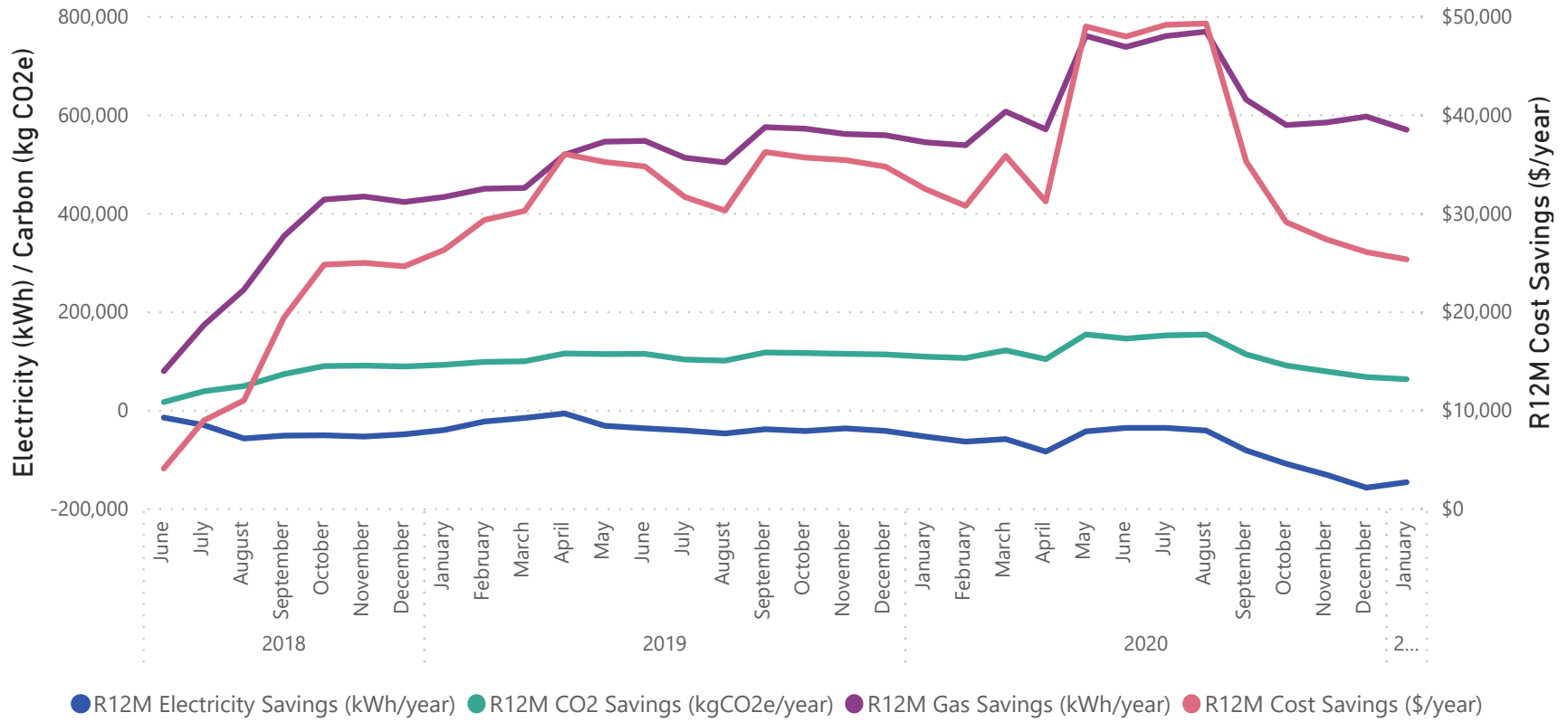
Aquatic Centre Carbon Emissions Compared to Baseline (kg CO2e)



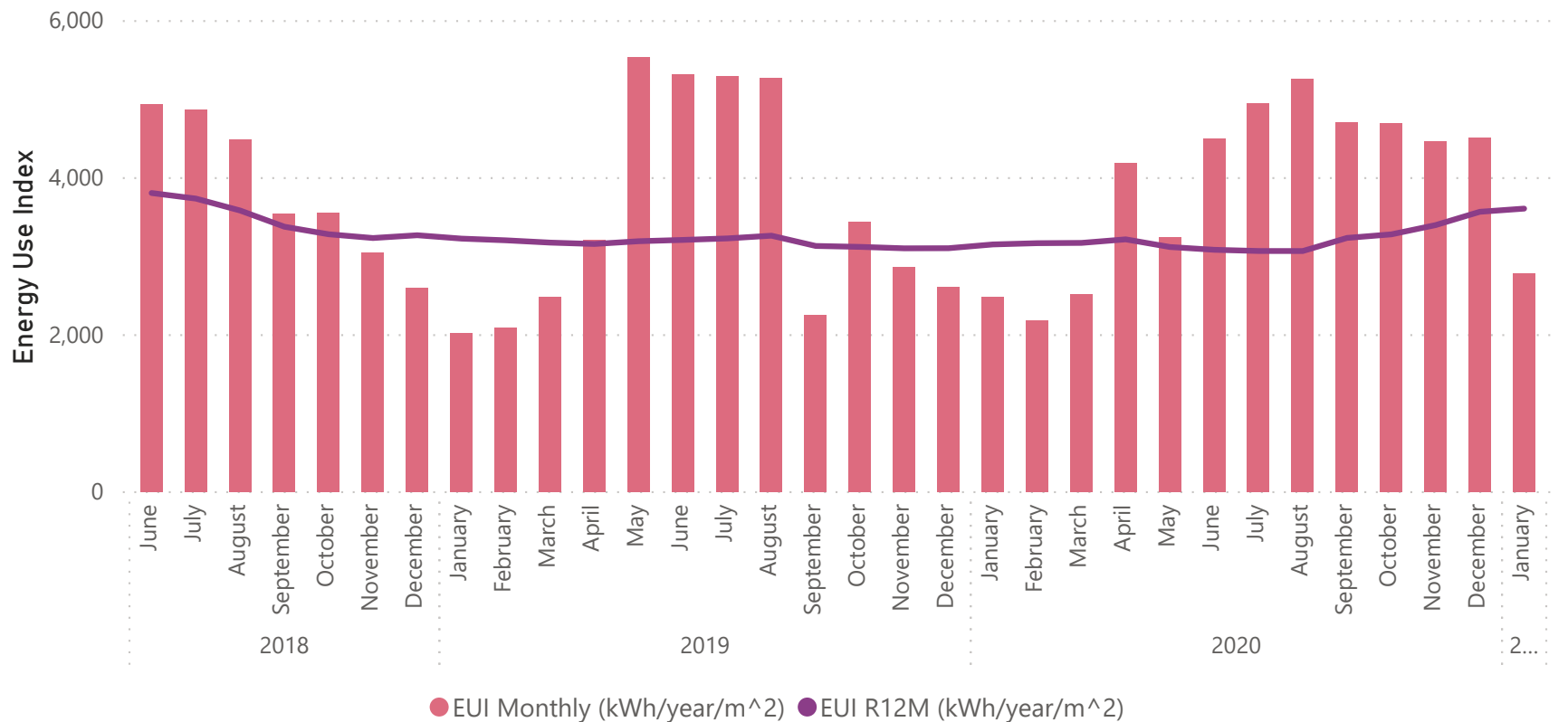
Whakatane District Council

Aquatic Centre

Aquatic Centre Cumulative Rolling 12 Month Savings



Aquatic Centre Energy Use Index by Month Compared to Rolling 12-Month Values



Whakatane District Council

Te Koputu Library

<p>\$762 Monthly Energy Cost Savings</p>	<p>3,291 Elec. Savings (kWh/mo)</p>	<p>22% Elec. Savings (%)</p>	<p>39,884 R12M Electricity Savings (kWh/yr)</p>	<p>1,618 CO2e Savings (kg/mo)</p>
<p>\$5,222 R12M Energy Cost Savings</p>	<p>5,488 Gas. Savings (kWh/mo)</p>	<p>83% Gas. Savings (%)</p>	<p>11,418 R12M Gas Savings (kWh/yr)</p>	<p>7,662 R12M CO2e Savings (kg/yr)</p>

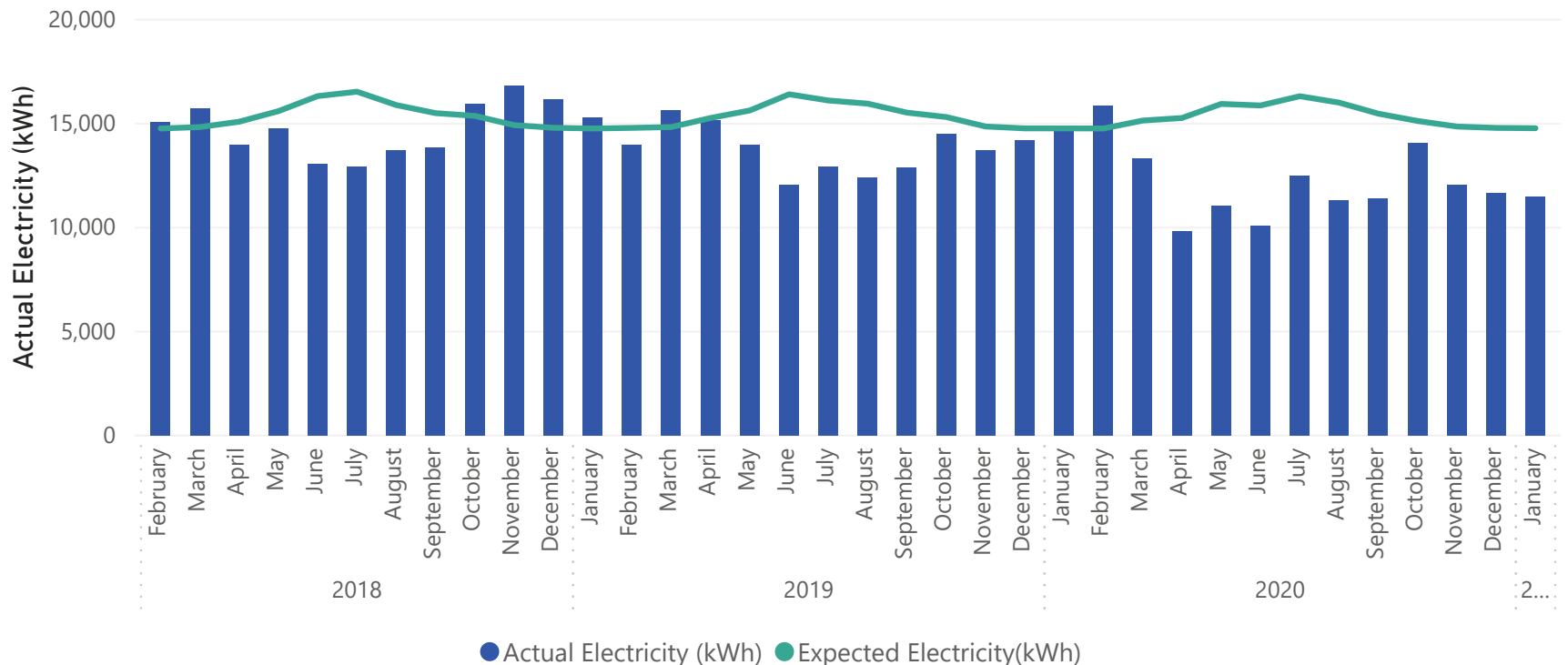
Comments:

Electricity use was considerably less than baseline in January 2021 and electricity use was 22% lower than January 2020, which is an improvement as both months were about the same temperature, on average.

Natural gas use was significantly less than baseline in January 2021, which has been the lowest month on record, improving on December 2020's performance. Compared to January last year, which was a similar temperature month, gas use is 88% less.

From November, when improvements were made to the HVAC system, natural gas use has decreased substantially compared to baseline, which has had a positive impact on monthly carbon emissions from the library. The EUI of the library has also decreased considerably in the past three months.

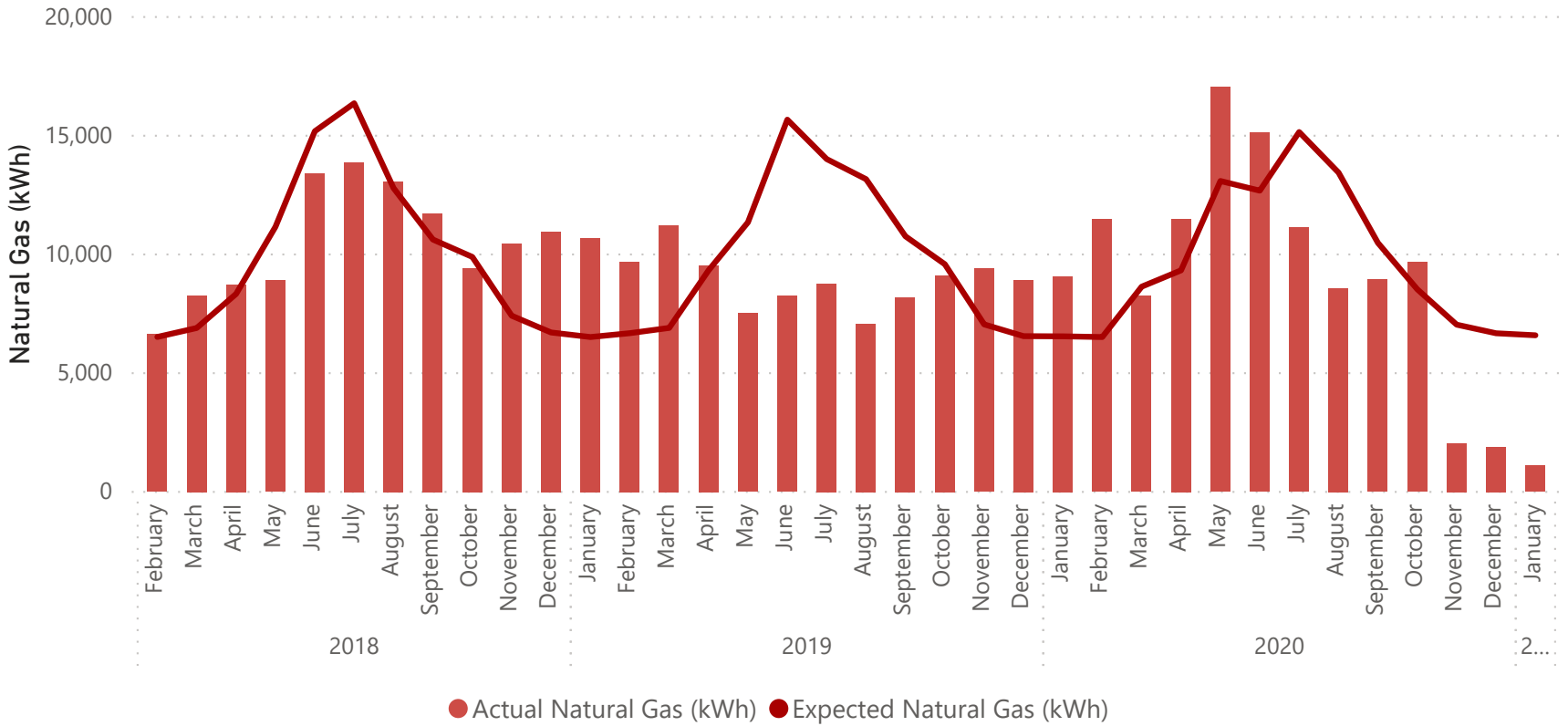
Te Koputu Library Electricity Use Compared to Baseline (kWh)



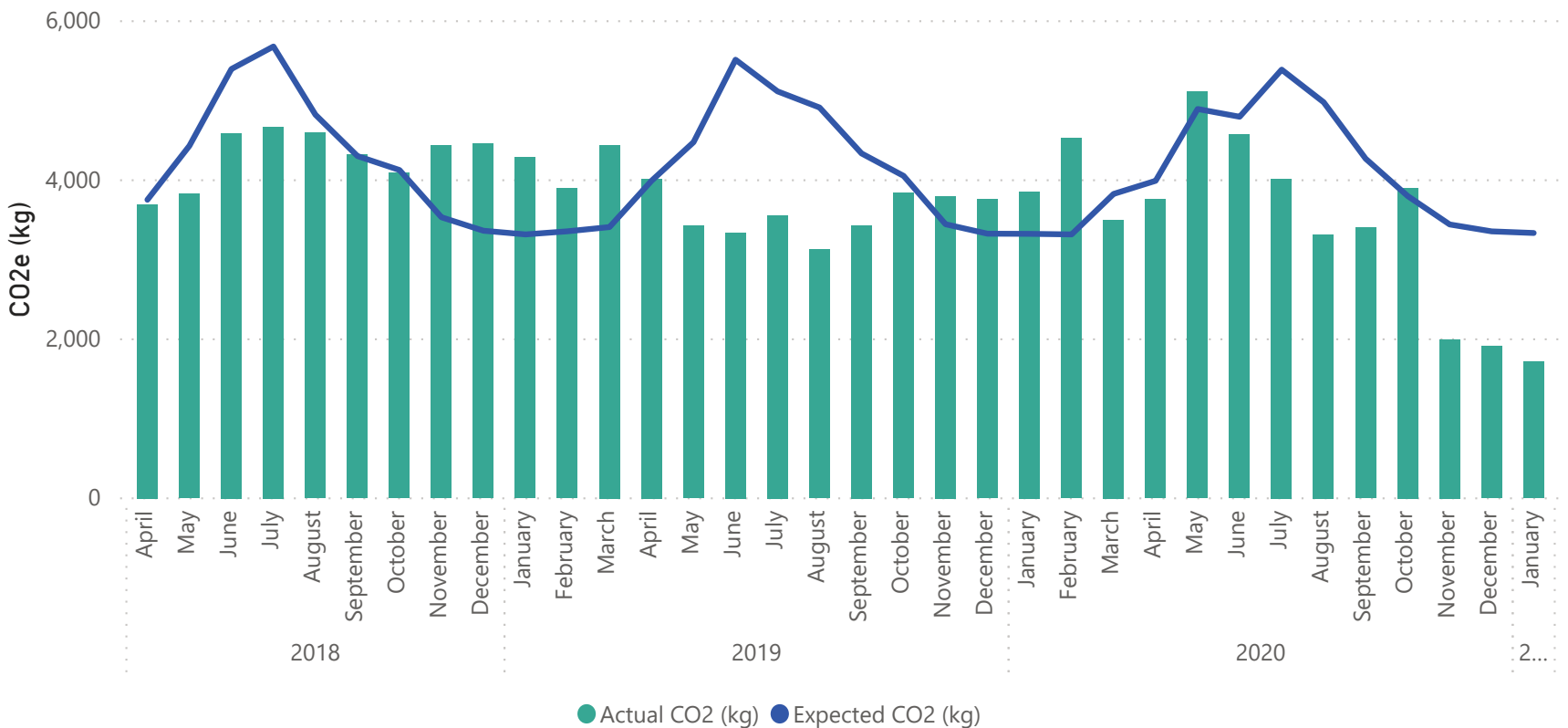
Whakatane District Council

Te Koputu Library

Te Koputu Library Natural Gas Compared to Baseline (kWh)



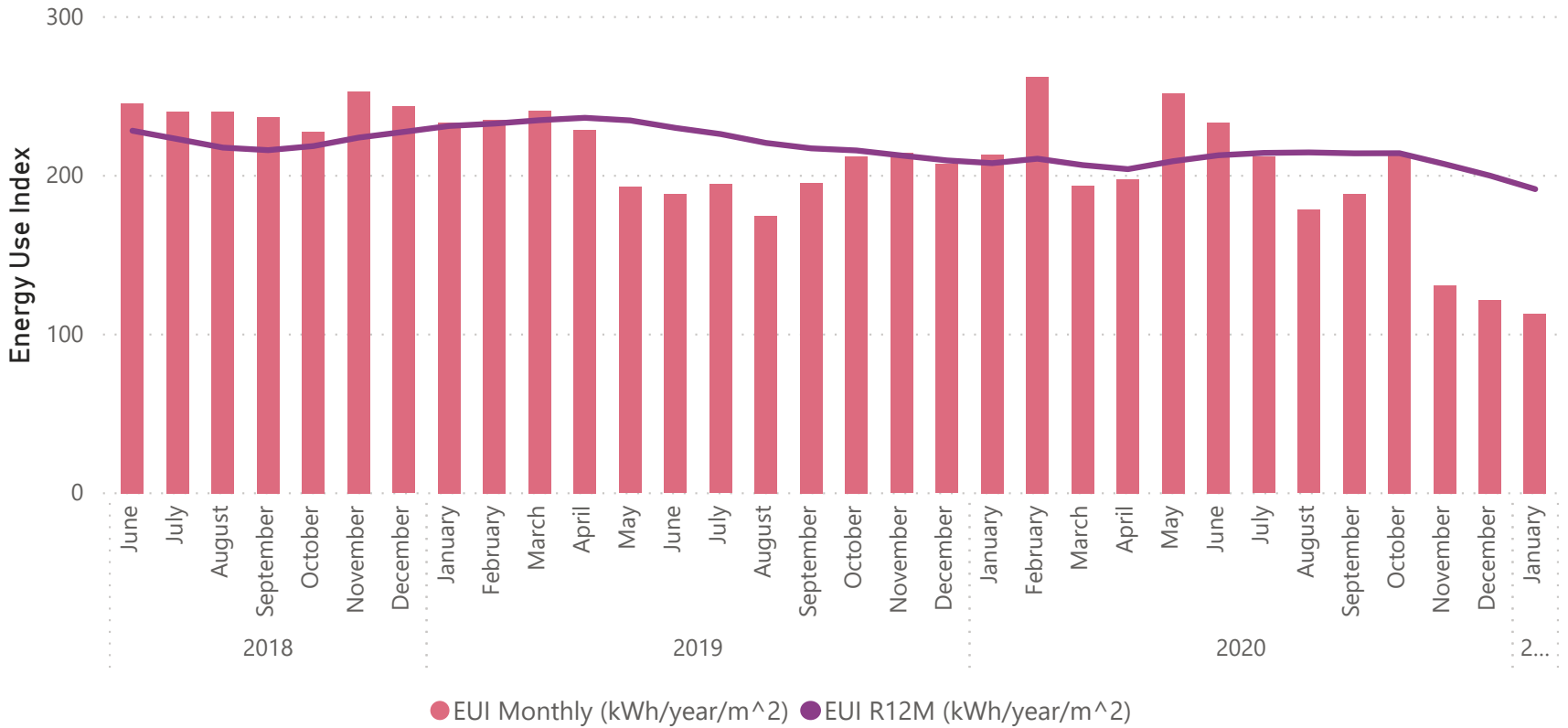
Te Koputu Library Carbon Emissions Compared to Baseline (kg CO2e)



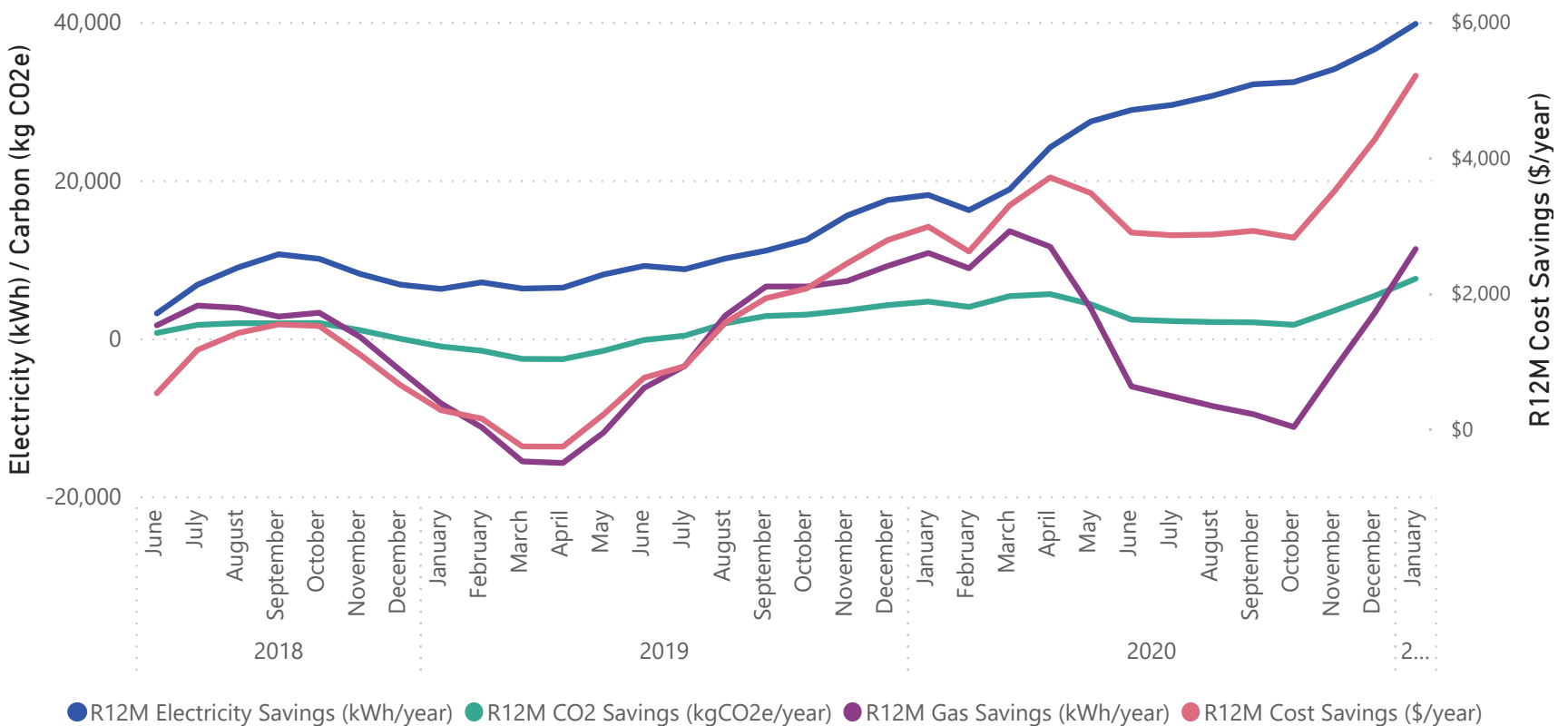
Whakatane District Council

Te Koputu Library

Te Koputu Library Energy Use Index by Month Compared to Rolling 12-Month Values



Te Koputu Library Cumulative Rolling 12 Month Savings



Whakatane District Council

Museum and Research Centre

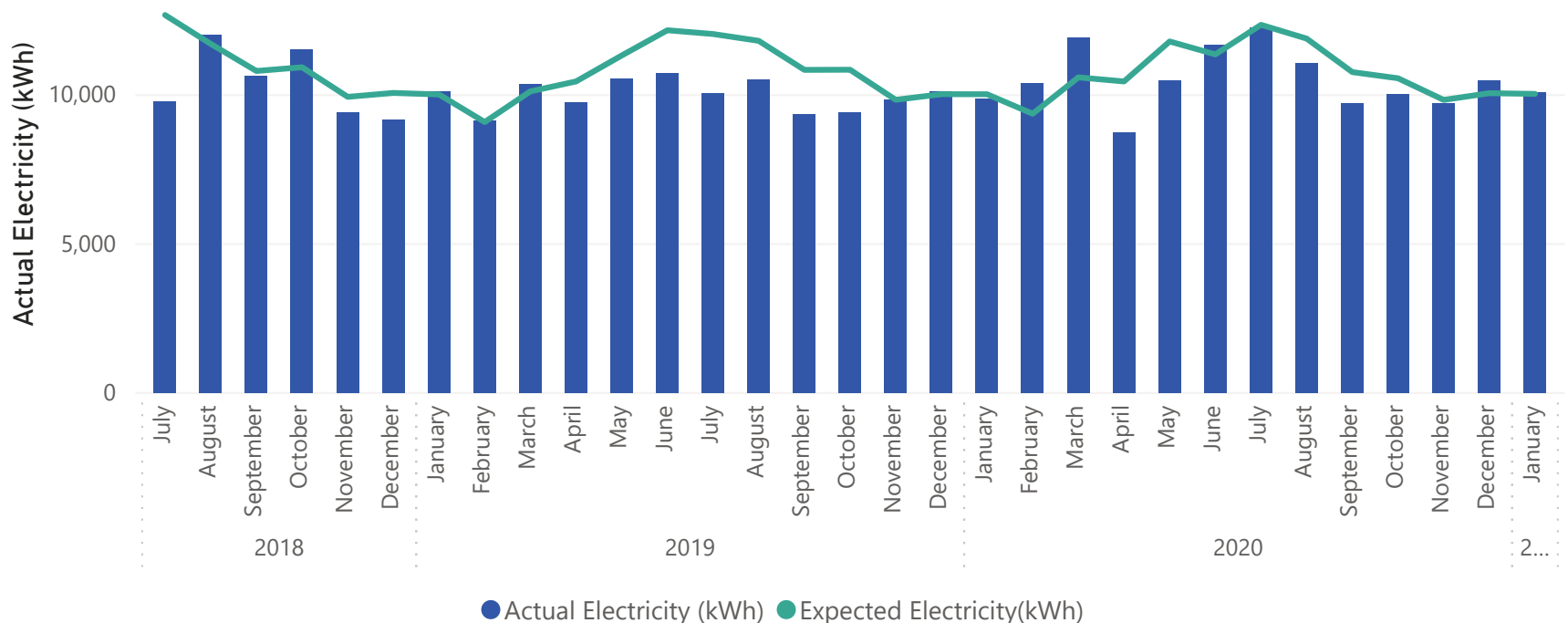
<p>-\$21</p> <p>Monthly Energy Cost Savings</p>	<p>-38</p> <p>Elec. Savings (kWh/mo)</p>	<p>-0%</p> <p>Elec. Savings (%)</p>	<p>2,557</p> <p>R12M Electricity Savings (kWh/yr)</p>	<p>-56</p> <p>CO2e Savings (kg/mo)</p>
<p>-\$207</p> <p>R12M Energy Cost Savings</p>	<p>-234</p> <p>Gas. Savings (kWh/mo)</p>	<p>-4%</p> <p>Gas. Savings (%)</p>	<p>-7,512</p> <p>R12M Gas Savings (kWh/yr)</p>	<p>-1,300</p> <p>R12M CO2e Savings (kg/yr)</p>

Comments:

Electricity use at the Museum and Research Centre is marginally above baseline for January 2021. Compared to 2020, electricity use has increased by 2%. Both months were approximately the same temperature on average.

The Museum and Research Centre also used 2.7 times more natural gas in January 2021, compared to January 2020. This seems to be the result of the meter not being read for several months from Aug 2019 to Apr 2020.

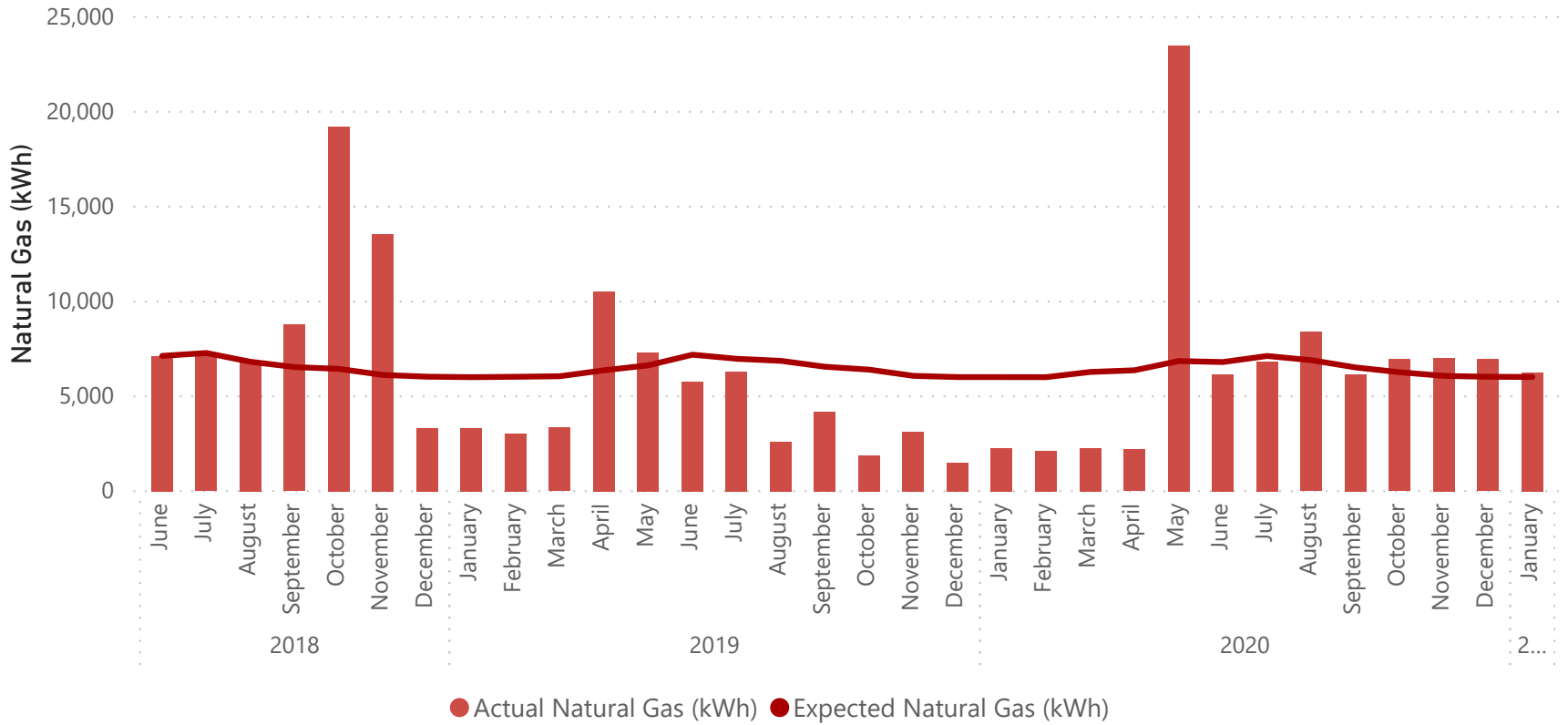
Museum Research Centre Electricity Use Compared to Baseline (kWh)



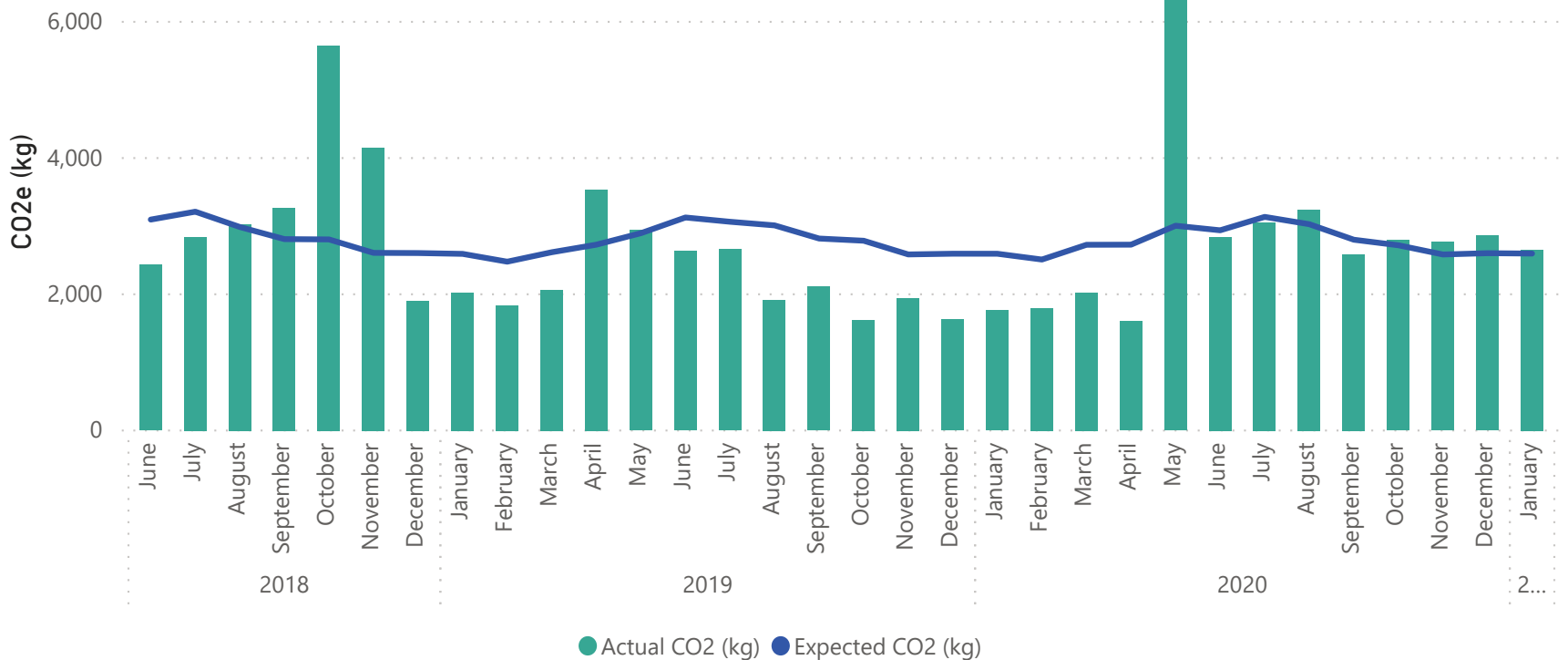
Whakatane District Council

Museum and Research Centre

Museum Research Centre Natural Gas Compared to Baseline (kWh)



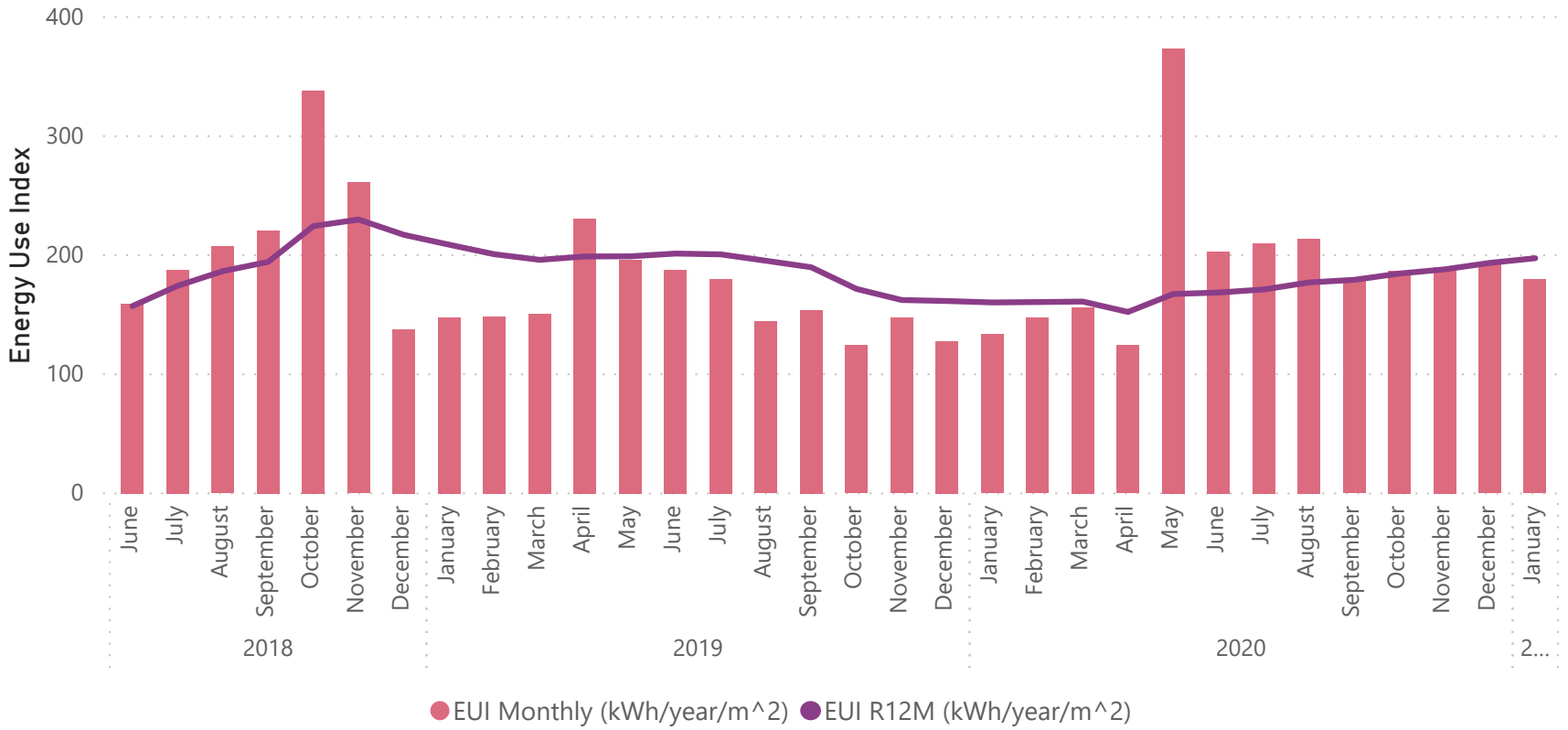
Museum Research Centre Carbon Emissions Compared to Baseline (kg CO2e)



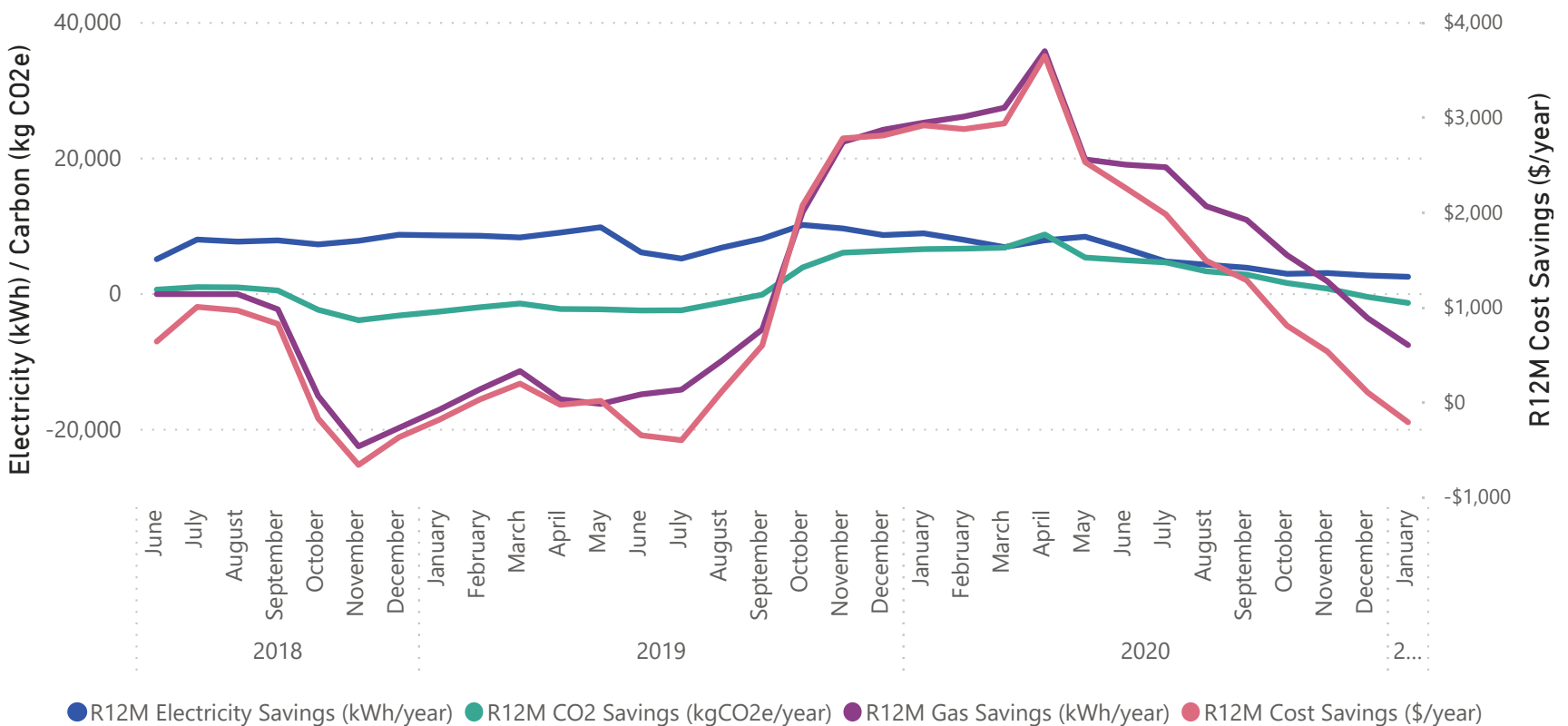
Whakatane District Council

Museum and Research Centre

Museum Research Centre Energy Use Index by Month Compared to Rolling 12-Month Values



Museum Research Centre Cumulative Rolling 12 Month Savings



Whakatane District Council

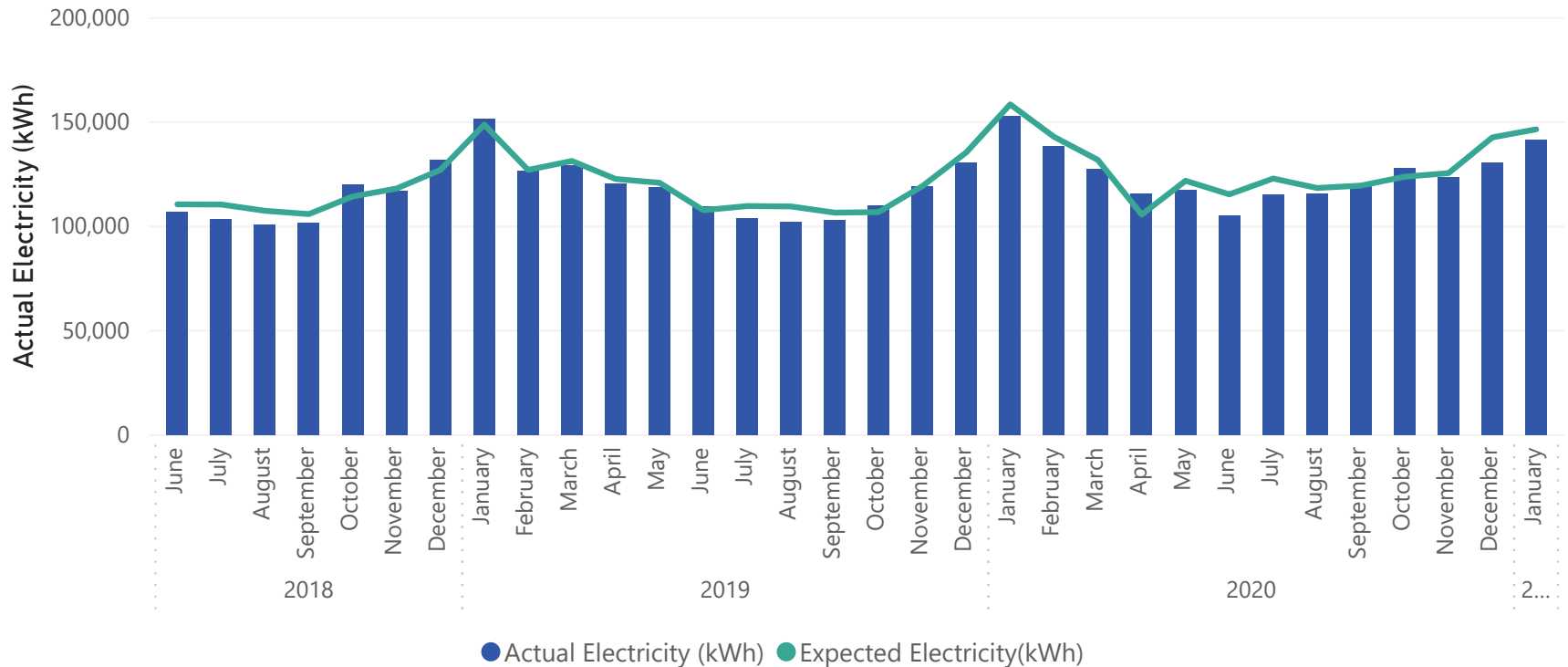
Water Treatment Plant

\$518 Monthly Energy Cost Savings	5,051 Elec. Savings (kWh/mo)	3% Elec. Savings (%)	39,584 R12M Electricity Savings (kWh/yr)	650 CO2e Savings (kg/mo)
\$4,410 R12M Energy Cost Savings				5,095 R12M CO2e Savings (kg/yr)

Comments:

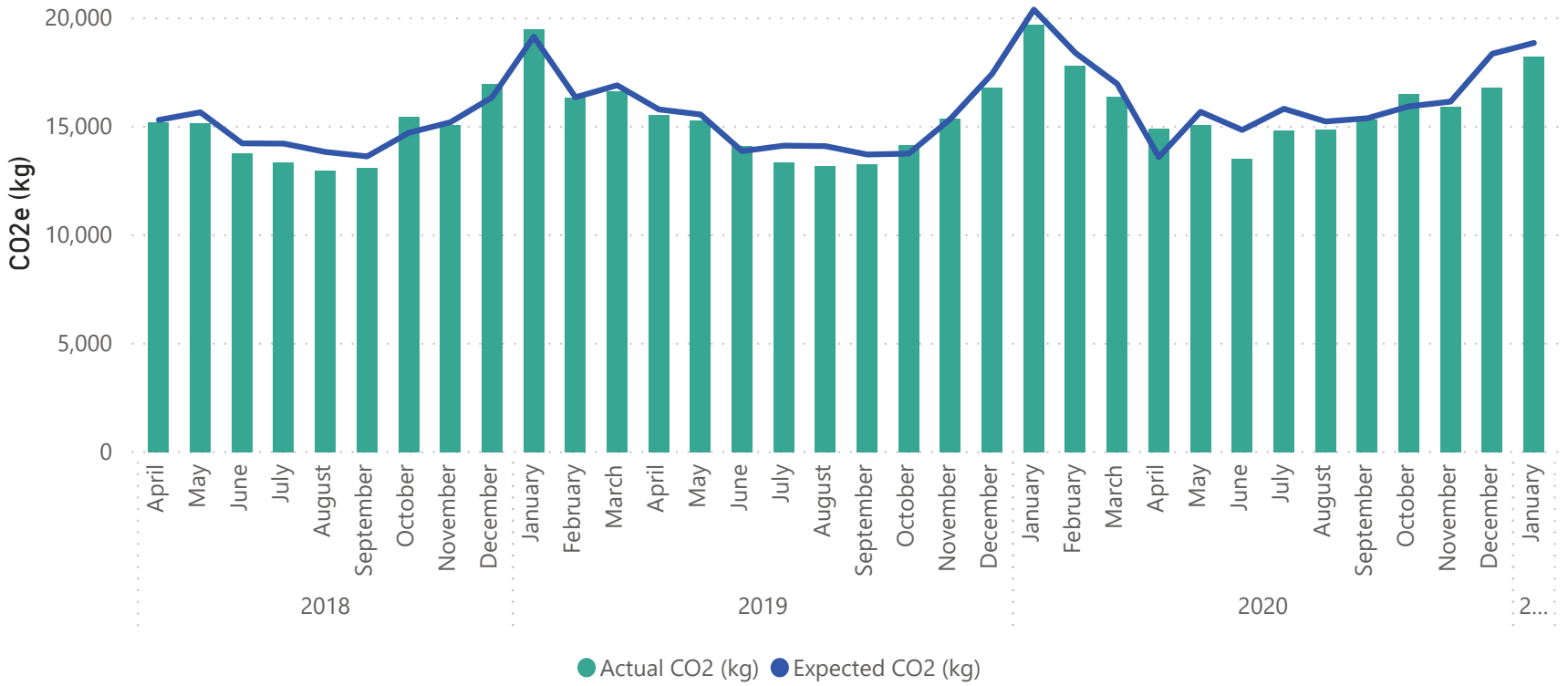
Demand for water in January 2021 was 8% lower compared to January 2020. Excluding summer months, demand was relatively steady in 2020 and was consistent with historical trends. Compared to previous years, peak demand has been less pronounced in 2021.

Water Treatment Plant Electricity Use Compared to Baseline (kWh)

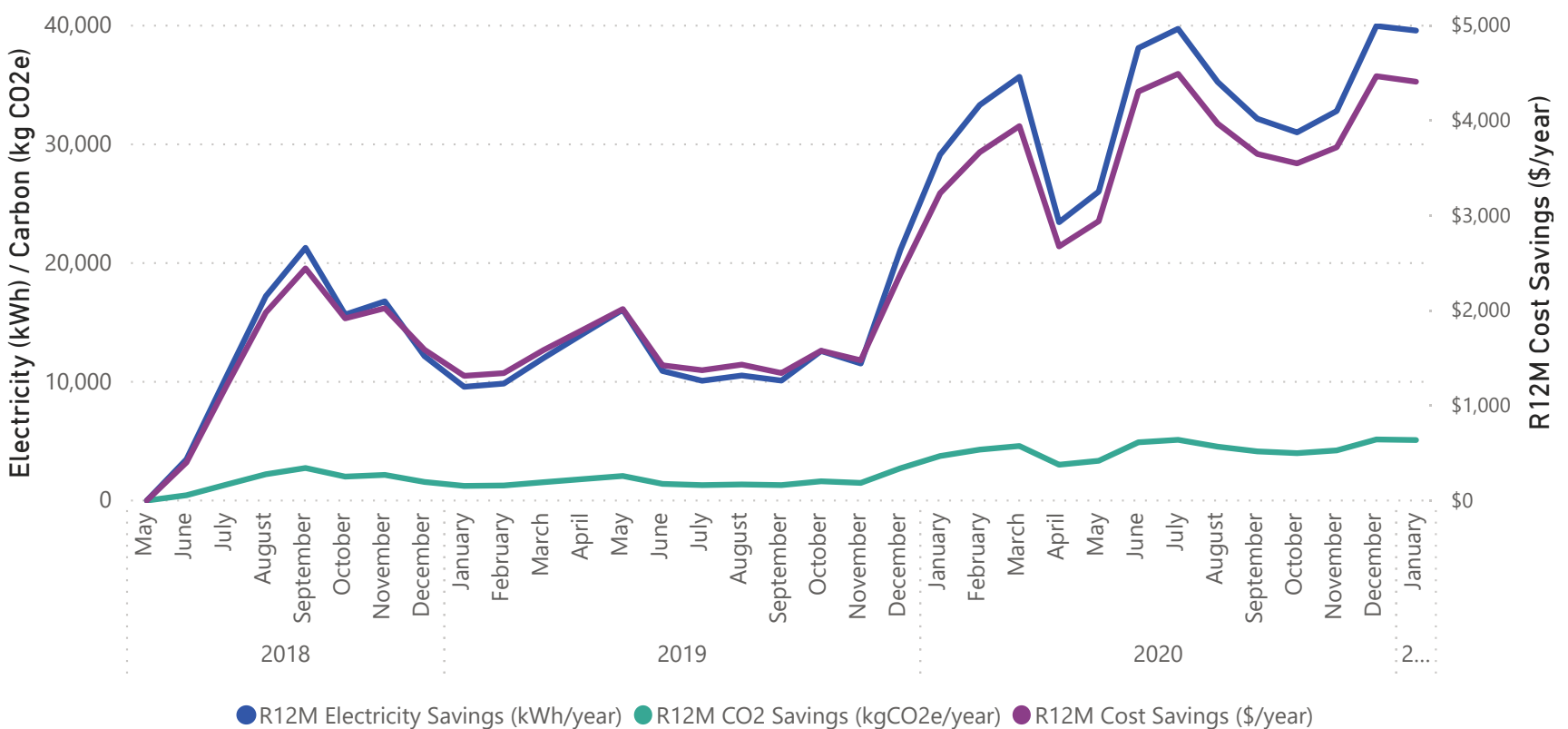


Whakatane District Council Water Treatment Plant

Water Treatment Plant Carbon Emissions Compared to Baseline (kg CO2e)



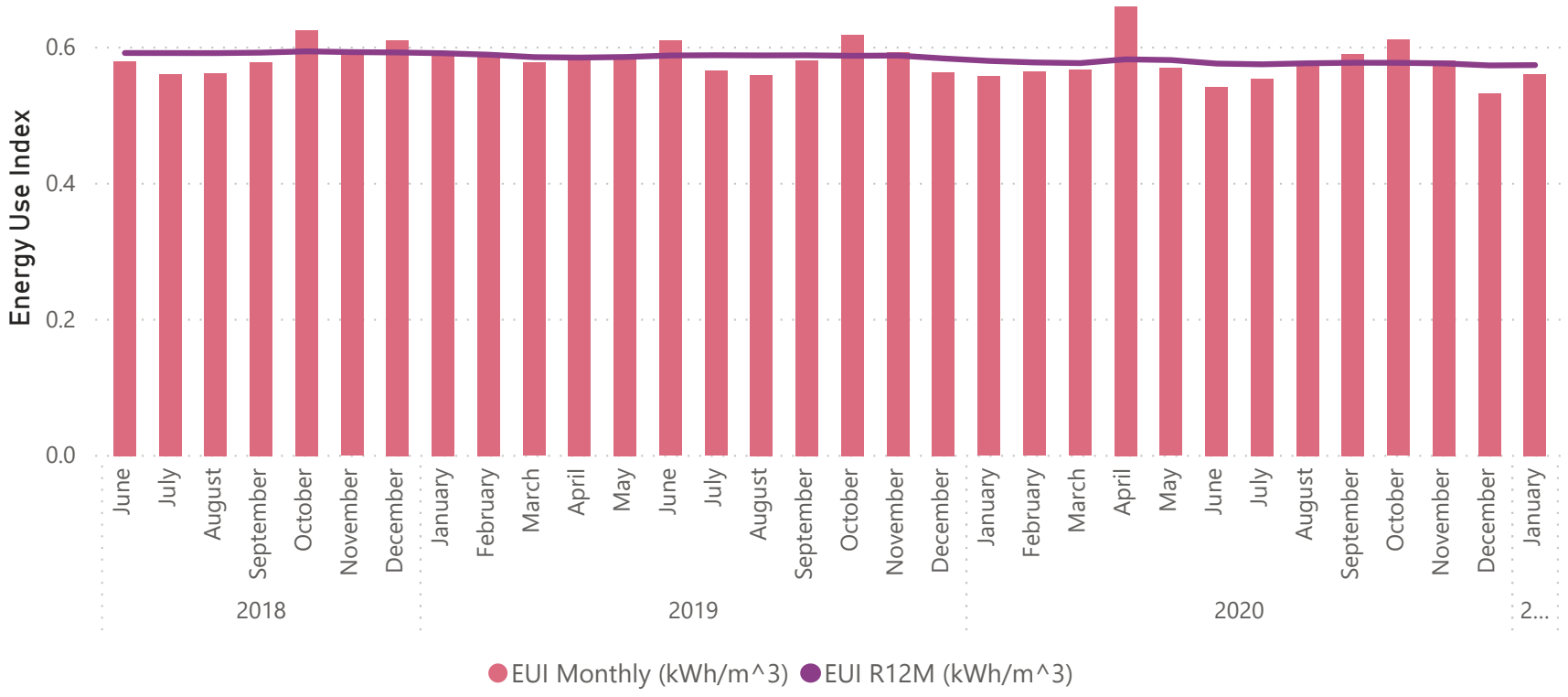
Water Treatment Plant Cumulative Rolling 12 Month Savings



Whakatane District Council

Water Treatment Plant

Water Treatment Plant Energy Use Index by Month Compared to Rolling 12-Month Values



Whakatane District Council

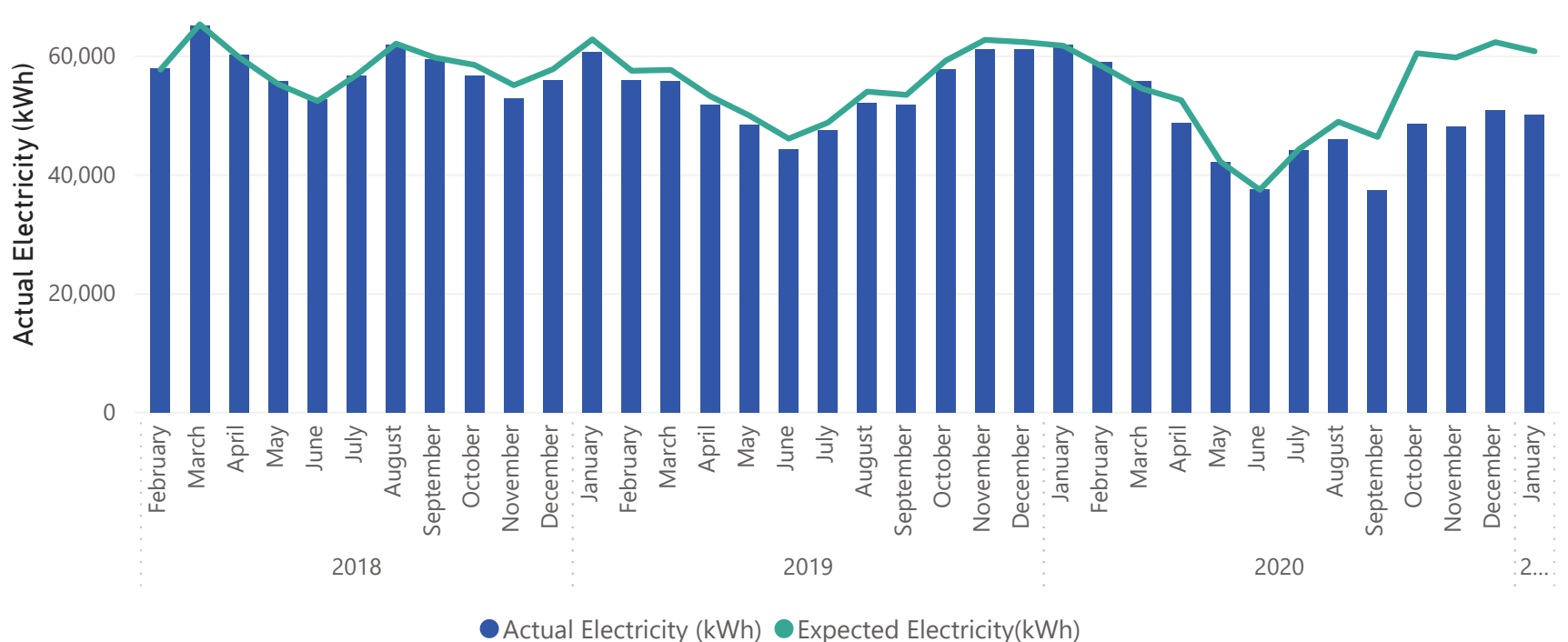
Braemar Road Pump Station

<p>\$1,163 Monthly Energy Cost Savings</p>	<p>10,786 Elec. Savings (kWh/mo)</p>	<p>18% Elec. Savings (%)</p>	<p>59,907 R12M Electricity Savings (kWh/yr)</p>	<p>1,403 CO2e Savings (kg/mo)</p>
<p>\$6,063 R12M Energy Cost Savings</p>				<p>8,522 R12M CO2e Savings (kg/yr)</p>

Comments:

Compared to baseline, Braemar Rd. has saved approximately 18% in electricity use. This is the fifth month in a row that savings in the 20% range have been achieved. This is due to new, more efficient pumps installed late in August, which have proven to produce consistent savings since.

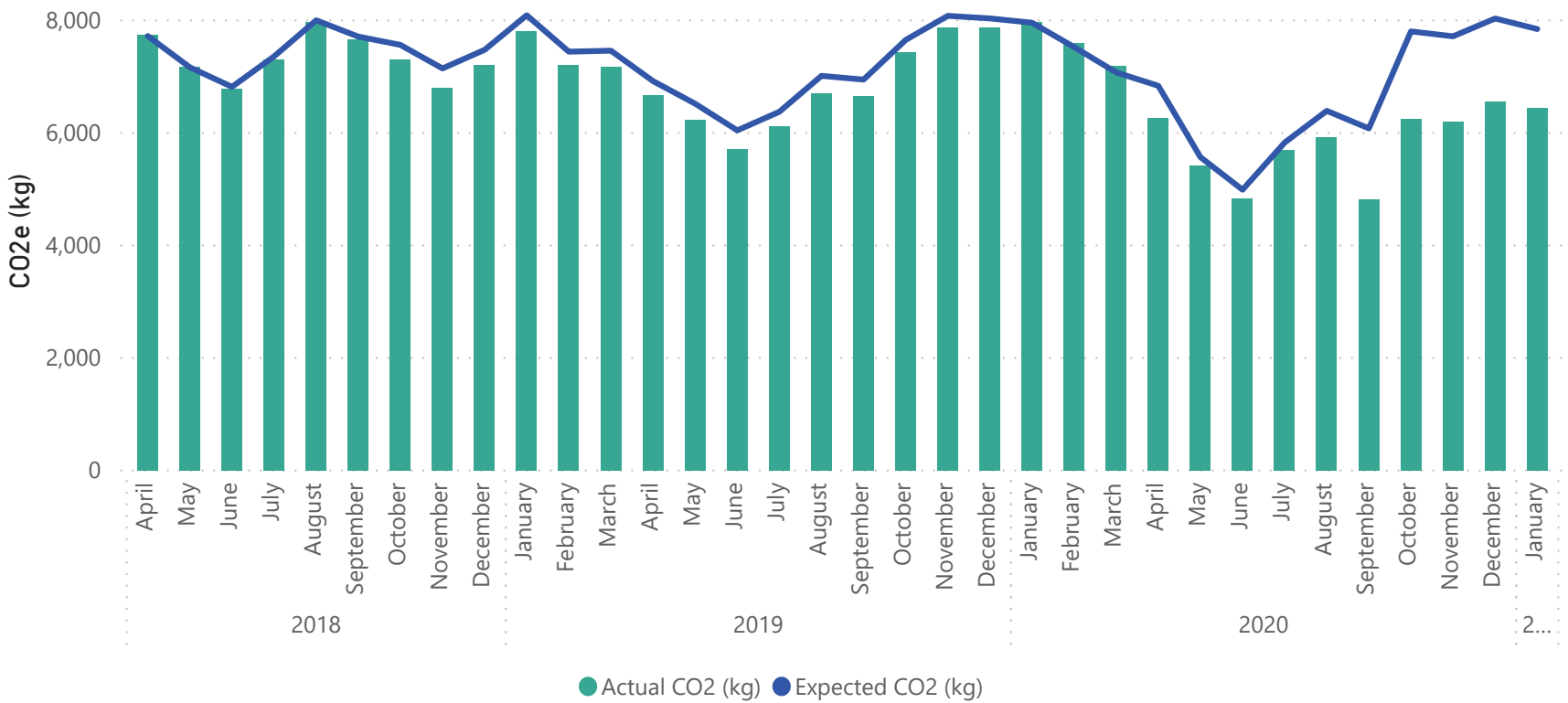
Braemar Rd Pumps Electricity Use Compared to Baseline (kWh)



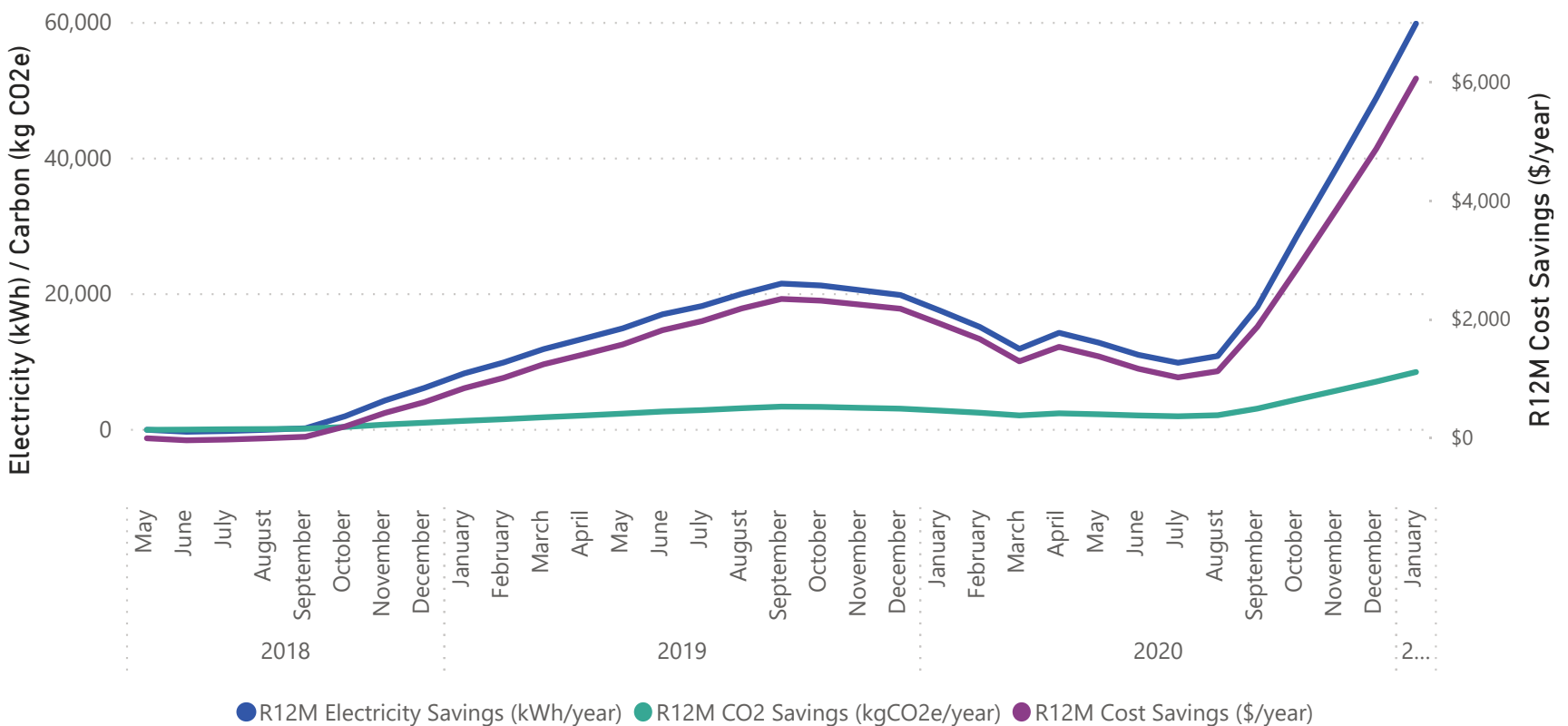
Whakatane District Council

Braemar Road Pump Station

Braemar Rd Pumps Carbon Emissions Compared to Baseline (kg CO2e)



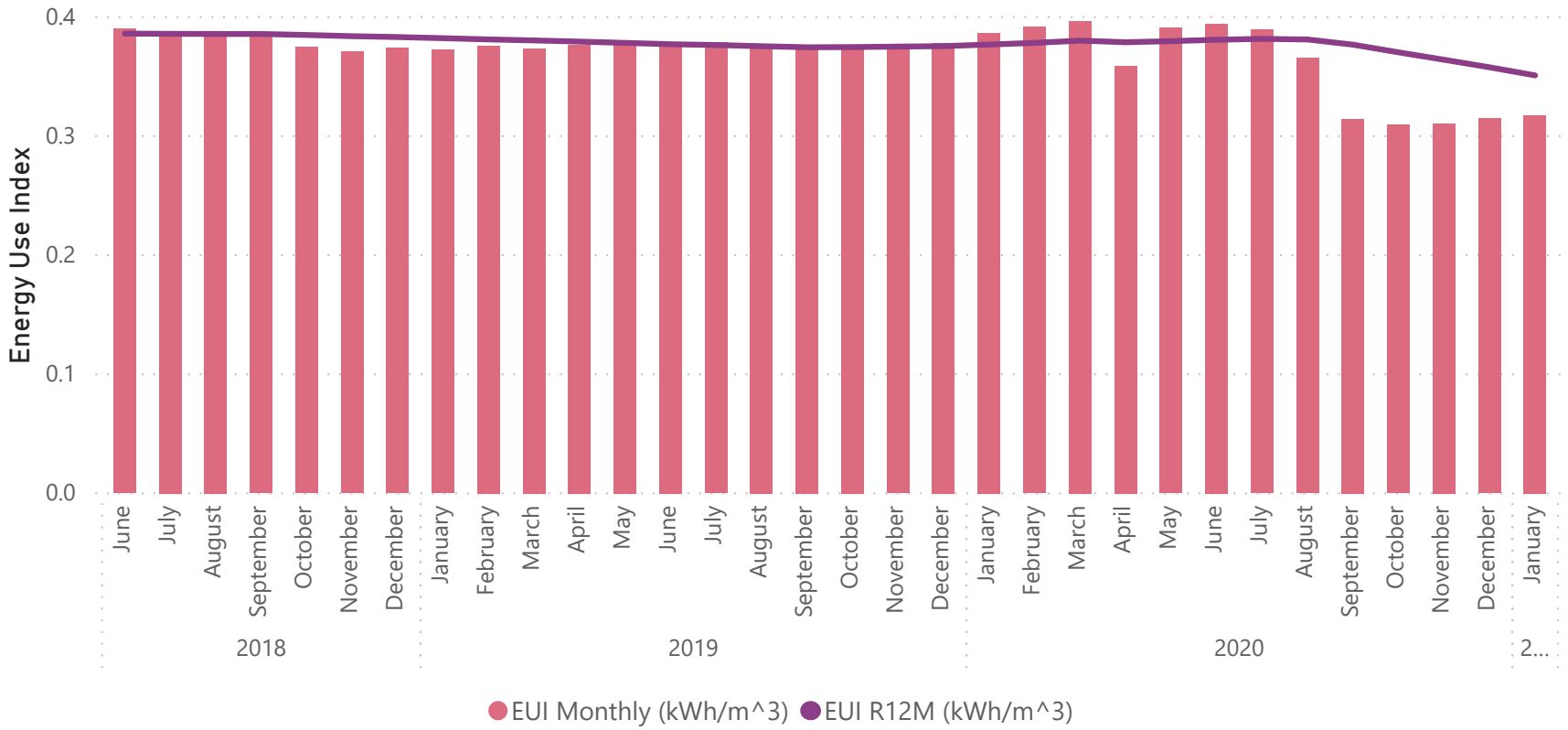
Braemar Rd Pumps Cumulative Rolling 12 Month Savings



Whakatane District Council

Braemar Road Pump Station

Braemar Rd Pumps Energy Use Index by Month Compared to Rolling 12-Month Values



Whakatane District Council

Paul Road Pump Station

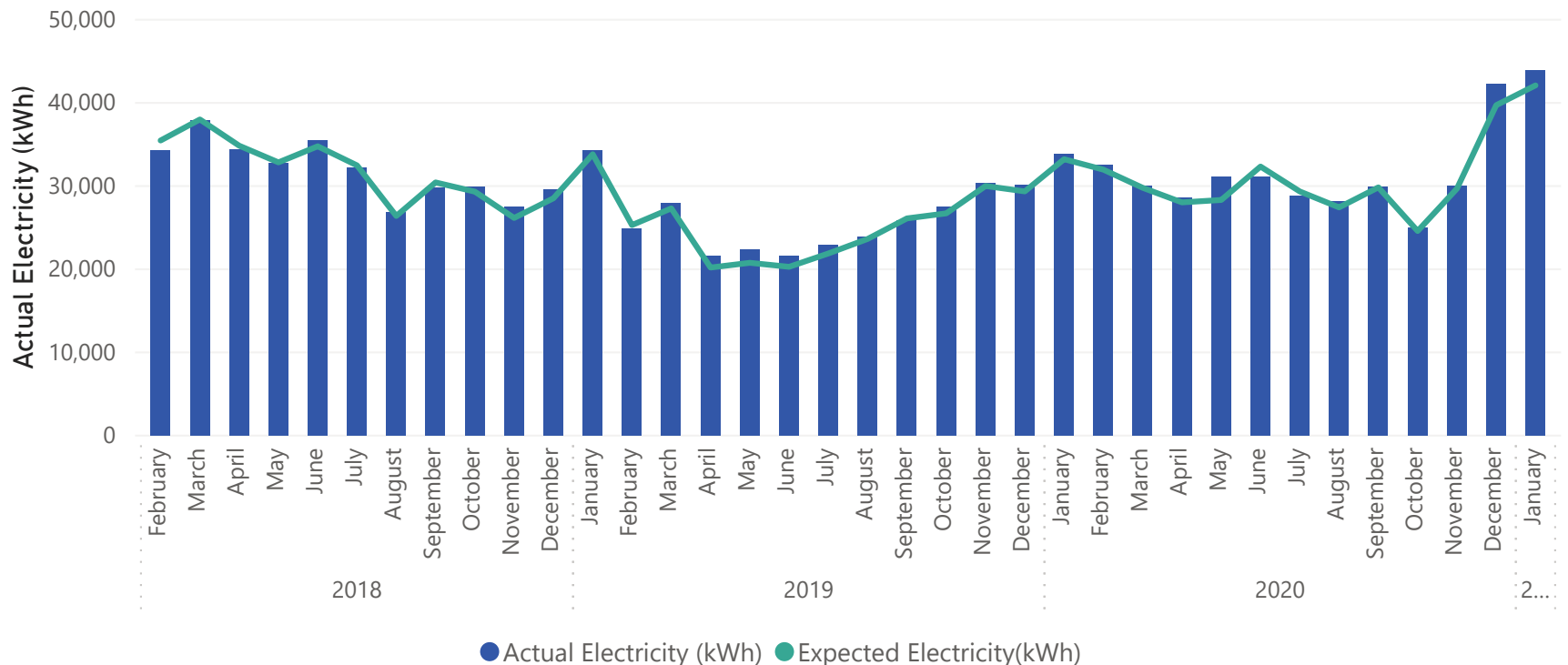
<p>-\$187 Monthly Energy Cost Savings</p>	<p>-1,783 Elec. Savings (kWh/mo)</p>	<p>-4% Elec. Savings (%)</p>	<p>-8,059 R12M Electricity Savings (kWh/yr)</p>	<p>-229 CO2e Savings (kg/mo)</p>
<p>-\$808 R12M Energy Cost Savings</p>				<p>-1,029 R12M CO2e Savings (kg/yr)</p>

Comments:

Paul Rd Pump Station electricity was above baseline in January 2021 and pumped water has increased by 30% compared to January 2020. On an EUI basis, the pumps are still operating consistently at a rate of approximately 0.65 kWh per cubic meter.

The increase in demand and electricity use at Paul Road is partially attributed to a decrease of use at Johnson Road pump station. The EUIs for Johnson and Paul road pumps are approximately twice as high when compared to Braemar Road and Bridger glade.

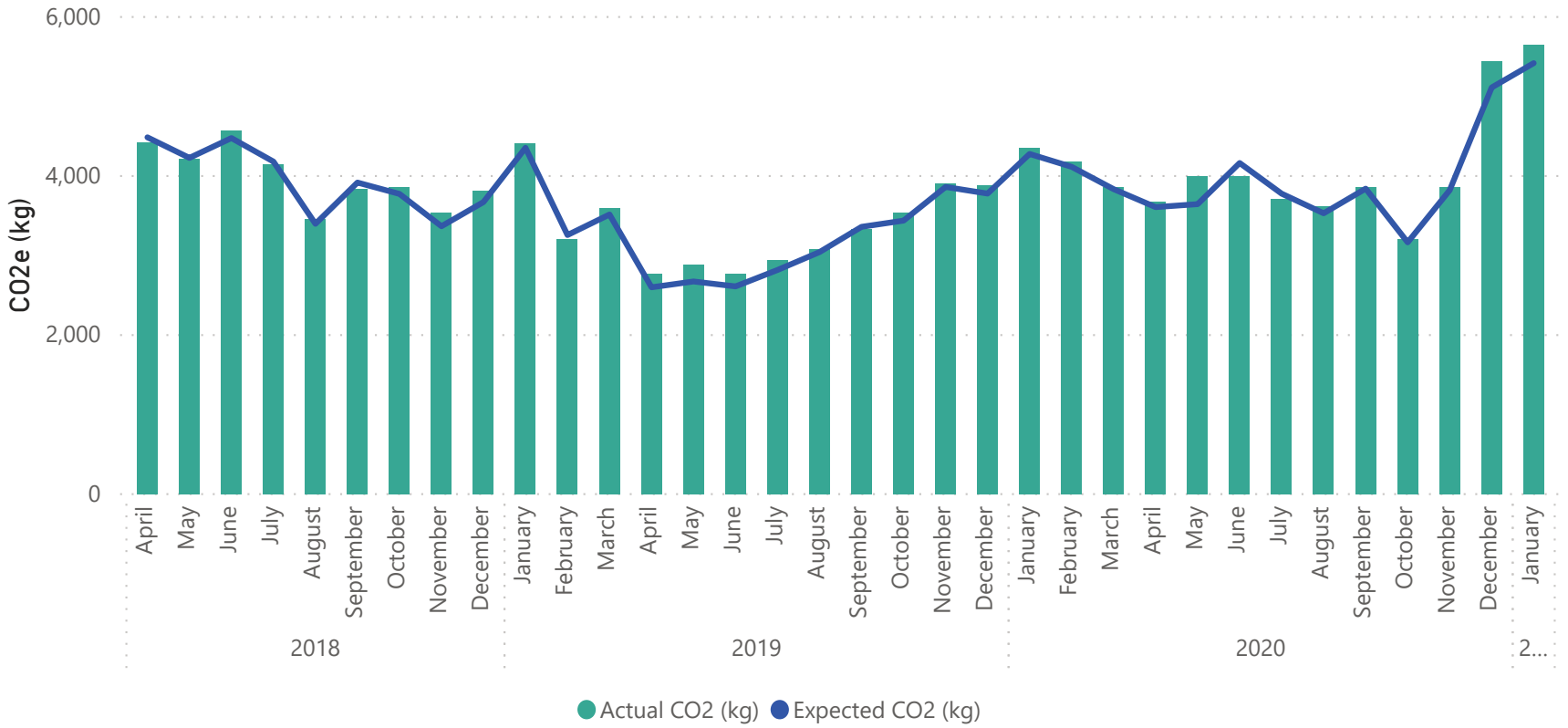
Paul Rd Pumps Electricity Use Compared to Baseline (kWh)



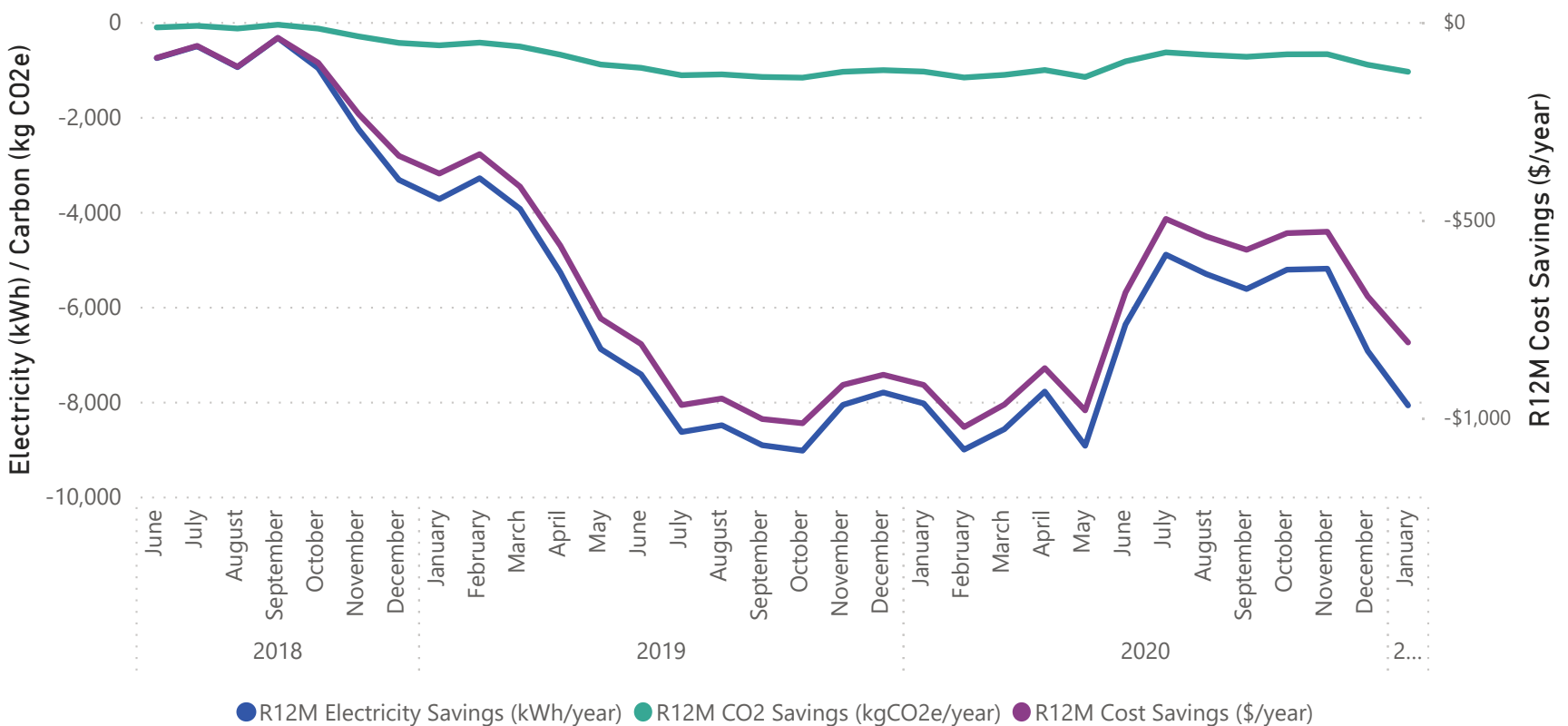
Whakatane District Council

Paul Road Pump Station

Paul Rd Pumps Carbon Emissions Compared to Baseline (kg CO2e)



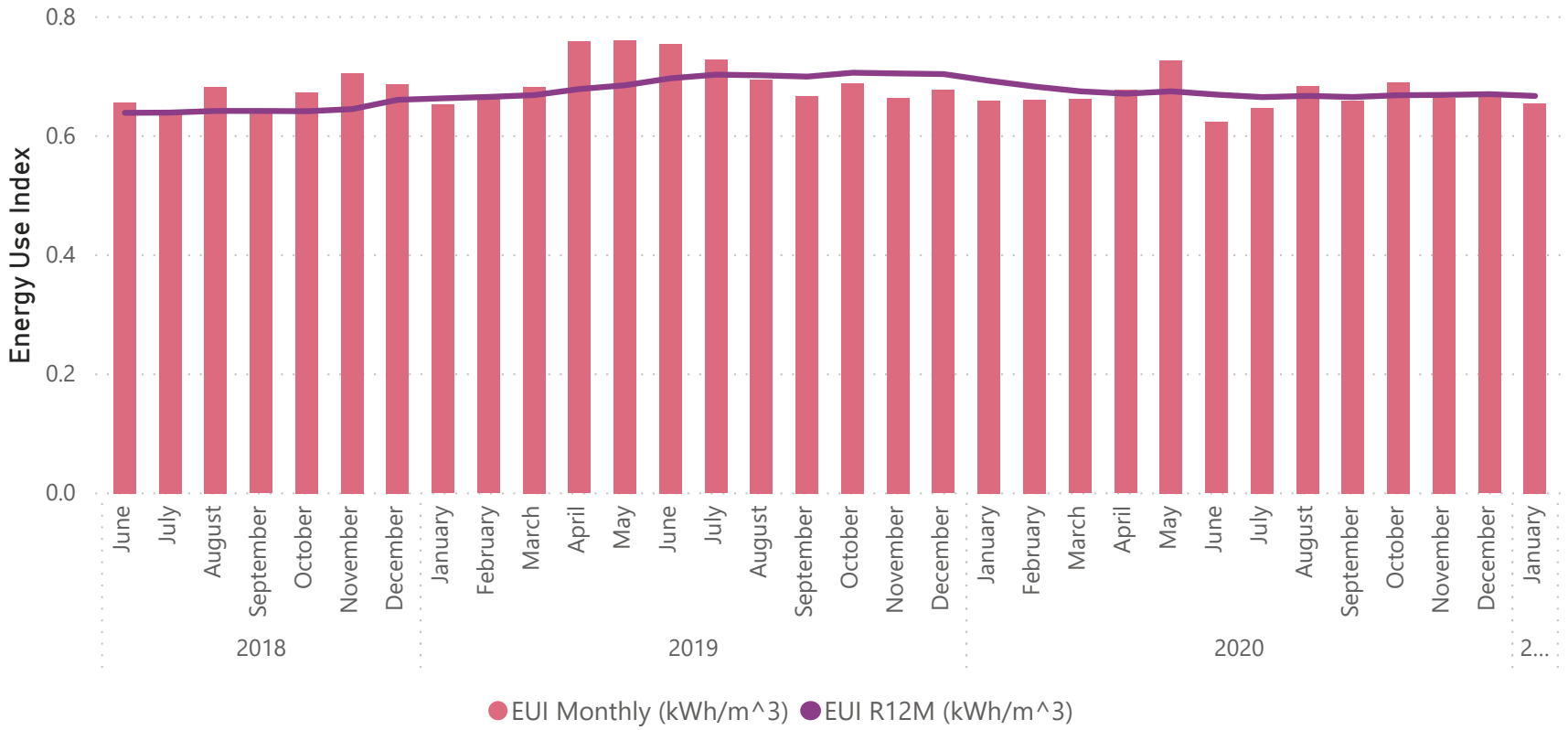
Paul Rd Pumps Cumulative Rolling 12 Month Savings



Whakatane District Council

Paul Road Pump Station

Paul Rd Pumps Energy Use Index by Month Compared to Rolling 12-Month Values



Whakatane District Council

Johnson Road Pump Station

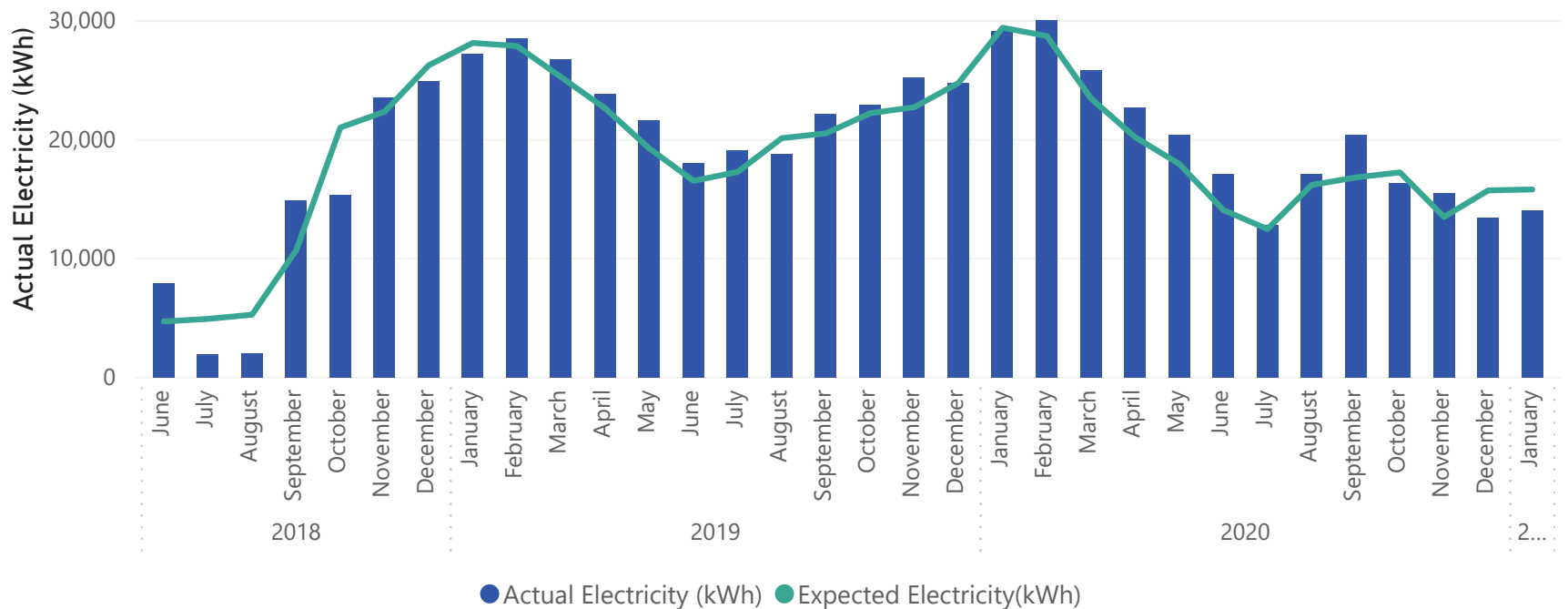
<p>\$386 Monthly Energy Cost Savings</p>	<p>1,772 Elec. Savings (kWh/mo)</p>	<p>11% Elec. Savings (%)</p>	<p>-13,343 R12M Electricity Savings (kWh/yr)</p>	<p>229 CO2e Savings (kg/mo)</p>
<p>-\$3,203 R12M Energy Cost Savings</p>				<p>-1,707 R12M CO2e Savings (kg/yr)</p>

Comments:

Electricity use was approx 11% less than baseline at Johnson Rd in January 2021. This may be partly due to when the electricity meter was read, although energy use is adjusted for the actual number of days in the month.

The decrease in electricity use compared to baseline is offset by increased usage at Paul Road pump station. Both Paul Road and Johnson Rd's EUIs are approximately twice as high compared to Bridger Glade and Braemar Road, on a kWh per cubic meter pumped basis.

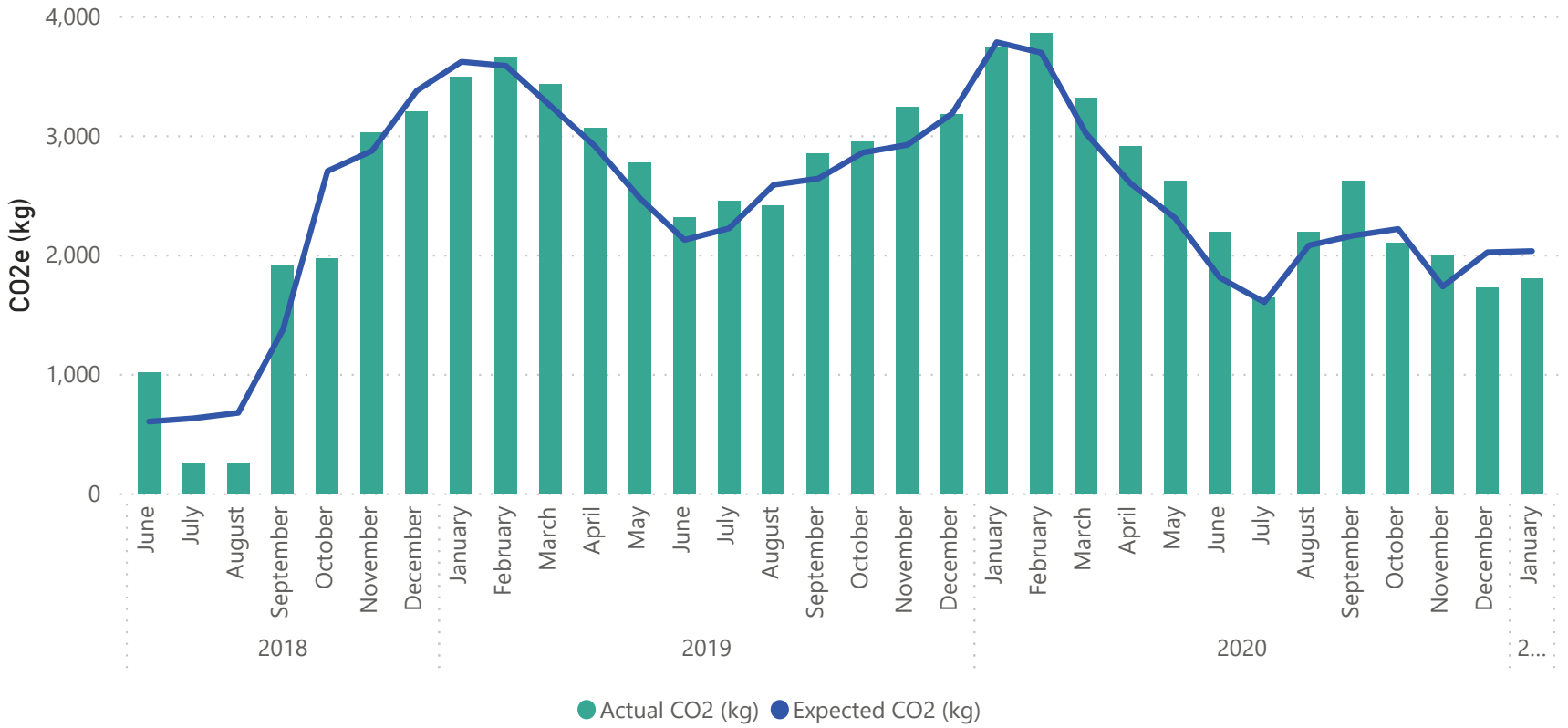
Johnson Rd Pumps Electricity Use Compared to Baseline (kWh)



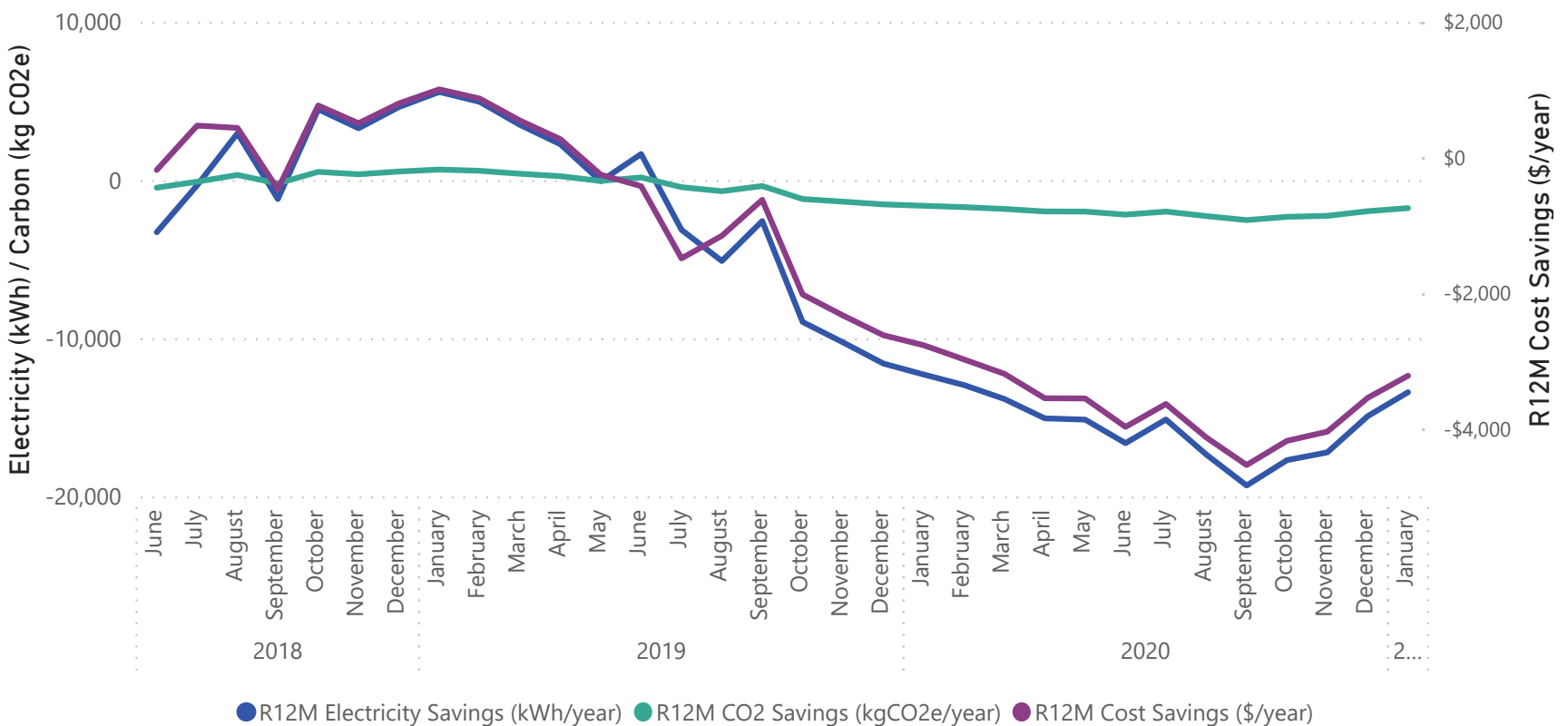
Whakatane District Council

Johnson Road Pump Station

Johnson Rd Pumps Carbon Emissions Compared to Baseline (kg CO2e)



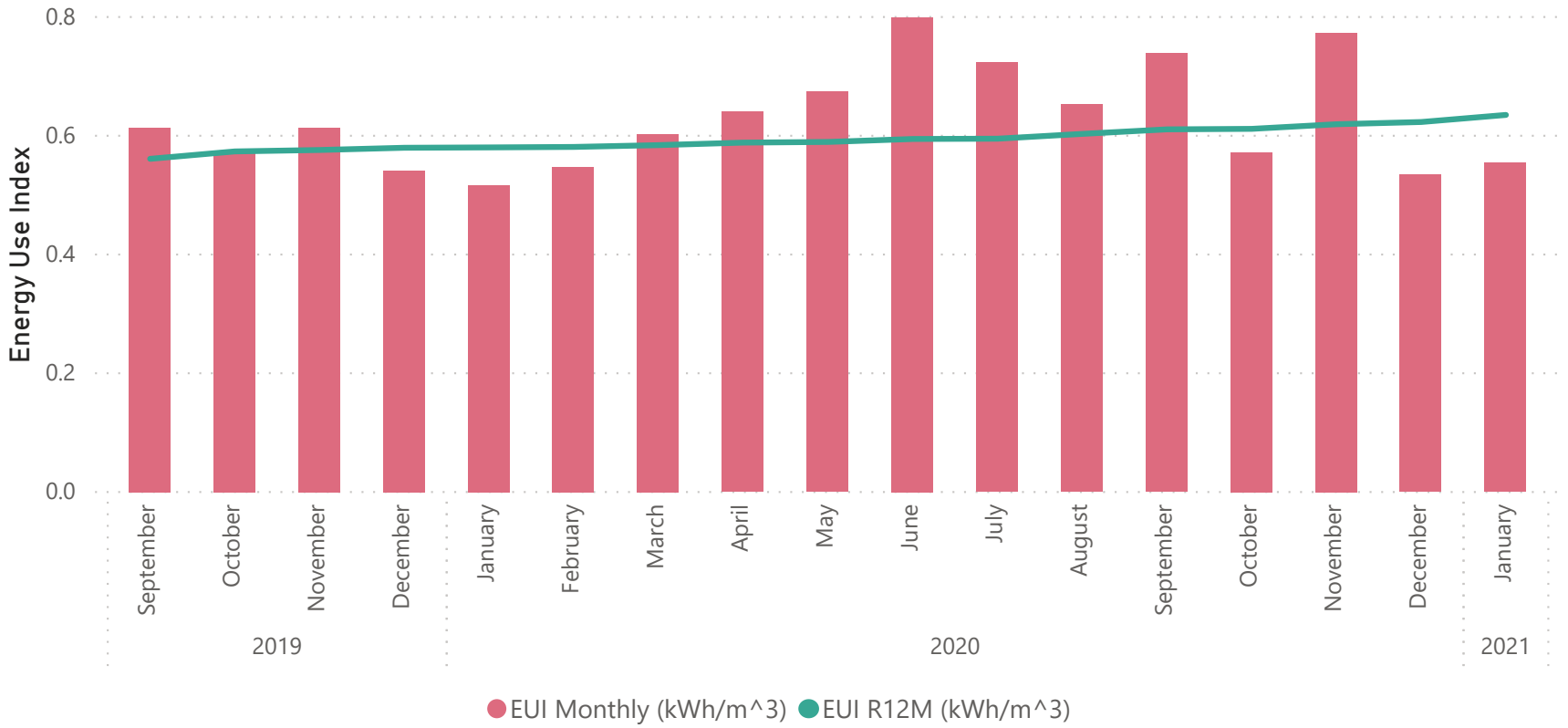
Johnson Rd Pumps Cumulative Rolling 12 Month Savings



Whakatane District Council

Johnson Road Pump Station

Johnson Rd Pumps Energy Use Index by Month Compared to Rolling 12-Month Values



Whakatane District Council

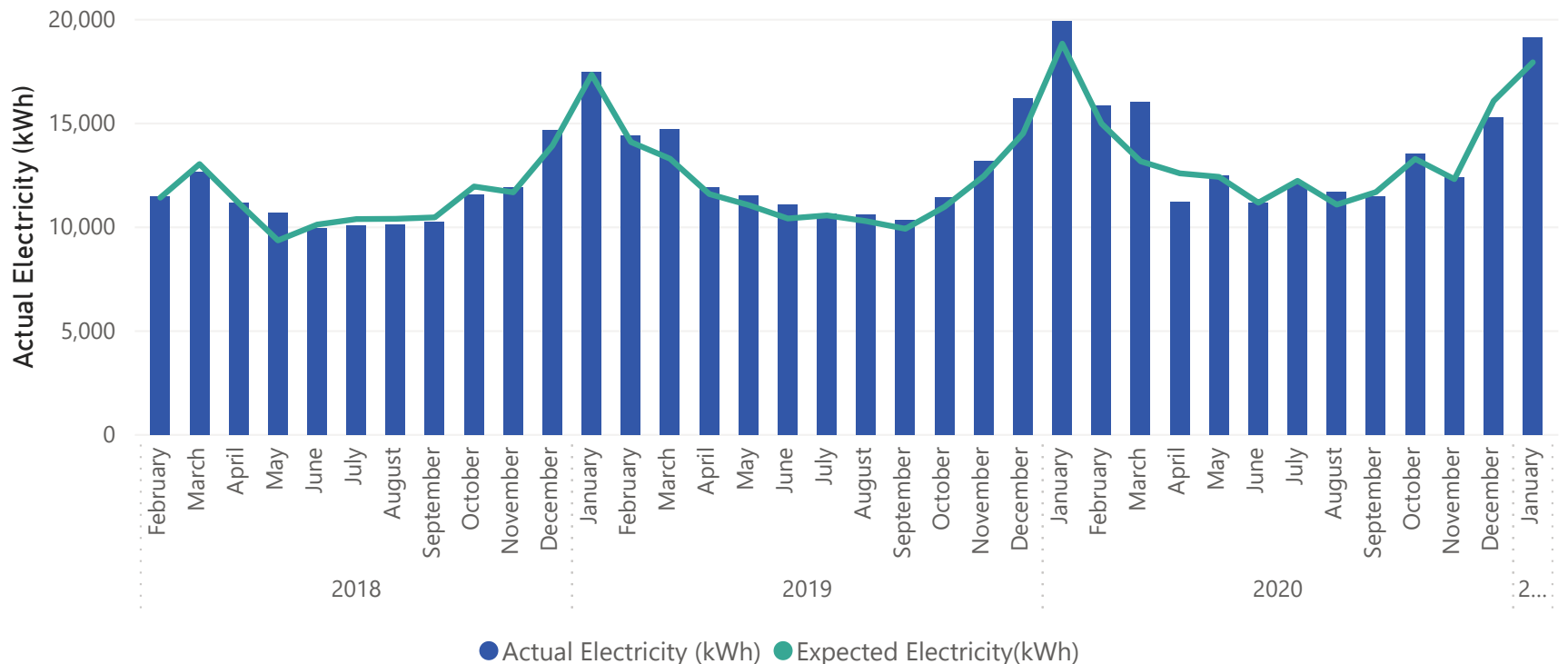
Bridger Glade Pump Station

<p>-\$213 Monthly Energy Cost Savings</p>	<p>-1,184 Elec. Savings (kWh/mo)</p>	<p>-7% Elec. Savings (%)</p>	<p>-3,327 R12M Electricity Savings (kWh/yr)</p>	<p>-152 CO2e Savings (kg/mo)</p>
<p>-\$640 R12M Energy Cost Savings</p>				<p>-428 R12M CO2e Savings (kg/yr)</p>

Comments:

Electricity use was more than baseline for the month of January 2021 at Bridger Glade pump station. Compared to January 2020, the volume of water supplied by Bridger Glade pumps has decreased by 5% and electricity use has decreased by 4%. Historic data shows that demand for water (and hence electricity) at Bridger Glade begins increasing over summer months and peaks in January. During months of high demand, the pump station typically uses more electricity than expected.

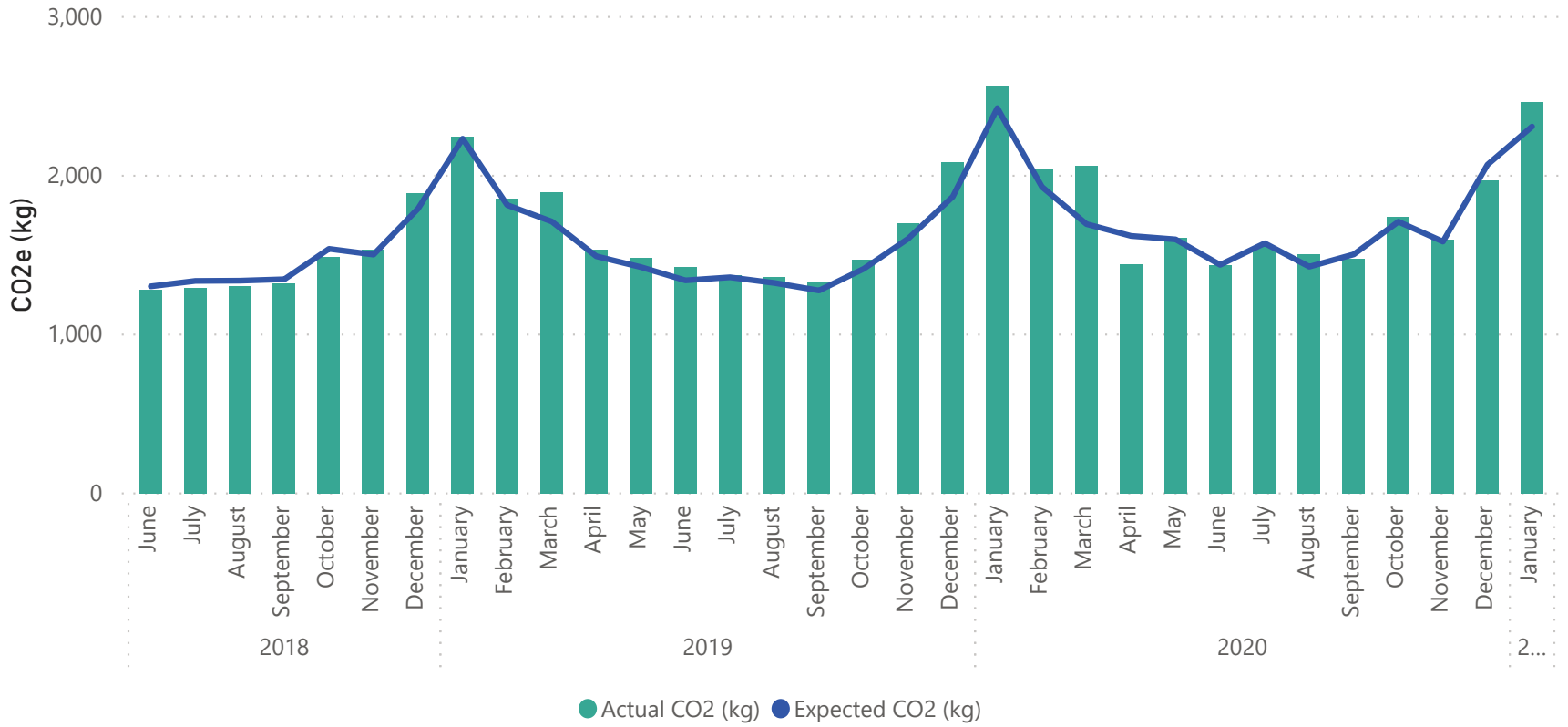
Bridger Glade Pumps Electricity Use Compared to Baseline (kWh)



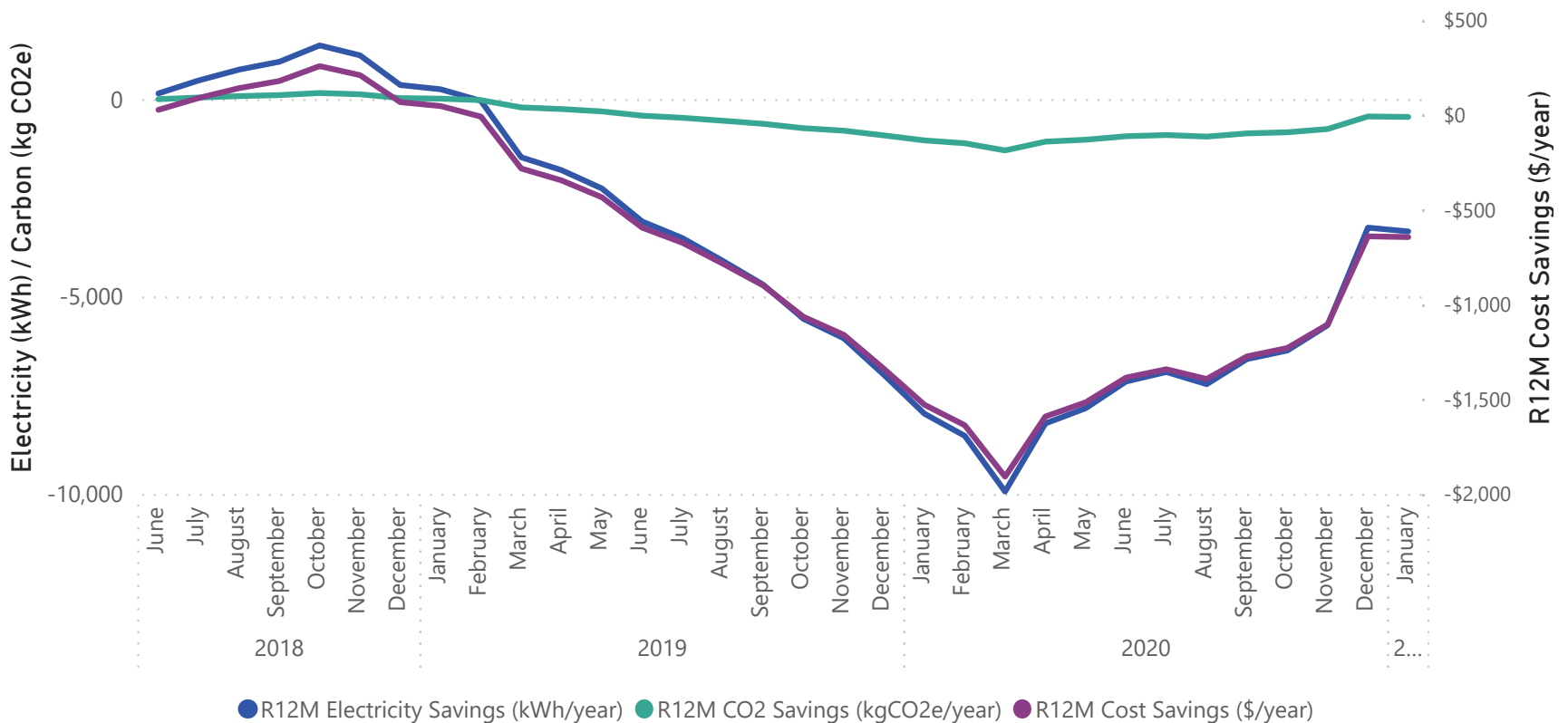
Whakatane District Council

Bridger Glade Pump Station

Bridger Glade Pumps Carbon Emissions Compared to Baseline (kg CO2e)



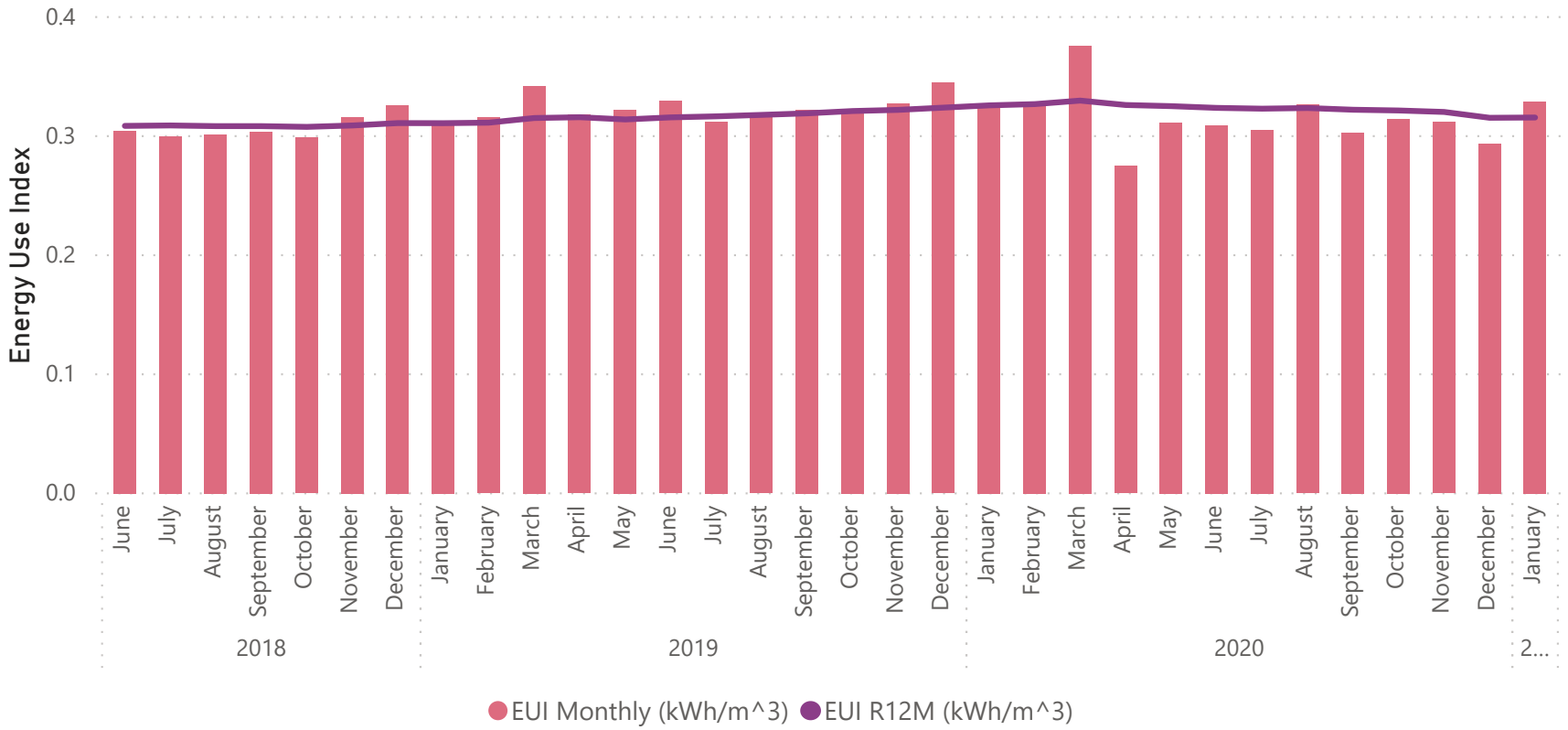
Bridger Glade Pumps Cumulative Rolling 12 Month Savings



Whakatane District Council

Bridger Glade Pump Station

Bridger Glade Pumps Energy Use Index by Month Compared to Rolling 12-Month Values



Whakatane District Council

Ohope Oxidation Ponds

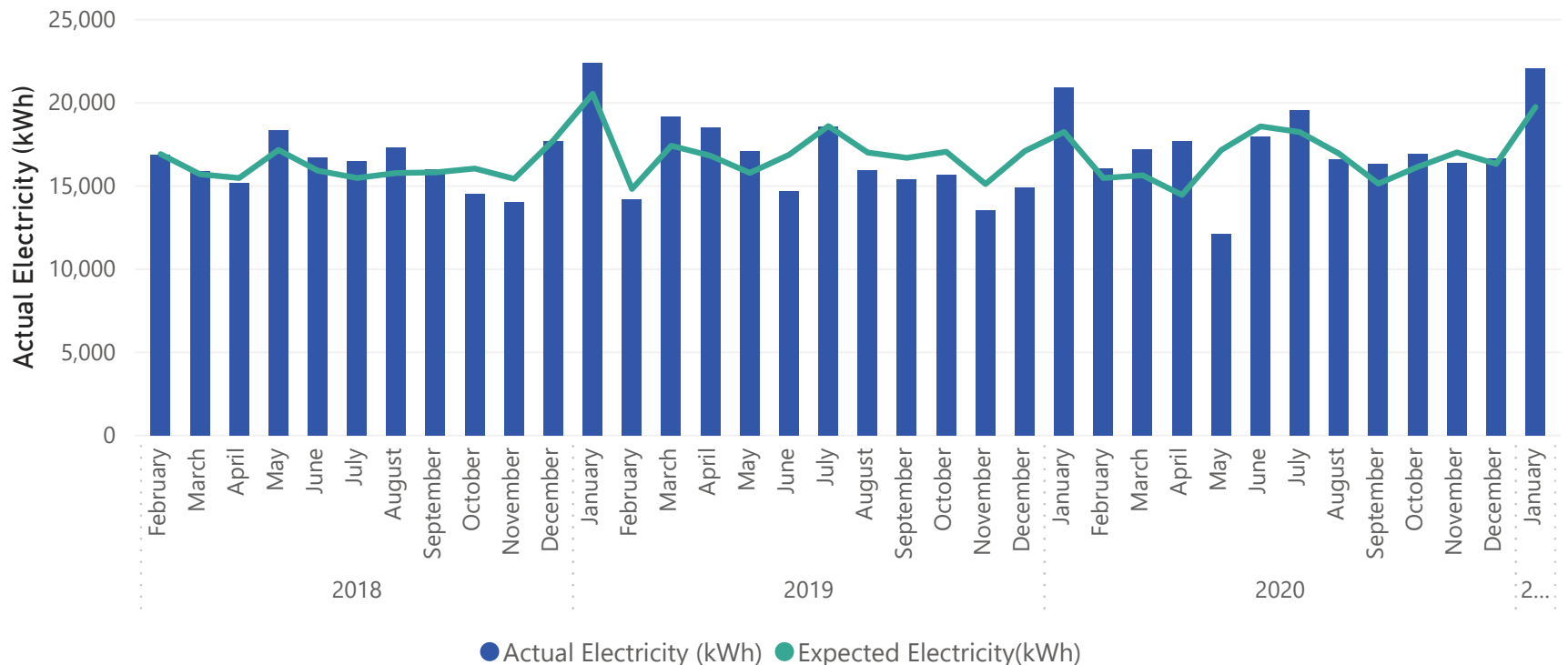
<p>-\$402 Monthly Energy Cost Savings</p>	<p>-2,310 Elec. Savings (kWh/mo)</p>	<p>-12% Elec. Savings (%)</p>	<p>-4,920 R12M Electricity Savings (kWh/yr)</p>	<p>-297 CO2e Savings (kg/mo)</p>
<p>-\$856 R12M Energy Cost Savings</p>				<p>-633 R12M CO2e Savings (kg/yr)</p>

Comments:

A baseline was established from Feb 2018 to Jun 2020 that uses the effluent water volume as an independent variable. Baseline expected electricity is adjusted based on total monthly volumes. The Ohope Oxidation Ponds are a non half hourly account, which reduces the accuracy of any correlations to electricity use. Electricity between months is relatively constant, aerators are likely on for similar durations each month. The correlation between electricity and effluent flow has an R squared value of 0.3867. This suggests that only 38.67% of electricity use is related to the volume of effluent flow.

Electricity use was 12% more than expected in January 2021.

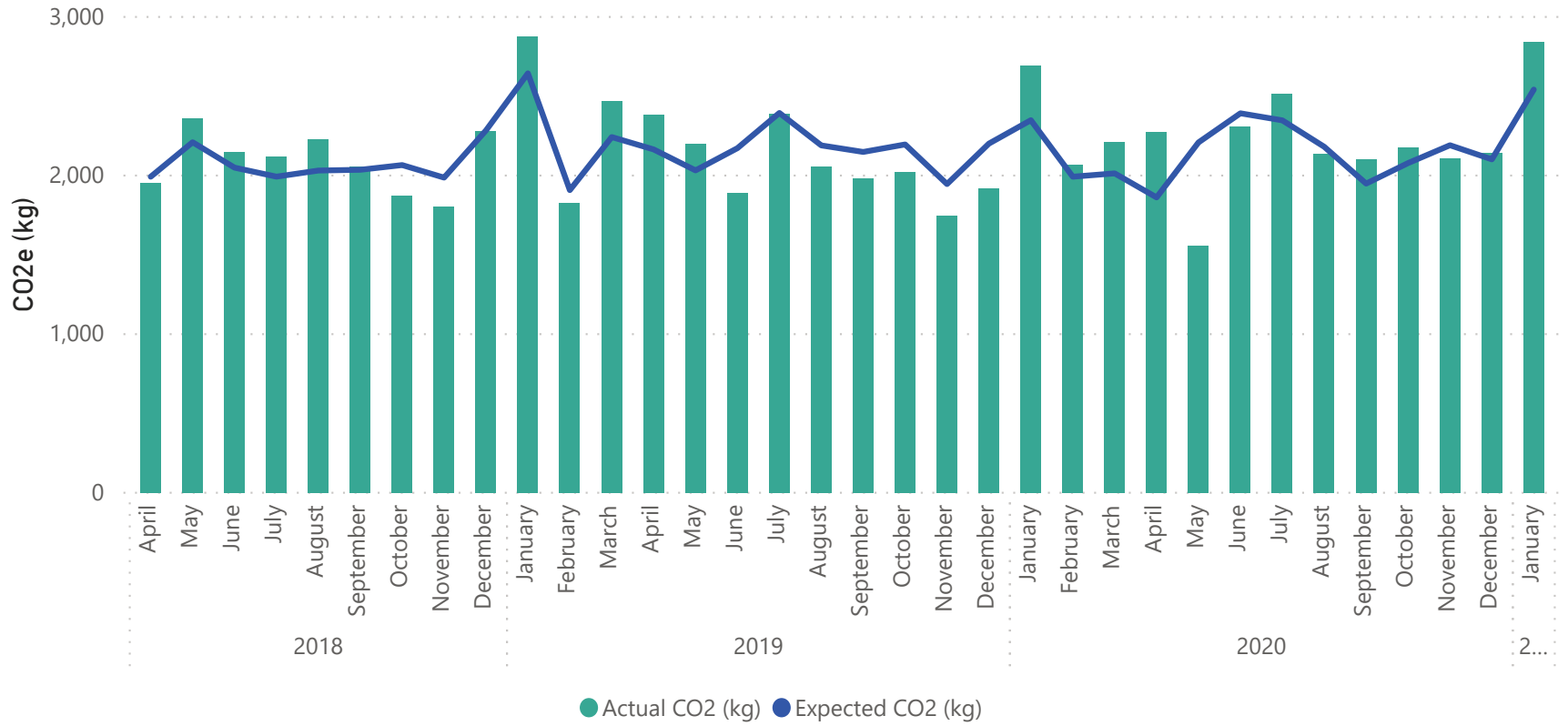
Ohope Oxidation Ponds Electricity Use Compared to Baseline (kWh)



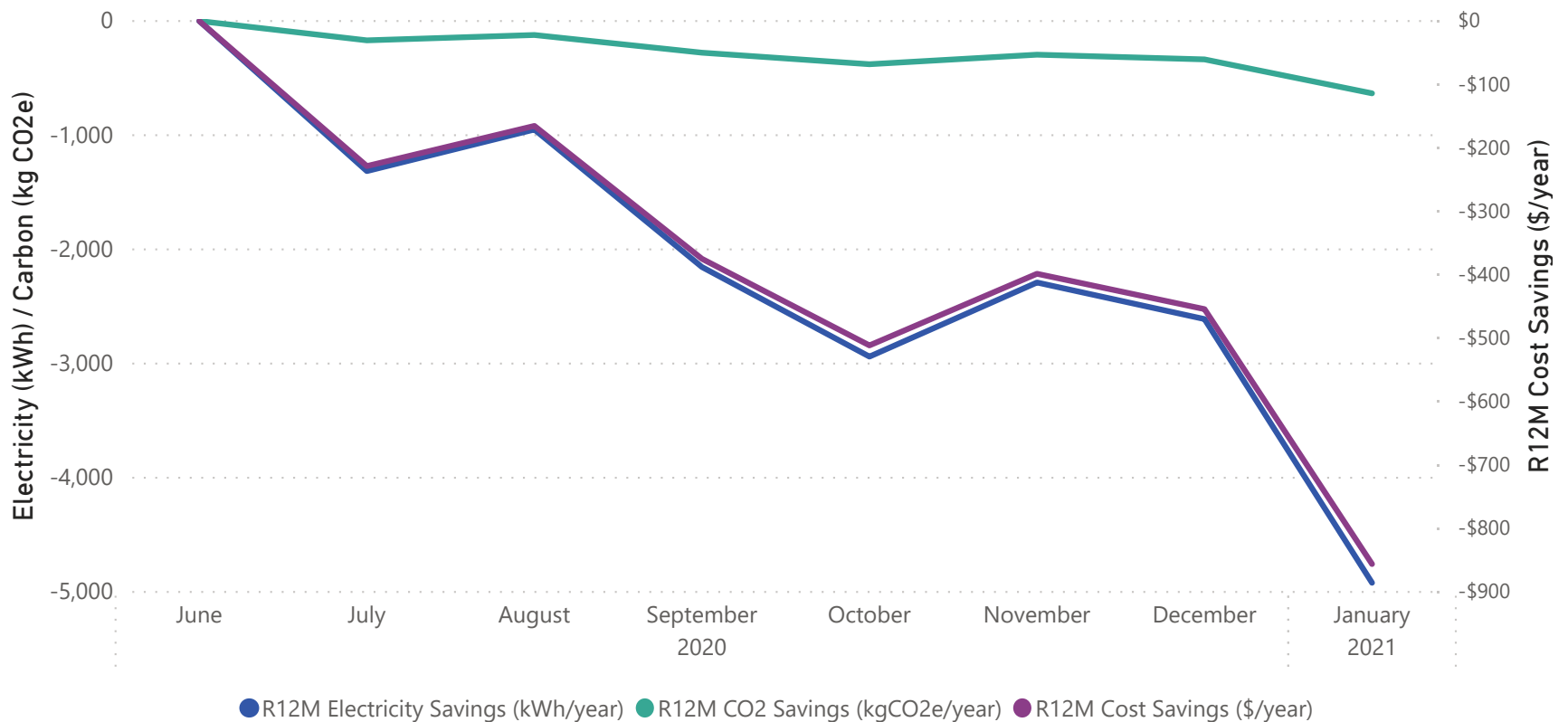
Whakatane District Council

Ohope Oxidation Ponds

Ohope Oxidation Ponds Carbon Emissions Compared to Baseline (kg CO2e)



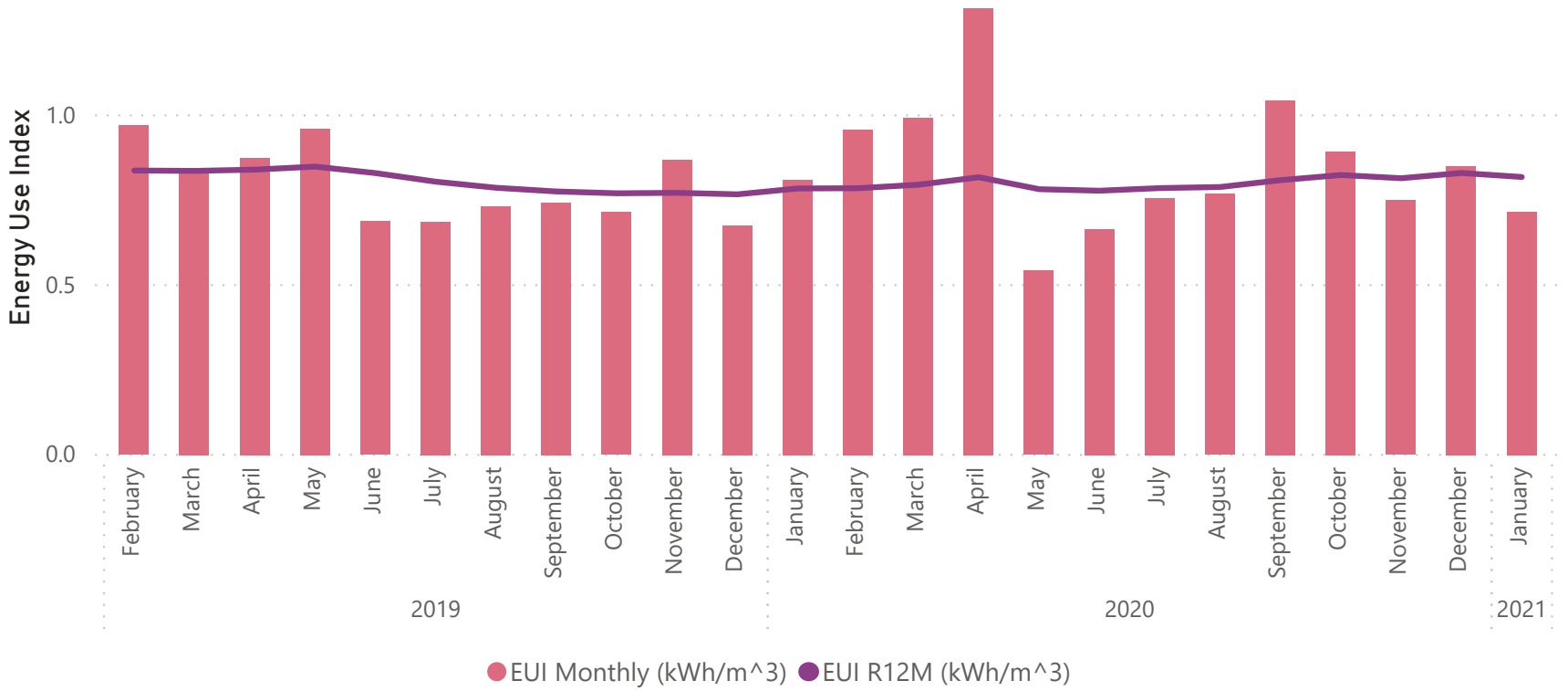
Ohope Oxidation Ponds Cumulative Rolling 12 Month Savings



Whakatane District Council

Ohope Oxidation Ponds

Ohope Oxidation Ponds Energy Use Index by Month Compared to Rolling 12-Month Values



Whakatane District Council

Whakatane Oxidation Ponds

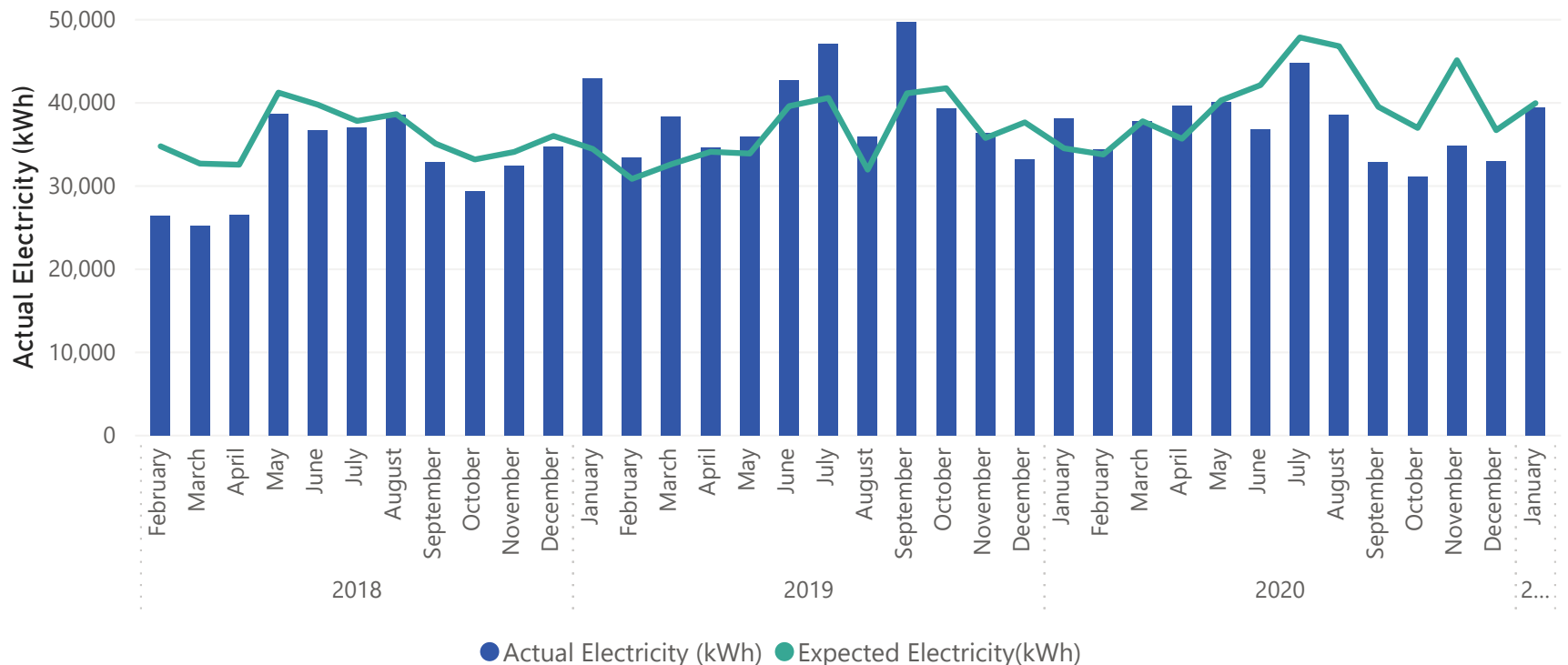
<p>\$77 Monthly Energy Cost Savings</p>	<p>573 Elec. Savings (kWh/mo)</p>	<p>1% Elec. Savings (%)</p>	<p>38,382 R12M Electricity Savings (kWh/yr)</p>	<p>74 CO2e Savings (kg/mo)</p>
<p>\$5,225 R12M Energy Cost Savings</p>				<p>4,940 R12M CO2e Savings (kg/yr)</p>

Comments:

A baseline was established from Feb 2018 to Jun 2020 that uses the effluent water volume as an independent variable. Baseline expected electricity is adjusted based on total monthly volumes. The correlation between electricity and effluent flow has an R squared value of 0.364 which suggests that only 36.4% of electricity use is related to the volume of effluent flow.

The Whakatane Oxidation Ponds have two ICPs, the aerators are set up as a time of use (TOU) account (supplied by Mercury), and the pumps are non-TOU (supplied by Genesis).

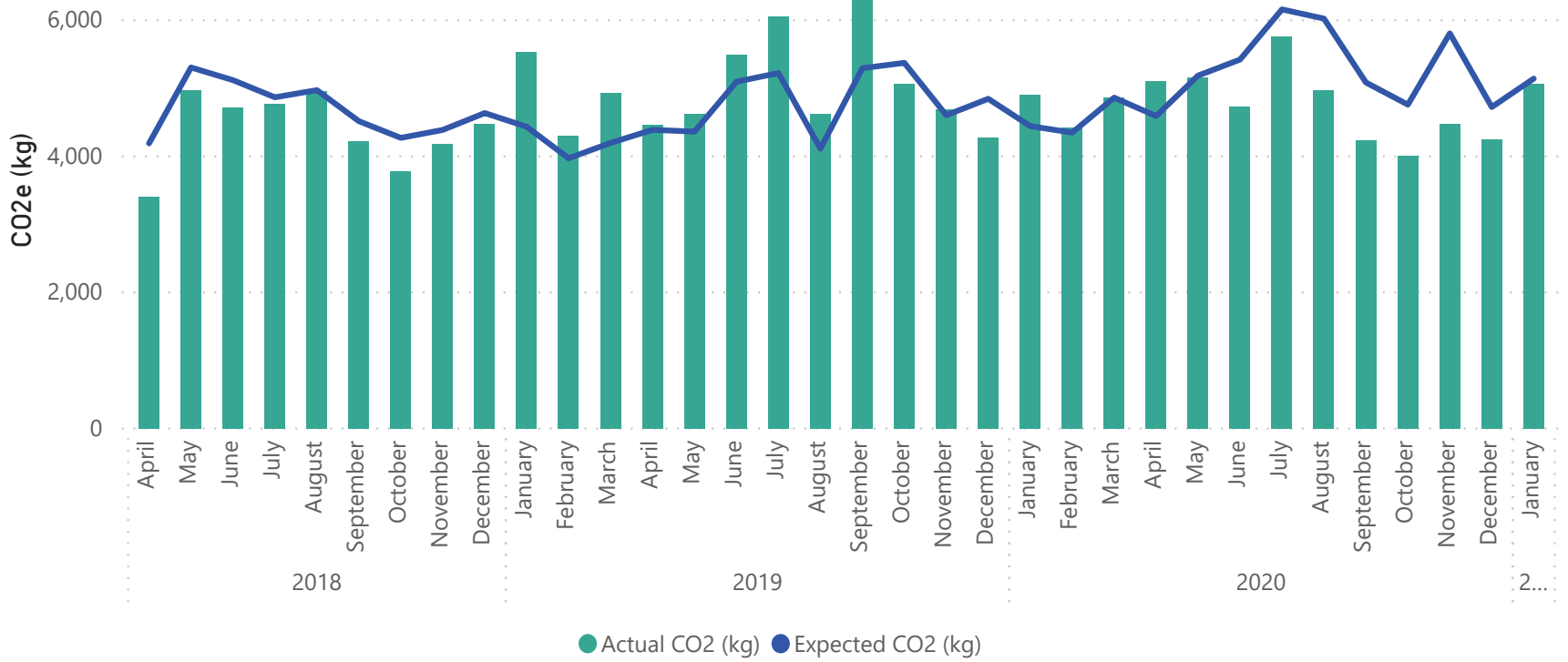
Whakatane Oxidation Ponds Electricity Use Compared to Baseline (kWh)



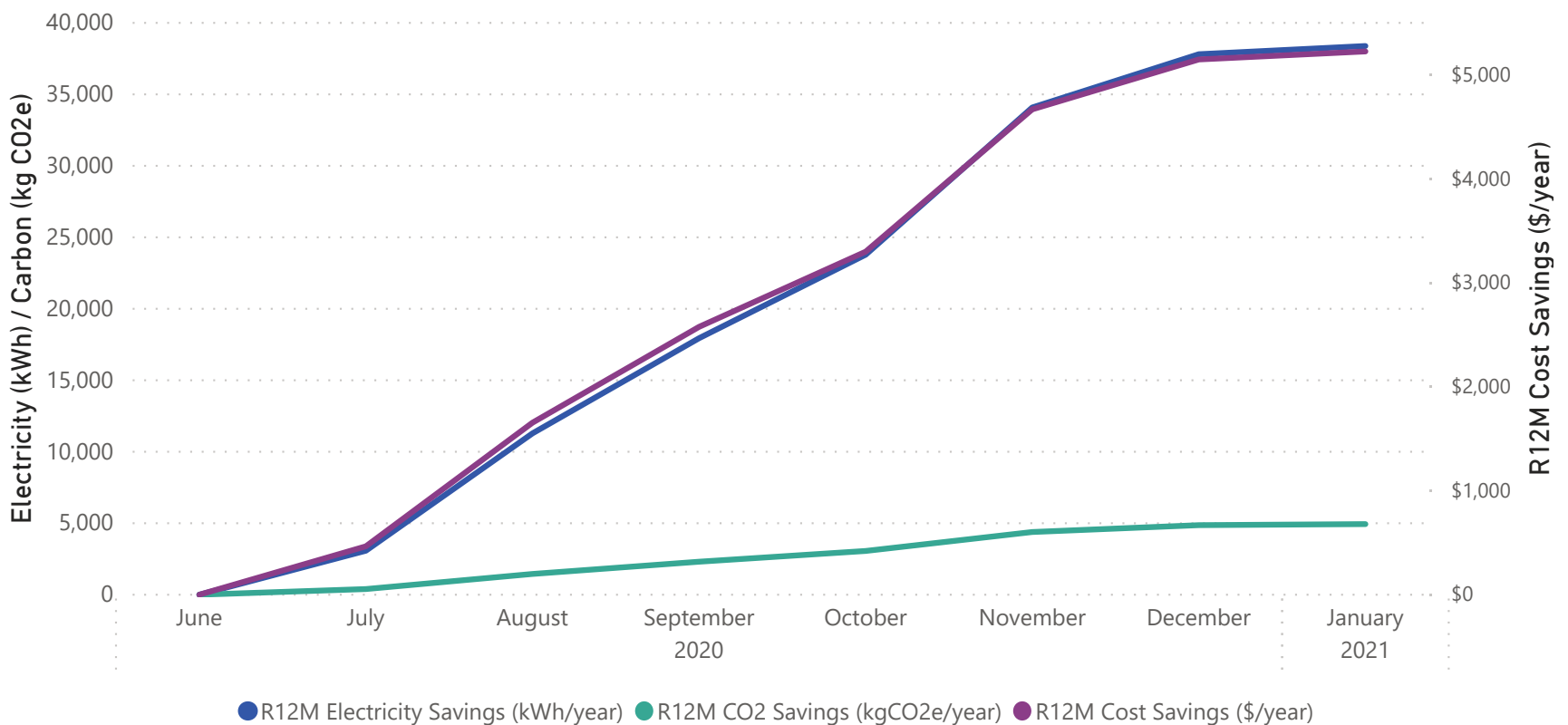
Whakatane District Council

Whakatane Oxidation Ponds

Whakatane Oxidation Ponds Carbon Emissions Compared to Baseline (kg CO2e)



Whakatane Oxidation Ponds Cumulative Rolling 12 Month Savings



Whakatane District Council

Whakatane Oxidation Ponds

Whakatane Oxidation Ponds Energy Use Index by Month Compared to Rolling 12-Month Values

