

Whakatane District Council

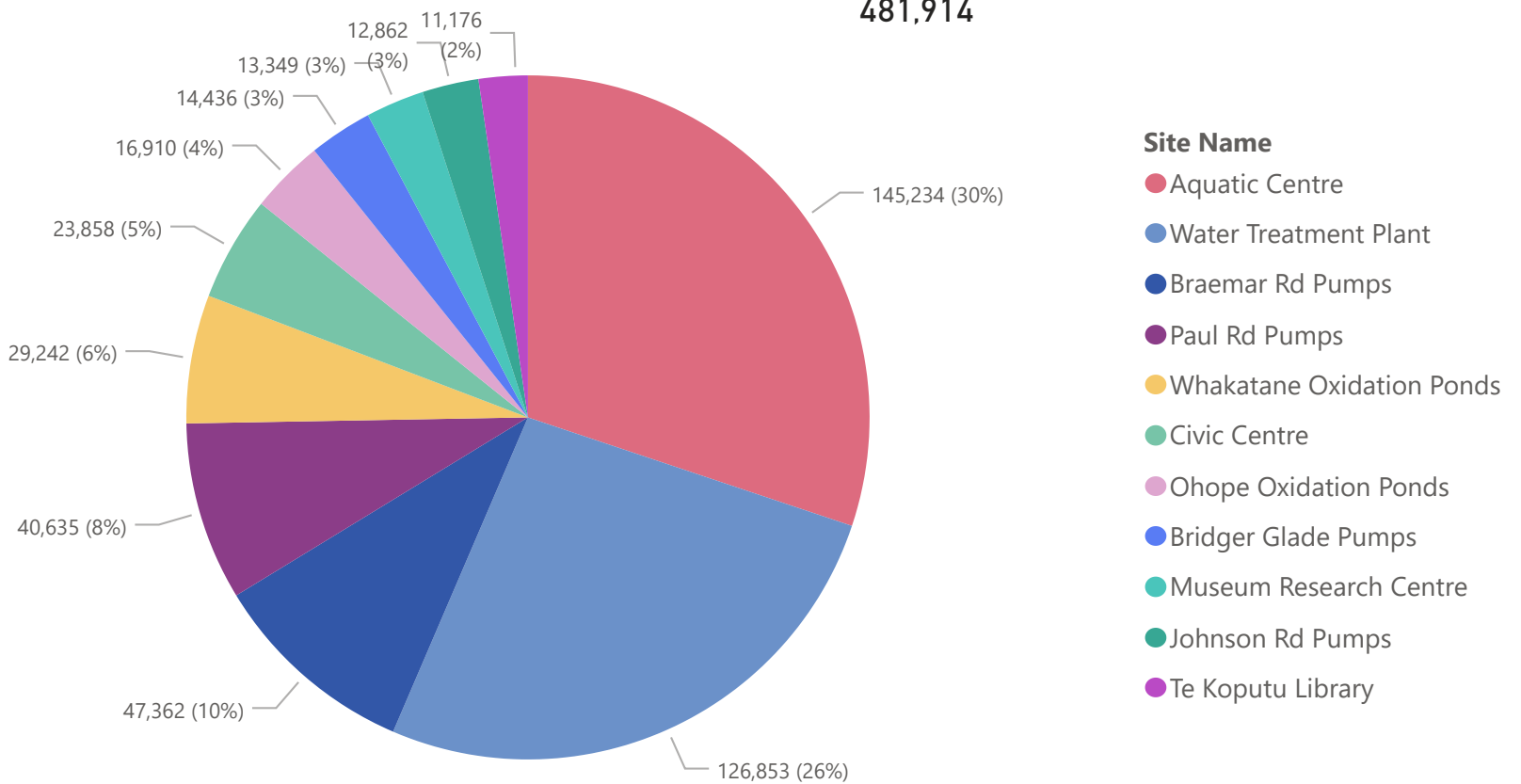
Summary

<p>\$3,958 Monthly Energy Cost Savings</p>	<p>43,155 Elec. Savings (kWh/mo)</p>	<p>9% Elec. Savings (%)</p>	<p>83,580 R12M Electricity Savings (kWh/yr)</p>	<p>3,477 CO2e Savings (kg/mo)</p>
<p>\$48,899 R12M Energy Cost Savings</p>	<p>-9,934 Gas. Savings (kWh/mo)</p>	<p>-22% Gas. Savings (%)</p>	<p>565,208 R12M Gas Savings (kWh/yr)</p>	<p>90,928 R12M CO2e Savings (kg/yr)</p>

Total Energy (kWh/Month)

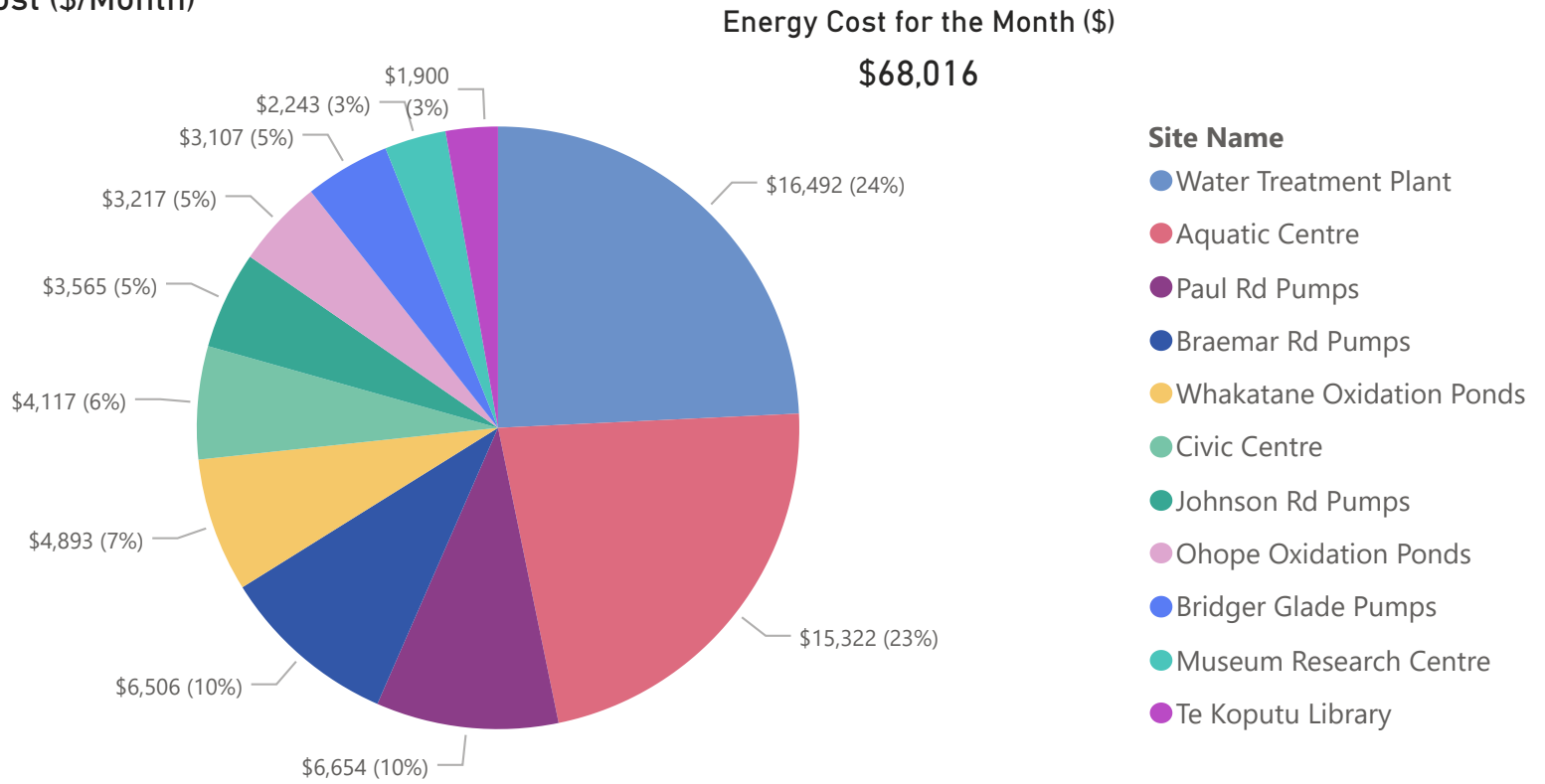
Total Energy Used for the Month (kWh)

481,914

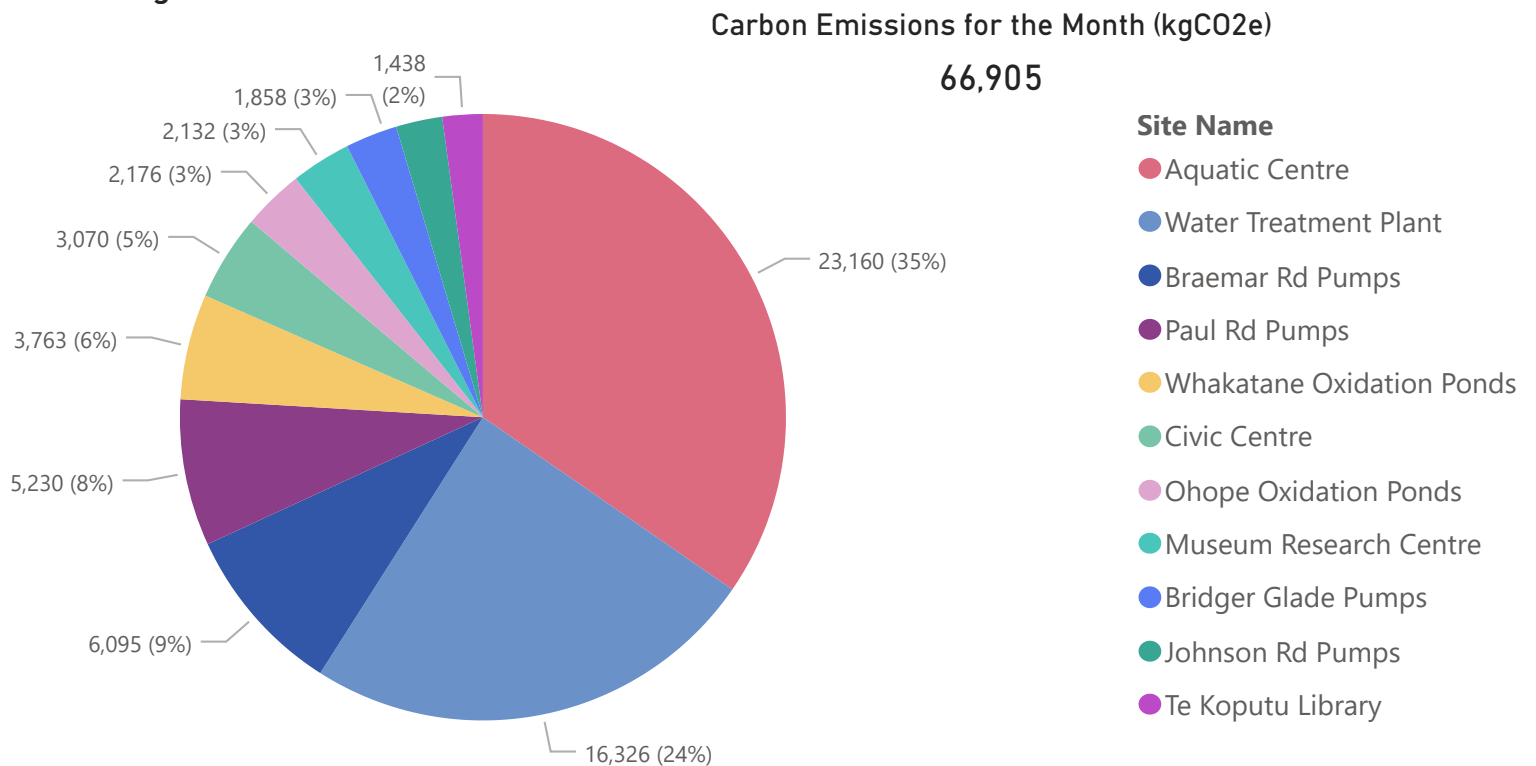


Whakatane District Council Summary

Energy Cost (\$/Month)



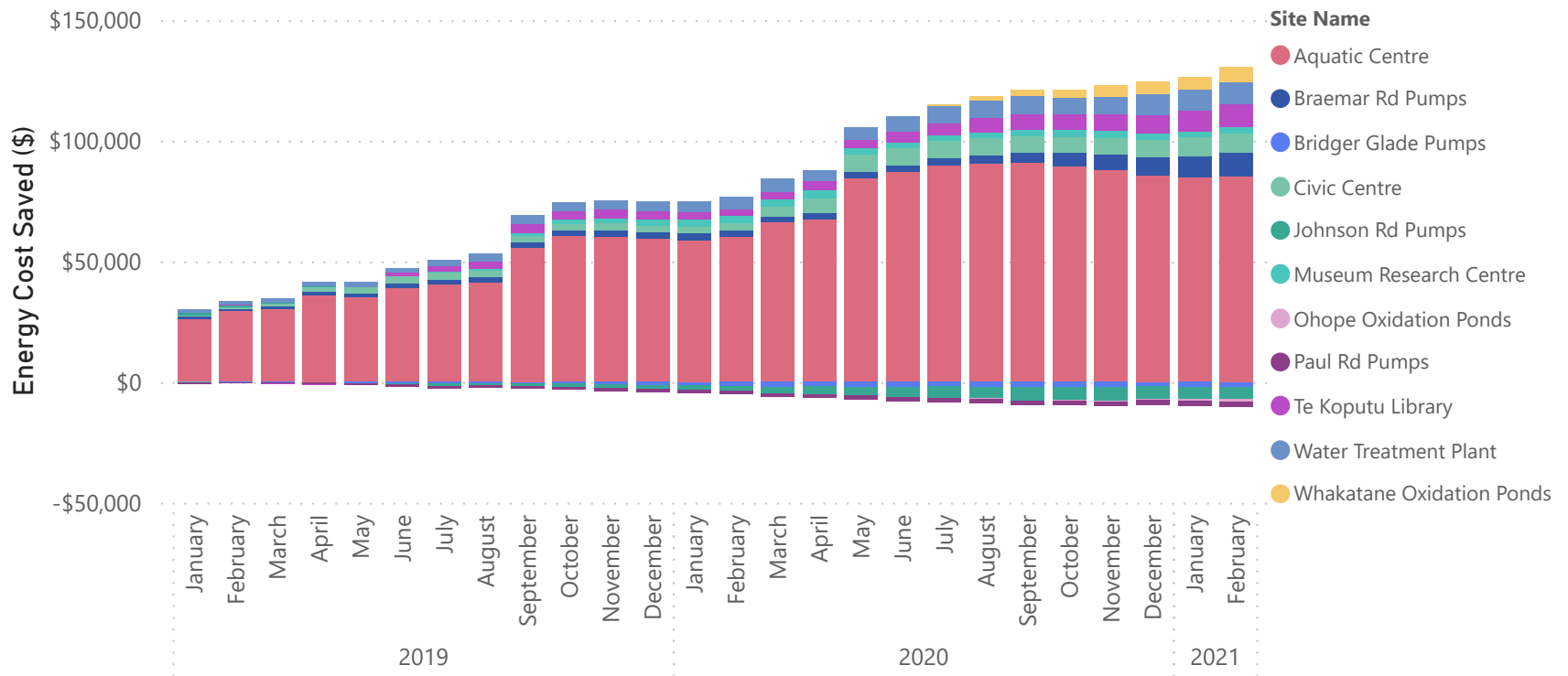
Carbon Emissions (kgCO2e/Month)



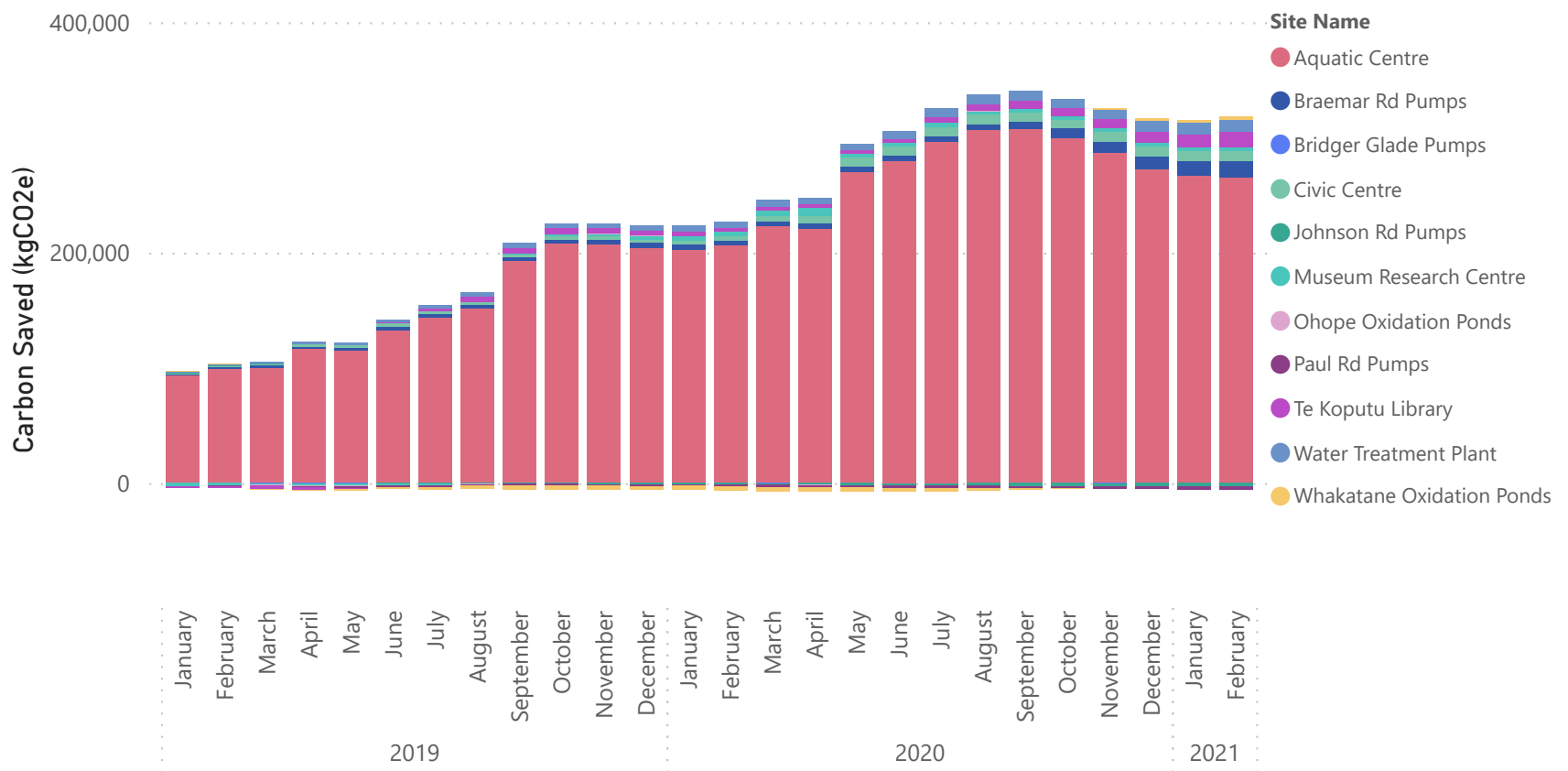
Whakatane District Council

Summary

Cumulative Energy Cost Savings (\$/month)



Cumulative Carbon Savings (kgCO2e/month)



Whakatane District Council

Civic Centre

<p>\$336 Monthly Energy Cost Savings</p>	<p>3,070 Elec. Savings (kWh/mo)</p>	<p>11% Elec. Savings (%)</p>	<p>43,621 R12M Electricity Savings (kWh/yr)</p>	<p>395 CO2e Savings (kg/mo)</p>
<p>\$4,762 R12M Energy Cost Savings</p>				<p>5,614 R12M CO2e Savings (kg/yr)</p>

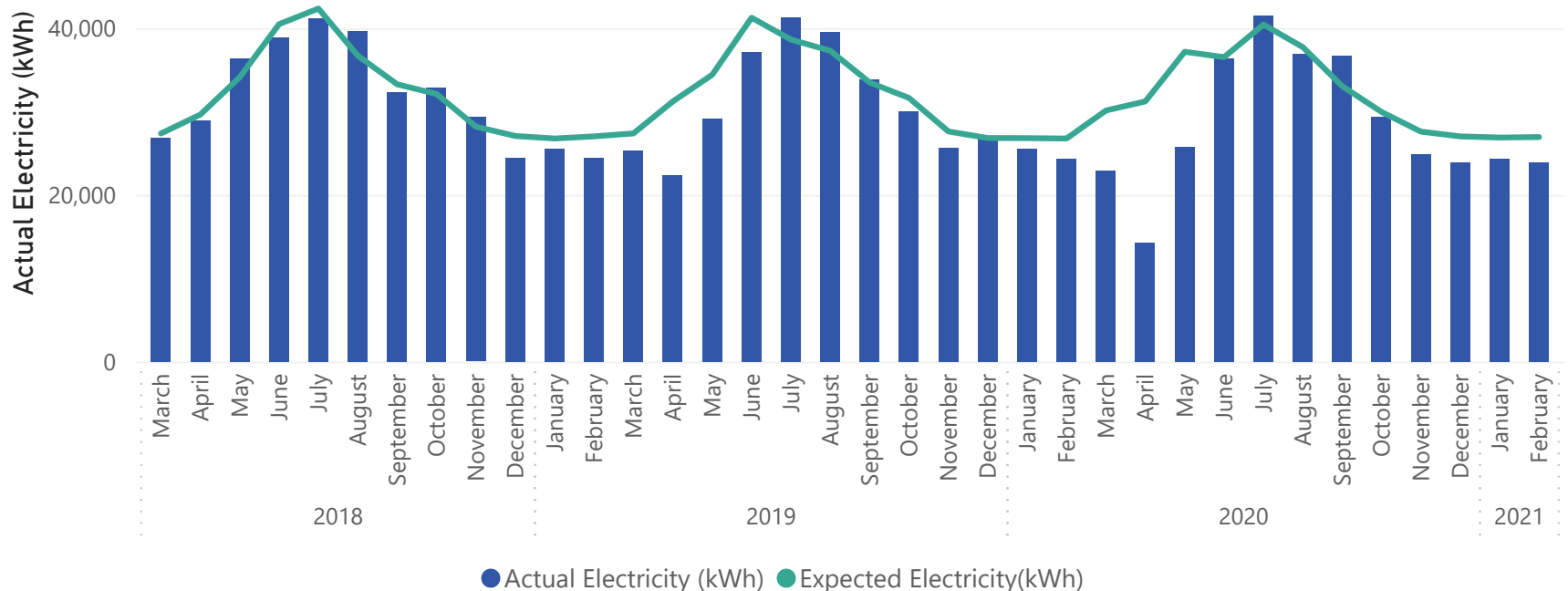
Comments:

Since heating was manually turned off, following an inadvertant change in the heating control scheme in September, energy performance has improved.

Energy use in February was less than baseline, following a similar pattern of decreased usage that has been seen since October. However, February is usually a month that the Civic Centre achieves electricity savings. Compared to February 2020, February 2021 used approximately 2% less electricity.

A seasonal trend can be observed with winter months using the most electricity. Rolling 12 month electricity savings have reached a new record, saving approximately 43,600 kWh and \$4,800 in the past 12 months.

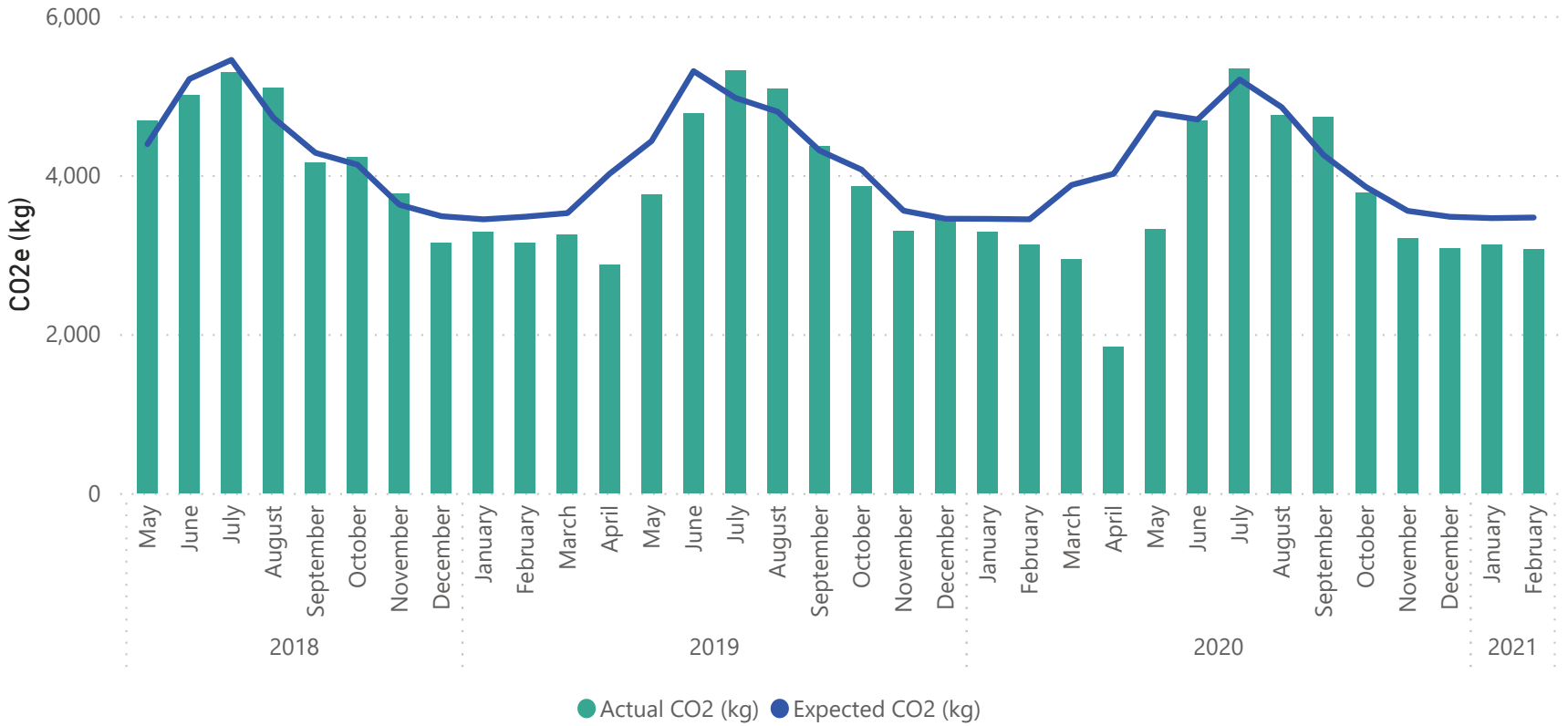
Civic Centre Electricity Use Compared to Baseline (kWh)



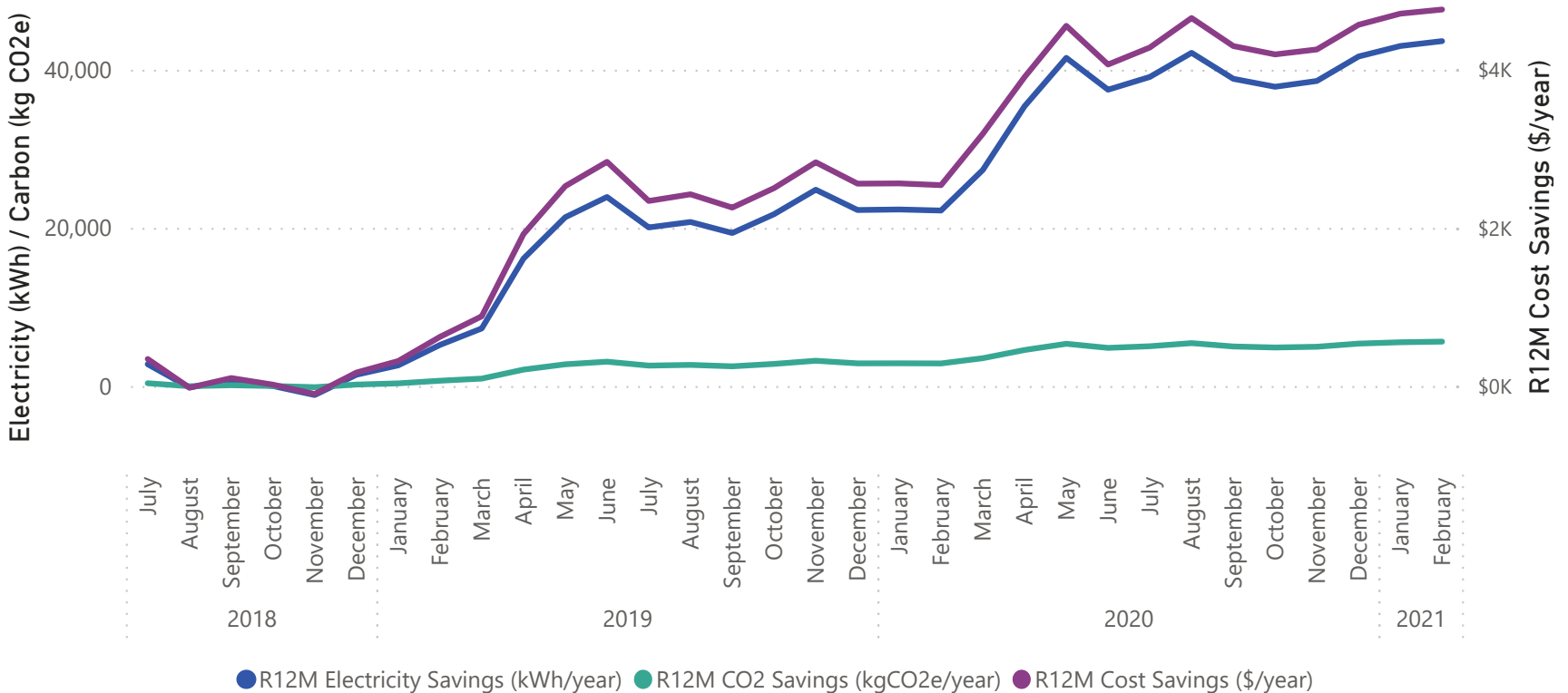
Whakatane District Council

Civic Centre

Civic Centre Carbon Emissions Compared to Baseline (kg CO2e)



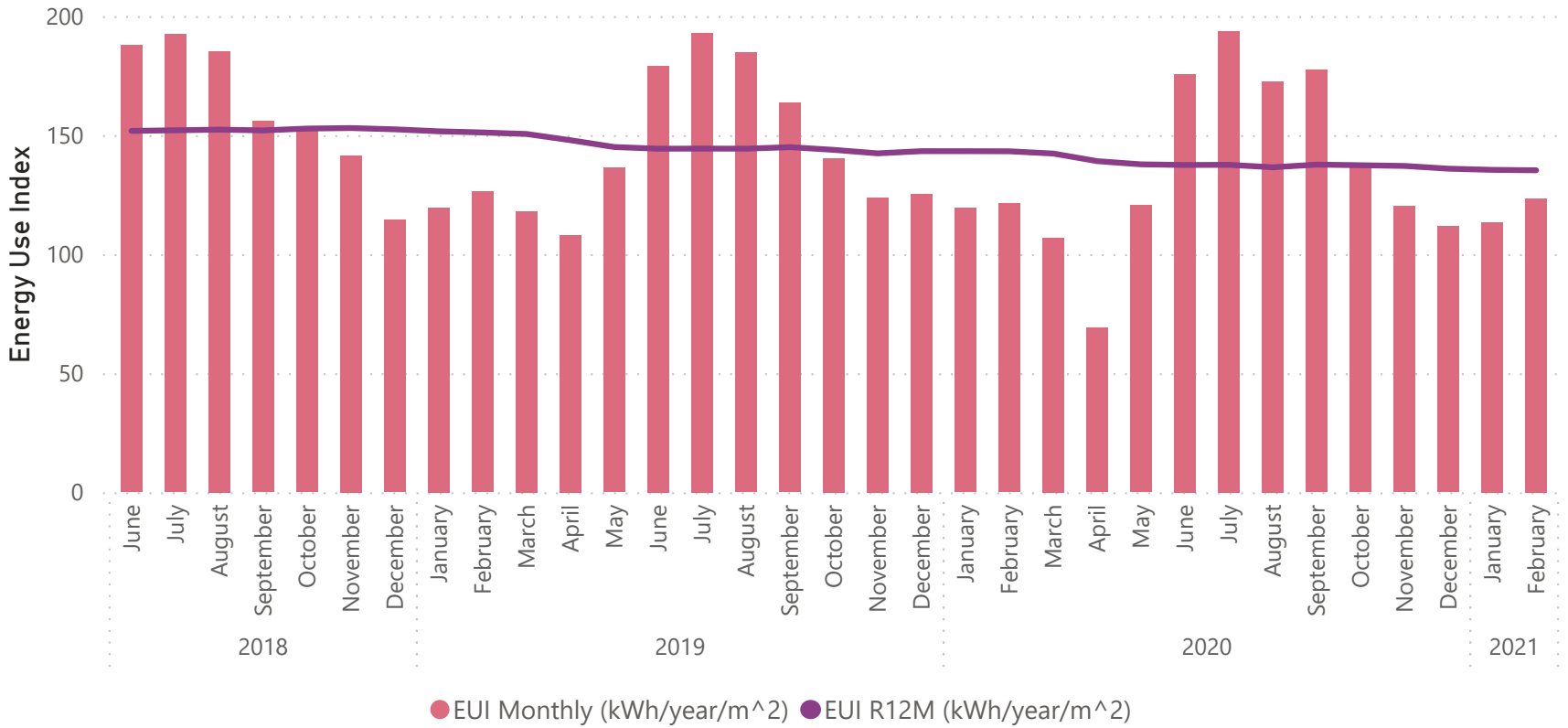
Civic Centre Cumulative Rolling 12 Month Savings



Whakatane District Council

Civic Centre

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



Whakatane District Council

Aquatic Centre

<p>\$434</p> <p>Monthly Energy Cost Savings</p>	<p>16,886</p> <p>Elec. Savings (kWh/mo)</p>	<p>15%</p> <p>Elec. Savings (%)</p>	<p>-135,313</p> <p>R12M Electricity Savings (kWh/yr)</p>	<p>-1,672</p> <p>CO2e Savings (kg/mo)</p>
<p>\$25,199</p> <p>R12M Energy Cost Savings</p>	<p>-17,890</p> <p>Gas. Savings (kWh/mo)</p>	<p>-54%</p> <p>Gas. Savings (%)</p>	<p>552,269</p> <p>R12M Gas Savings (kWh/yr)</p>	<p>59,062</p> <p>R12M CO2e Savings (kg/yr)</p>

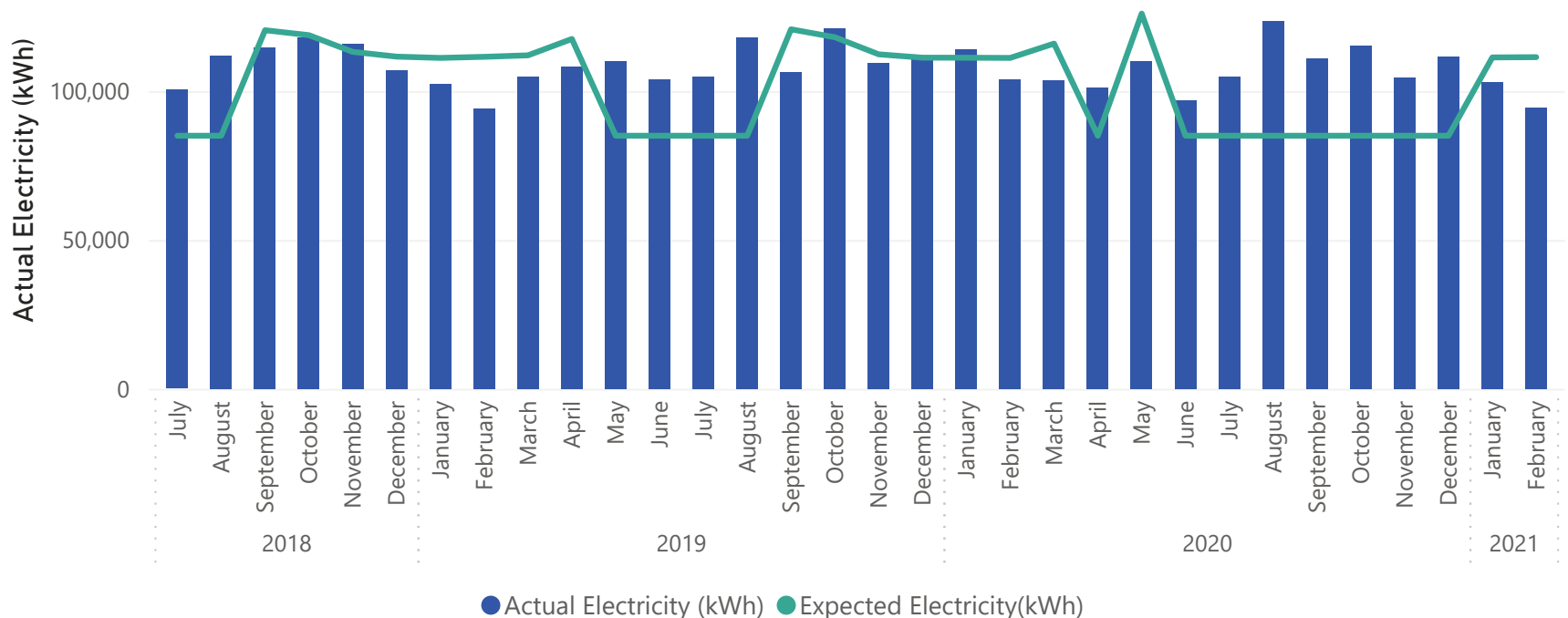
Comments:

The Aquatic Centre's outdoor pool re-opened on 5 January. As the pool needed to be heated up to temperature, which is not usually done in January, an adjustment was added to the expected gas usage for the month. The outdoor pool is now open year-round, a baseline that includes the outdoor pool for the rest of the season.

Electricity use in February 2021 is 15% below baseline; however, February is a month that usually achieves electricity savings. Compared to 2020, February 2021 used 9% less electricity.

Natural gas use was greater than expected this month. Compared to February 2020, February 2021 used almost three times more natural gas.

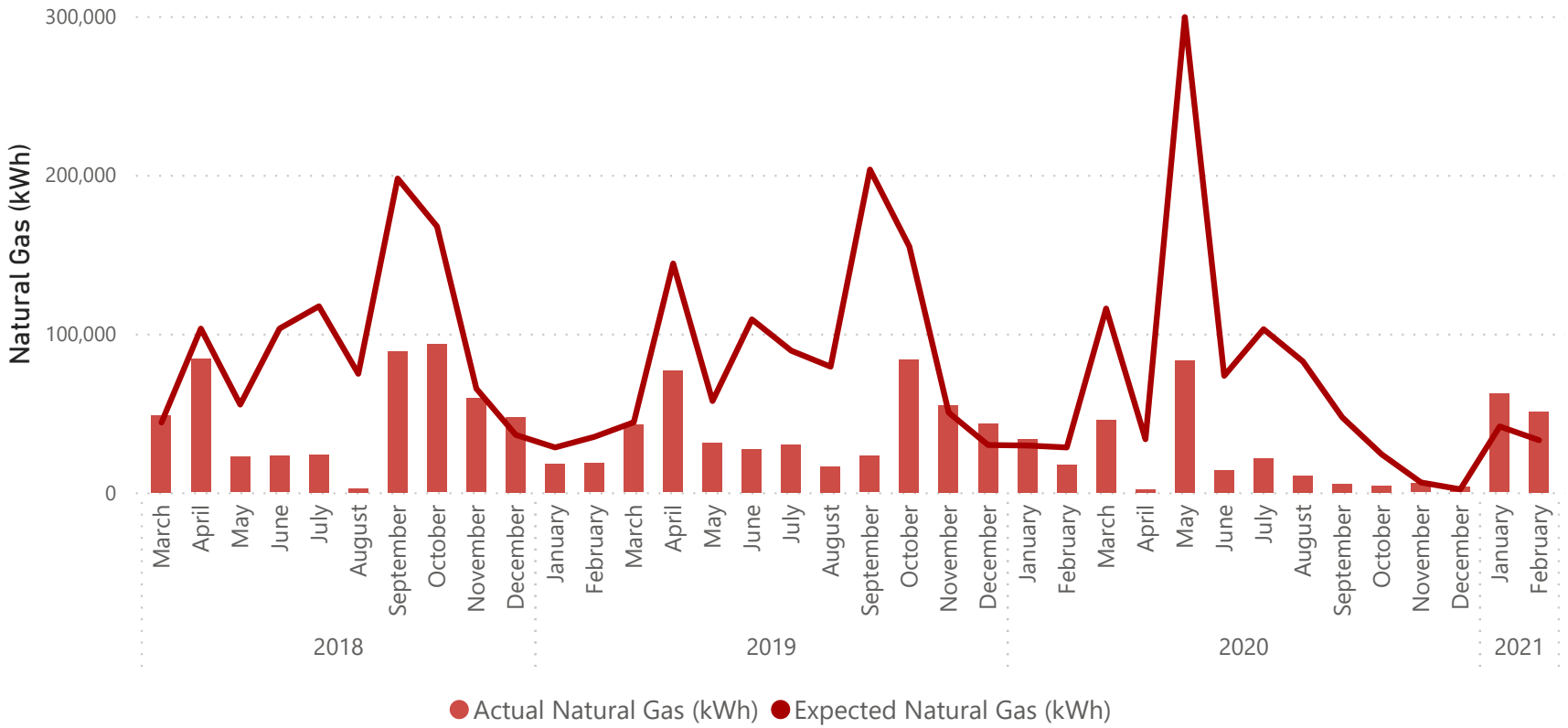
Aquatic Centre Electricity Use Compared to Baseline (kWh)



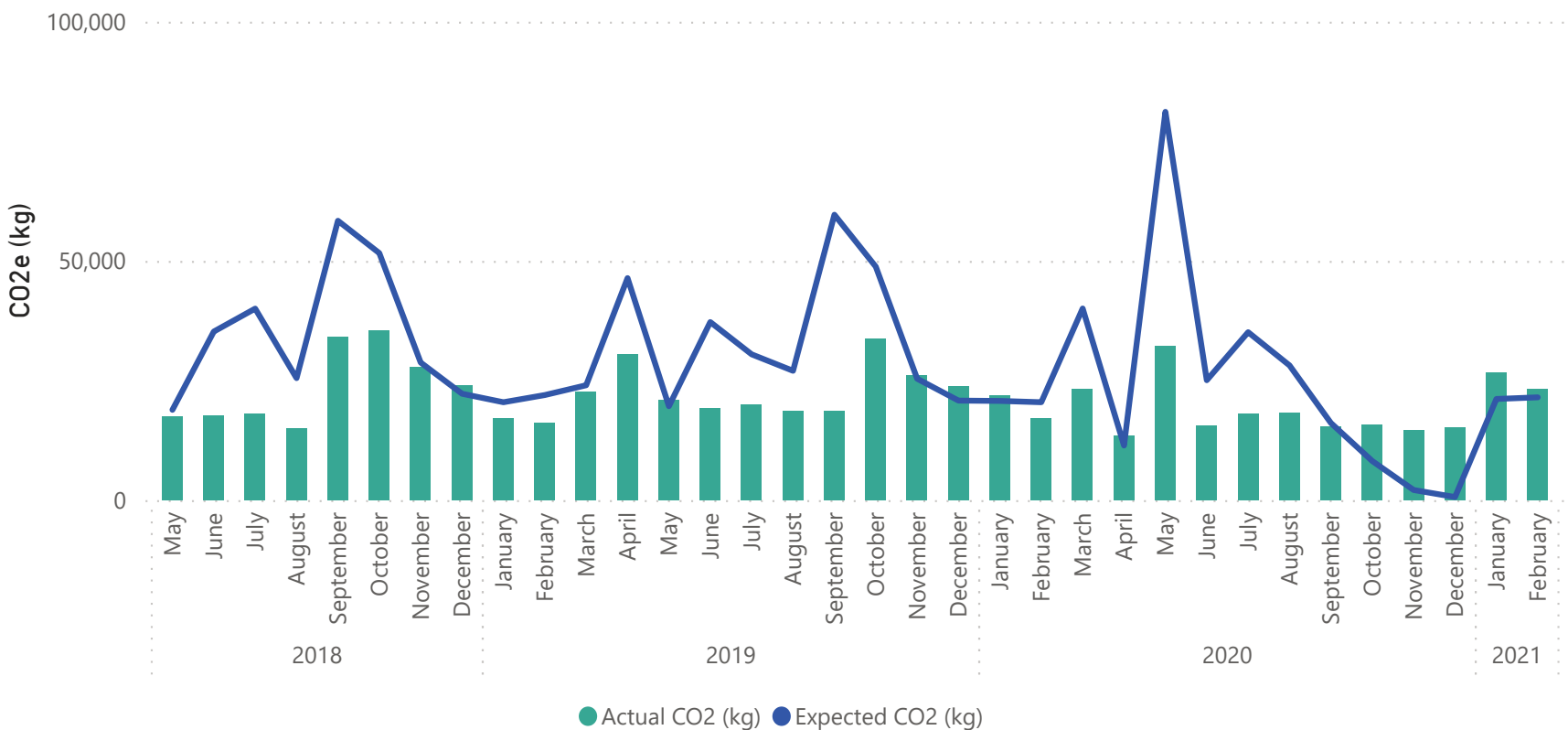
Whakatane District Council

Aquatic Centre

Aquatic Centre Natural Gas Compared to Baseline (kWh)



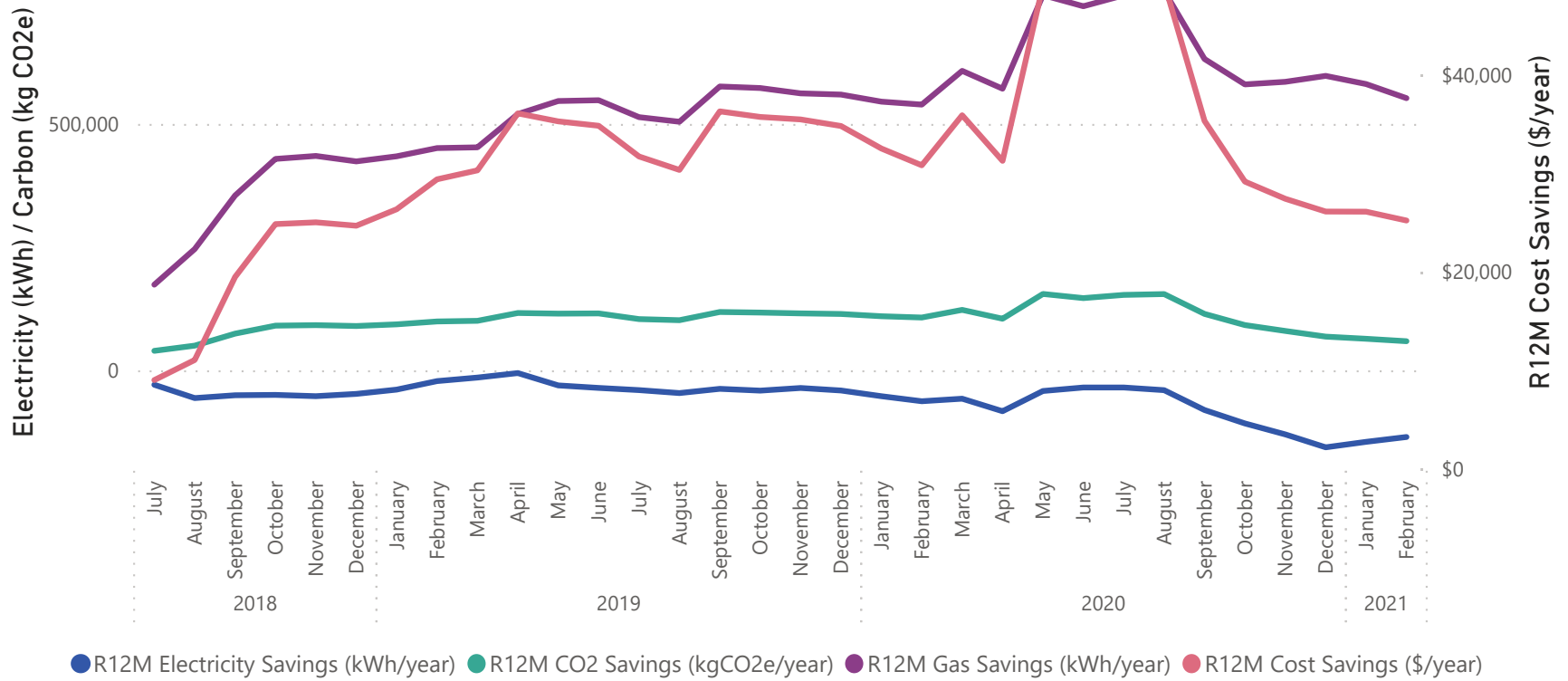
Aquatic Centre Carbon Emissions Compared to Baseline (kg CO2e)



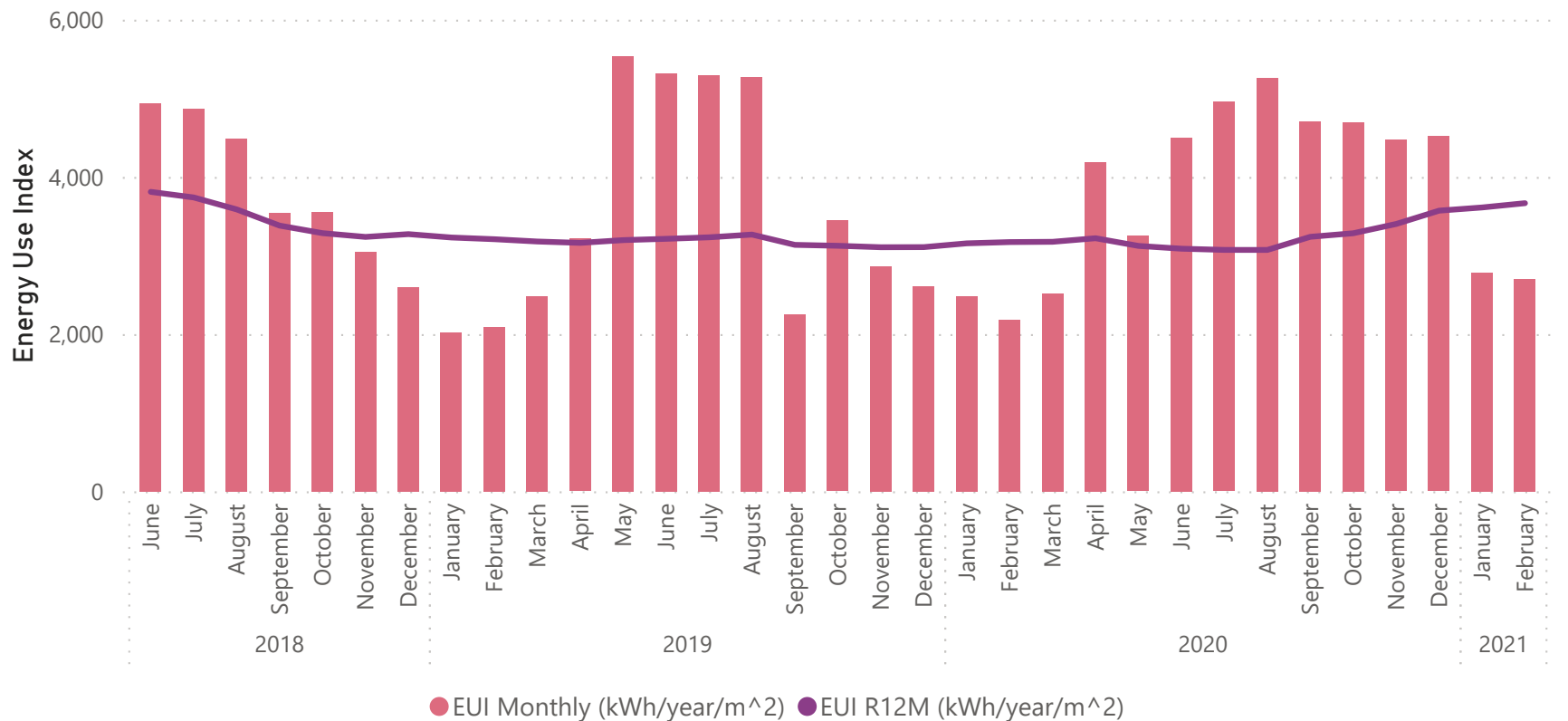
Whakatane District Council

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>\$869</p> <p>Monthly Energy Cost Savings</p>	<p>3,613</p> <p>Elec. Savings (kWh/mo)</p>	<p>24%</p> <p>Elec. Savings (%)</p>	<p>44,579</p> <p>R12M Electricity Savings (kWh/yr)</p>	<p>1,907</p> <p>CO2e Savings (kg/mo)</p>
<p>\$6,580</p> <p>R12M Energy Cost Savings</p>	<p>6,633</p> <p>Gas. Savings (kWh/mo)</p>	<p>100%</p> <p>Gas. Savings (%)</p>	<p>23,008</p> <p>R12M Gas Savings (kWh/yr)</p>	<p>10,779</p> <p>R12M CO2e Savings (kg/yr)</p>

Comments:

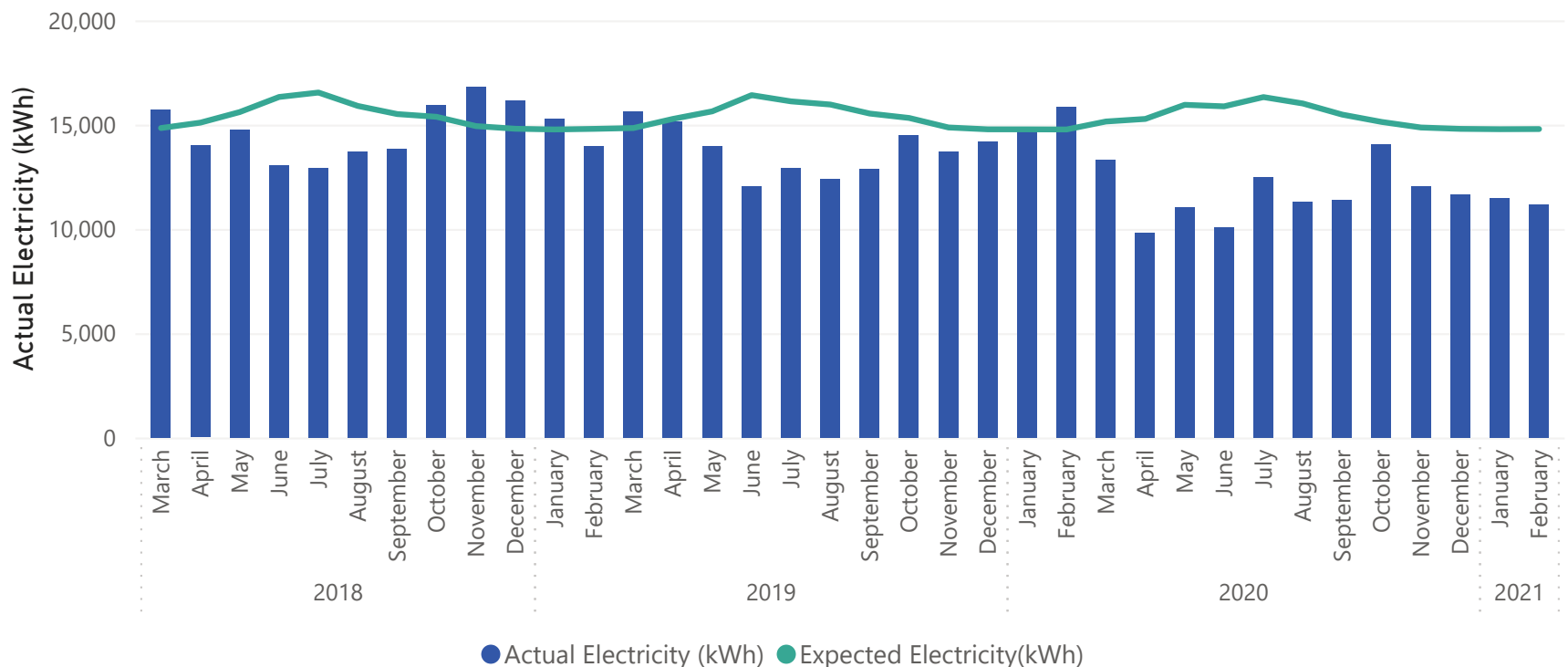
Electricity use was considerably less than baseline in February 2021 and electricity use was 30% lower than February 2020, which is an improvement as both months were about the same temperature, on average.

Natural gas was turned off for the month of February. Turning off the boilers completely has saved the Library \$485 this month in gas charges.

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 four months.

Rolling 12 month savings are at a record high, saving approximately 44,600 kWh of electricity, 23,000 kWh of natural gas, \$6,100, and 10,800 kgCO₂e.

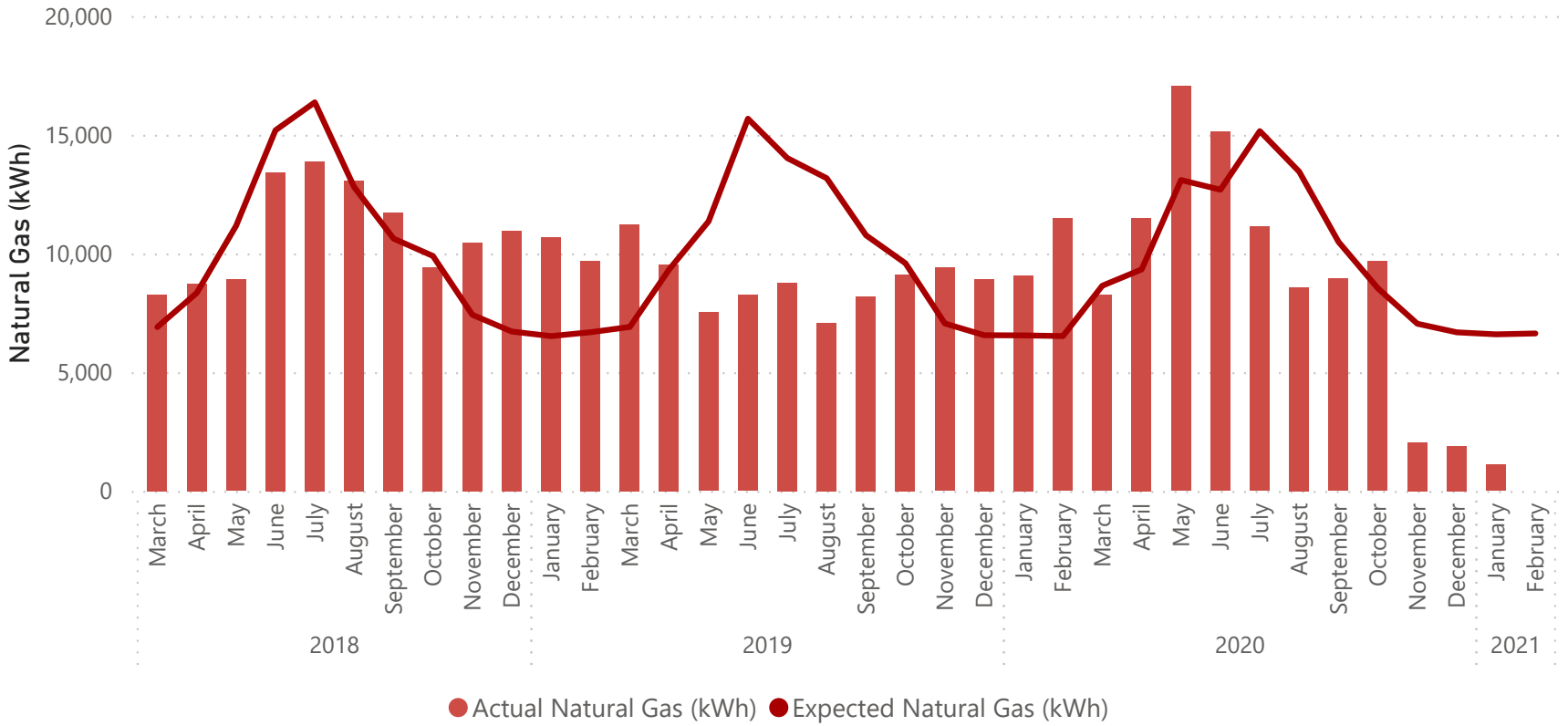
Te Koputu Library Electricity Use Compared to Baseline (kWh)



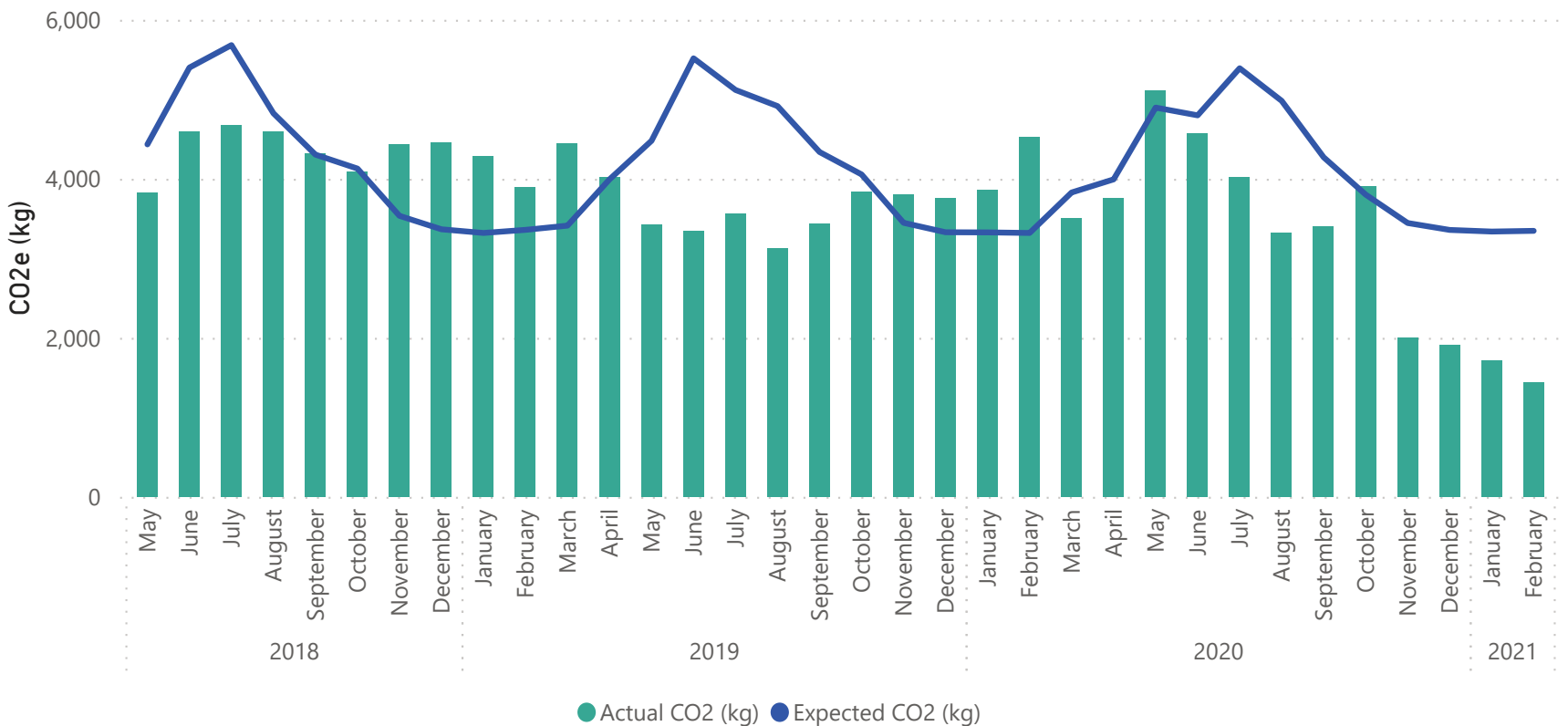
Whakatane District Council

Te Koputu Library

Te Koputu Library Natural Gas Compared to Baseline (kWh)



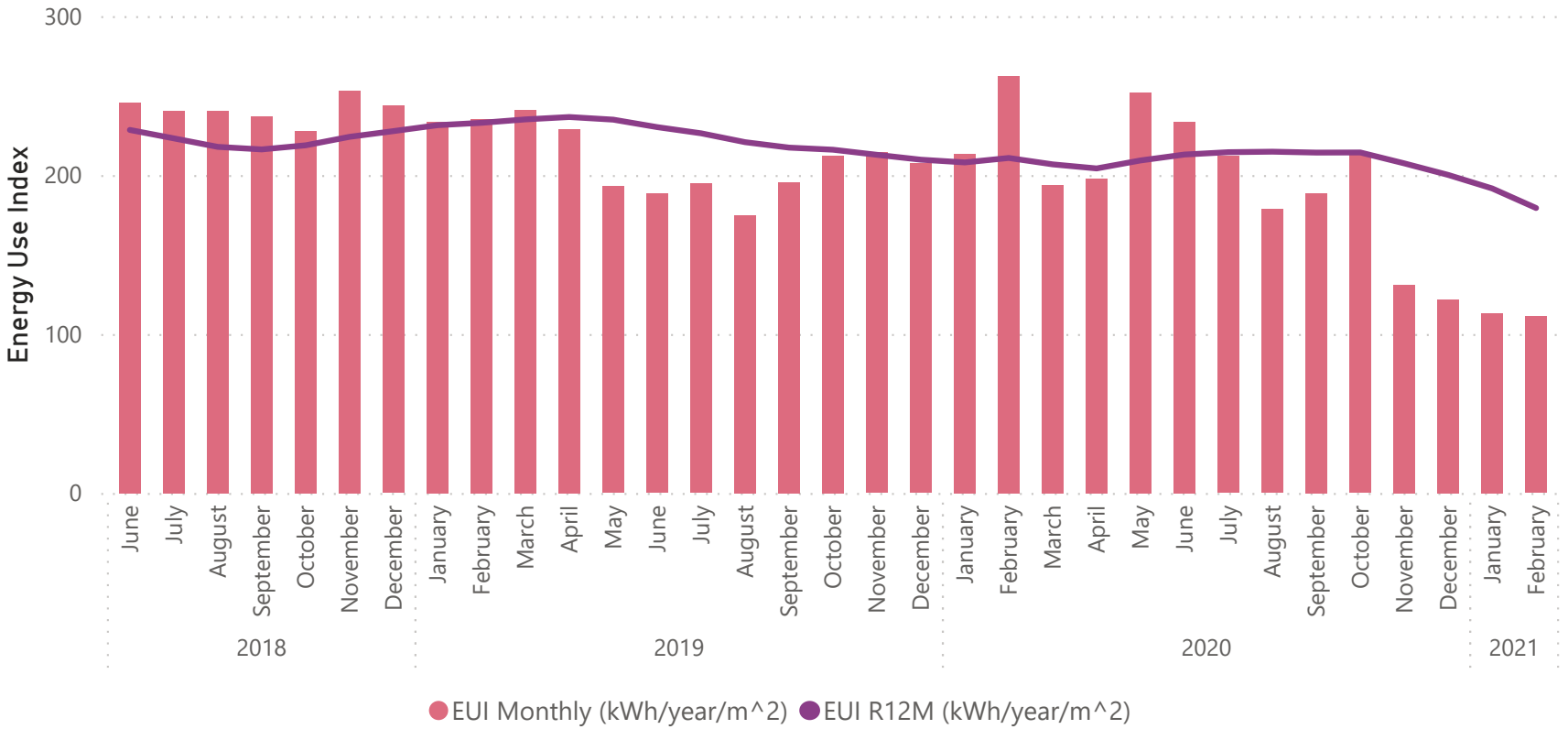
Te Koputu Library Carbon Emissions Compared to Baseline (kg CO2e)



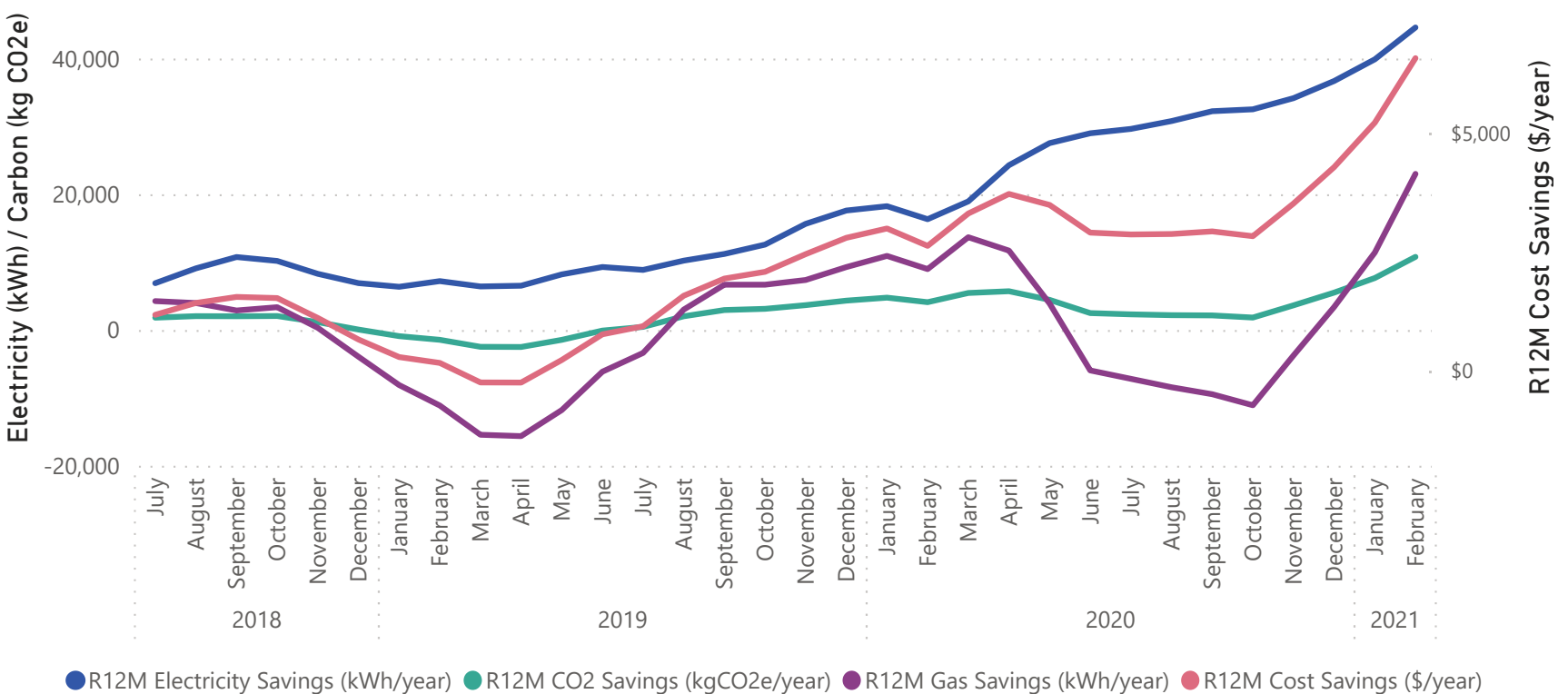
Whakatane District Council

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

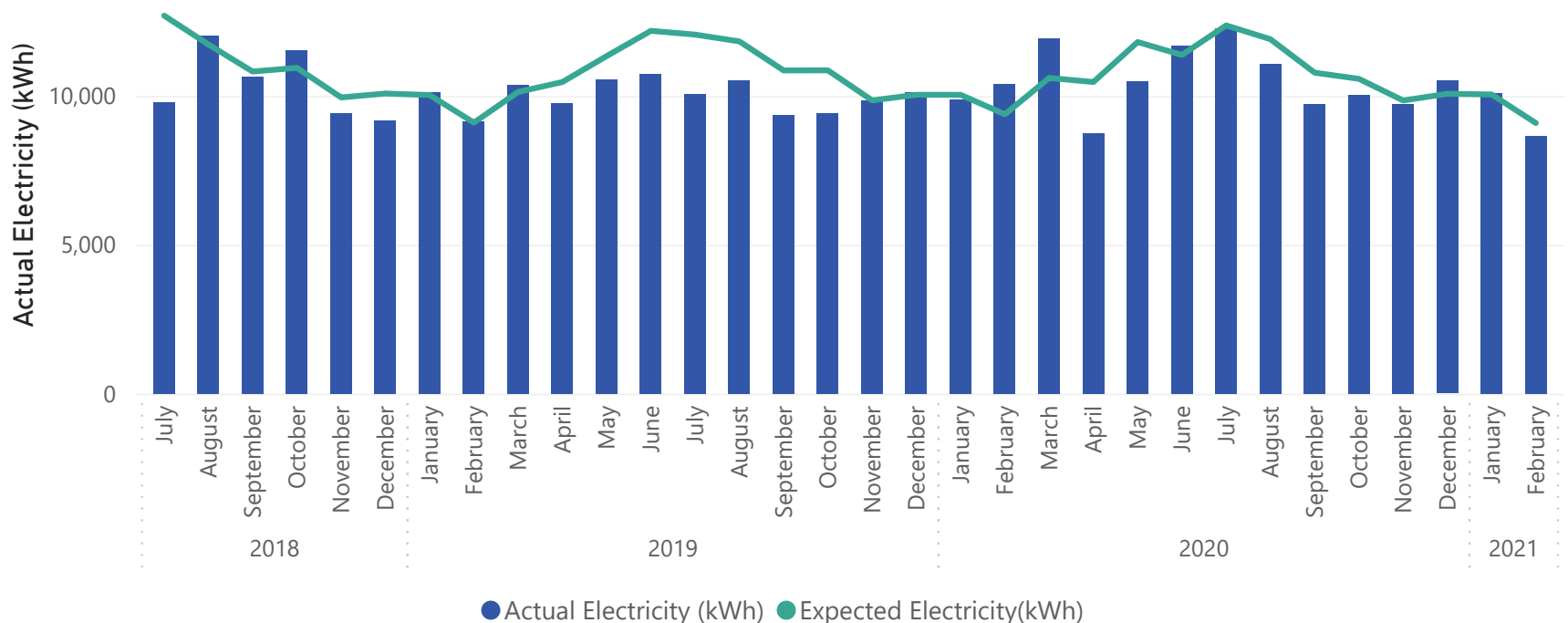
<p>\$143</p> <p>Monthly Energy Cost Savings</p>	<p>437</p> <p>Elec. Savings (kWh/mo)</p>	<p>5%</p> <p>Elec. Savings (%)</p>	<p>4,013</p> <p>R12M Electricity Savings (kWh/yr)</p>	<p>343</p> <p>CO2e Savings (kg/mo)</p>
<p>-\$236</p> <p>R12M Energy Cost Savings</p>	<p>1,323</p> <p>Gas. Savings (kWh/mo)</p>	<p>22%</p> <p>Gas. Savings (%)</p>	<p>-10,068</p> <p>R12M Gas Savings (kWh/yr)</p>	<p>-1,666</p> <p>R12M CO2e Savings (kg/yr)</p>

Comments:

Electricity use at the Museum and Research Centre is below baseline for February 2021. Compared to February 2020, electricity use has decreased by 17%. Both months were approximately the same temperature on average.

The Museum and Research Centre achieved a savings of 22% below baseline for natural gas. Compared to February 2020, the museum used 2.2 times more natural gas in February 2021. This seems to be the result of the meter not being read for several months from Aug 2019 to Apr 2020.

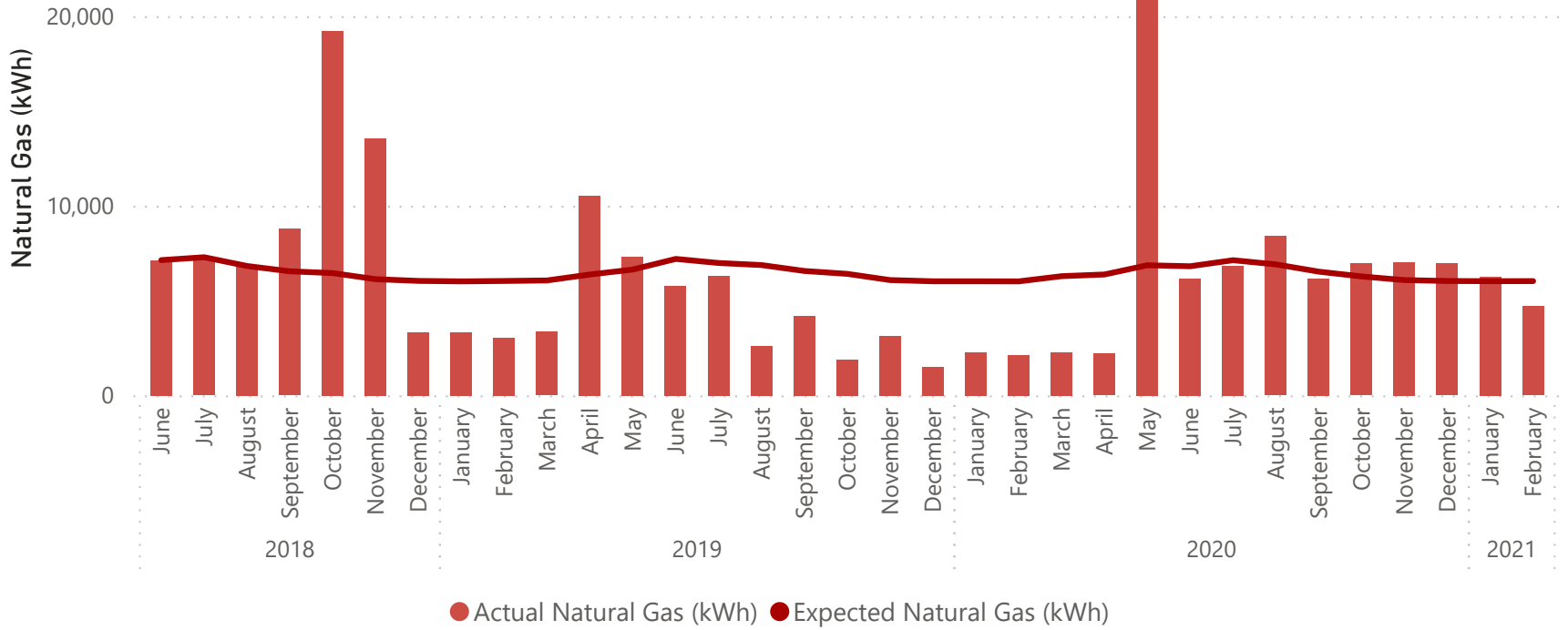
Museum Research Centre Electricity Use Compared to Baseline (kWh)



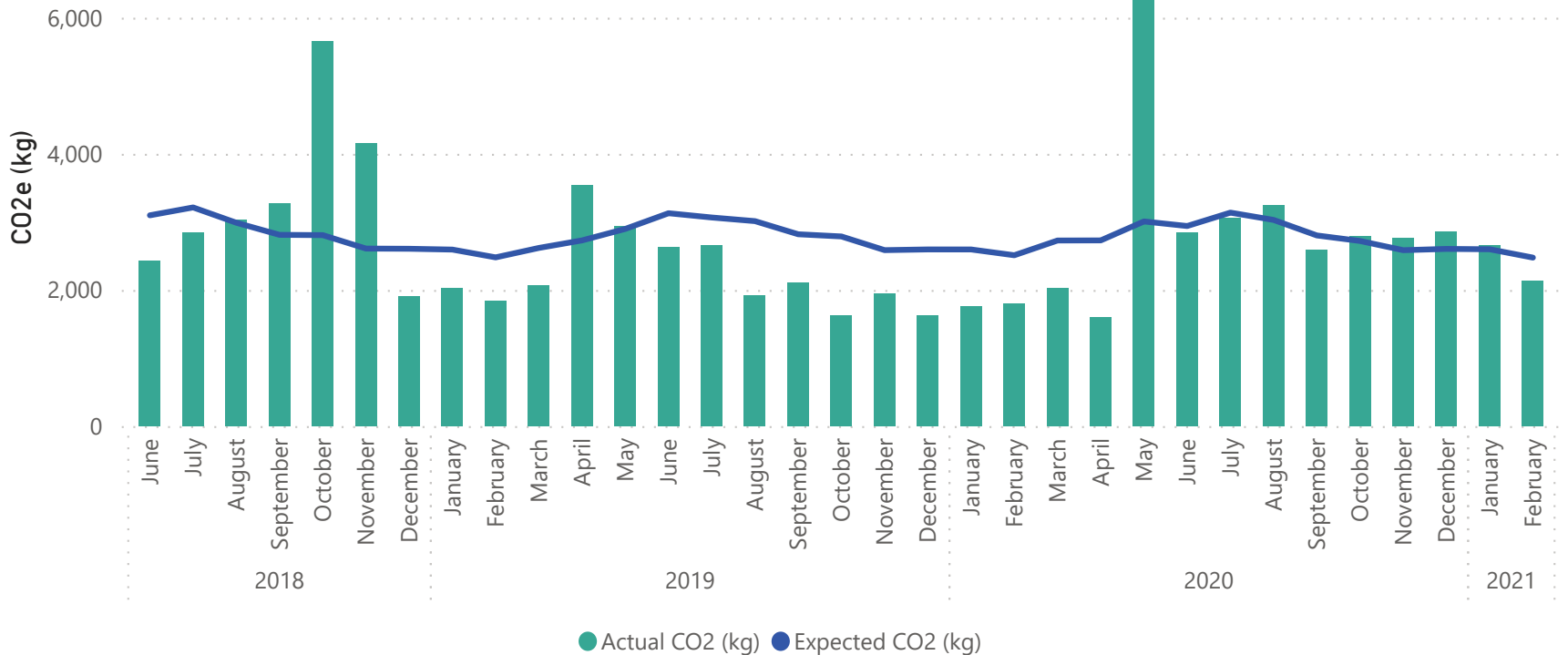
Whakatane District Council

Museum and Research Centre

Museum Research Centre Natural Gas Compared to Baseline (kWh)



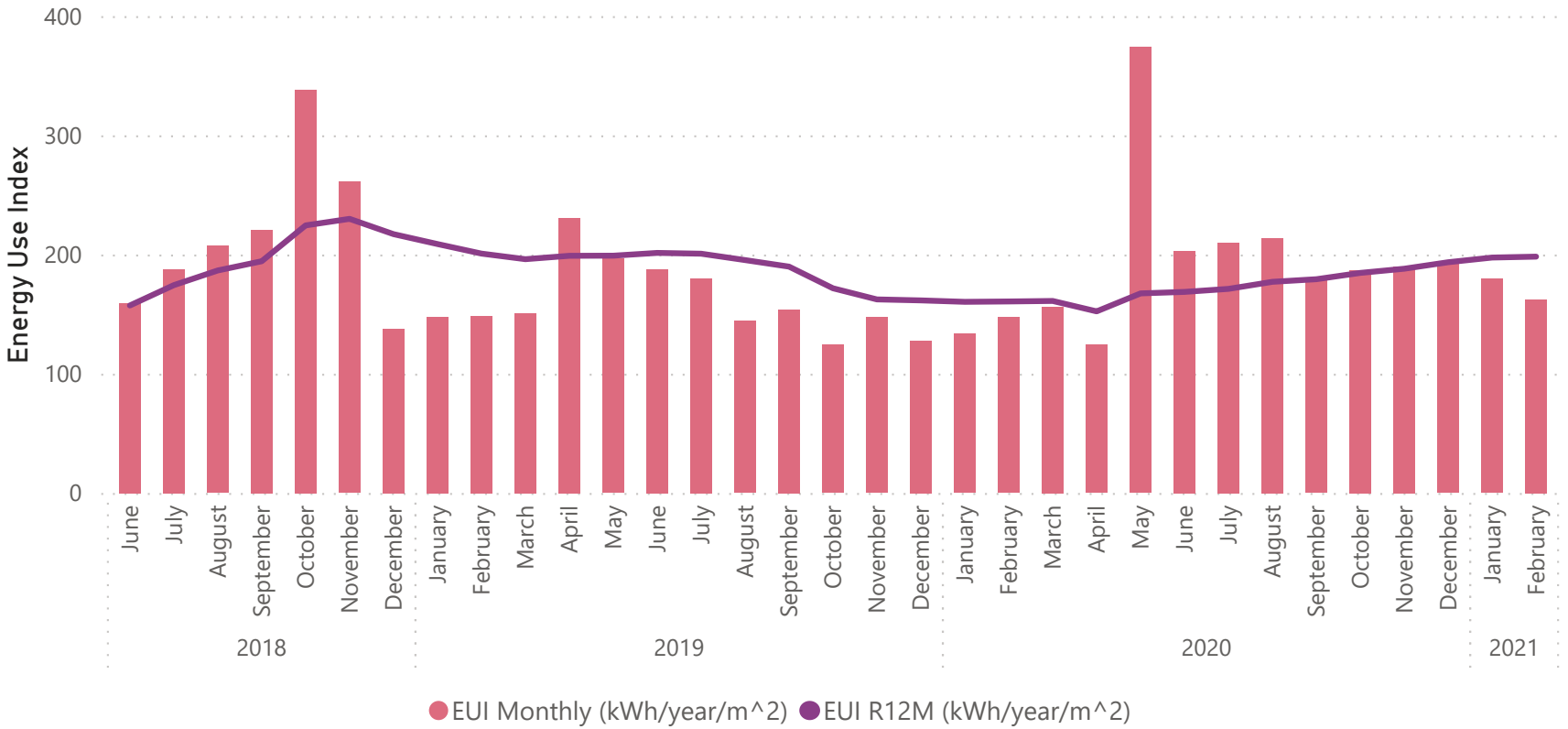
Museum Research Centre Carbon Emissions Compared to Baseline (kg CO2e)



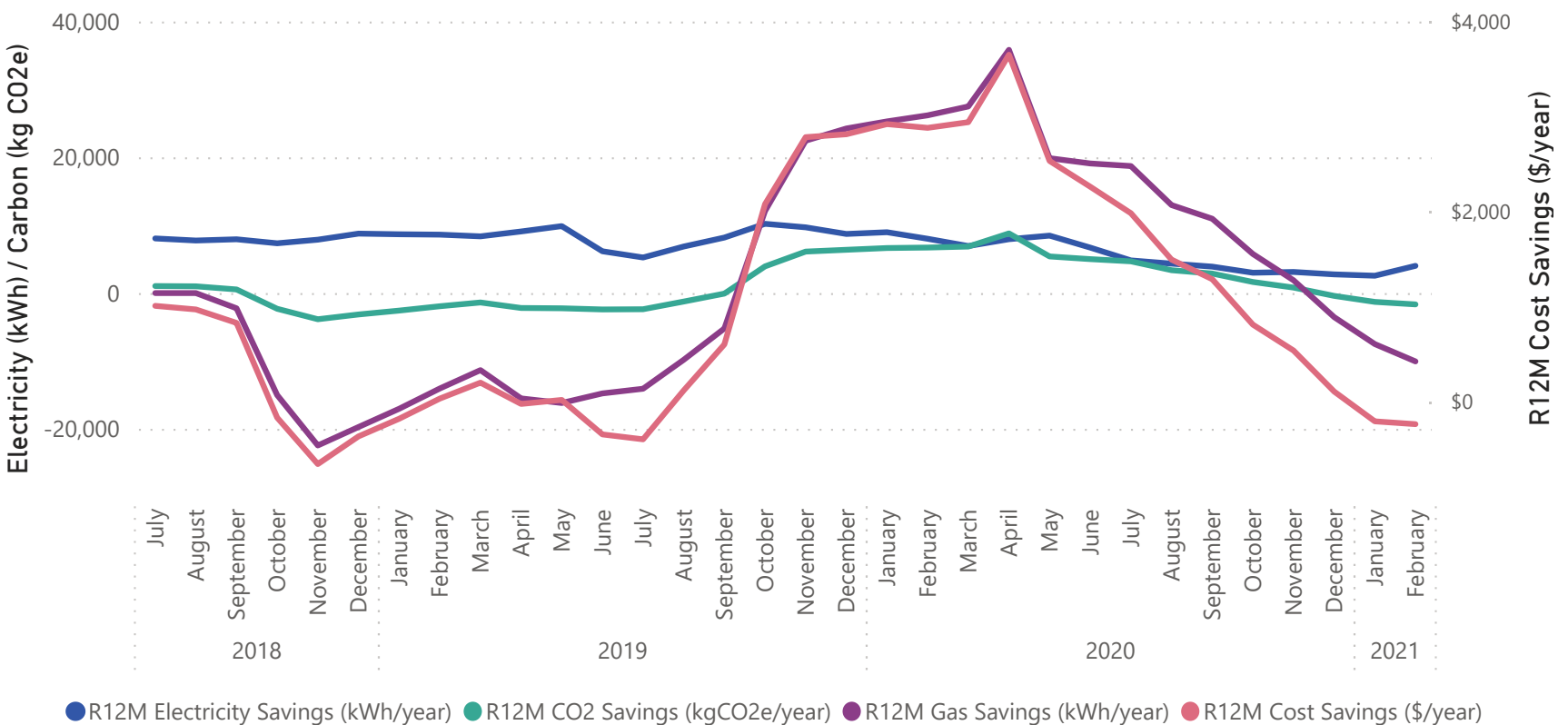
Whakatane District Council

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

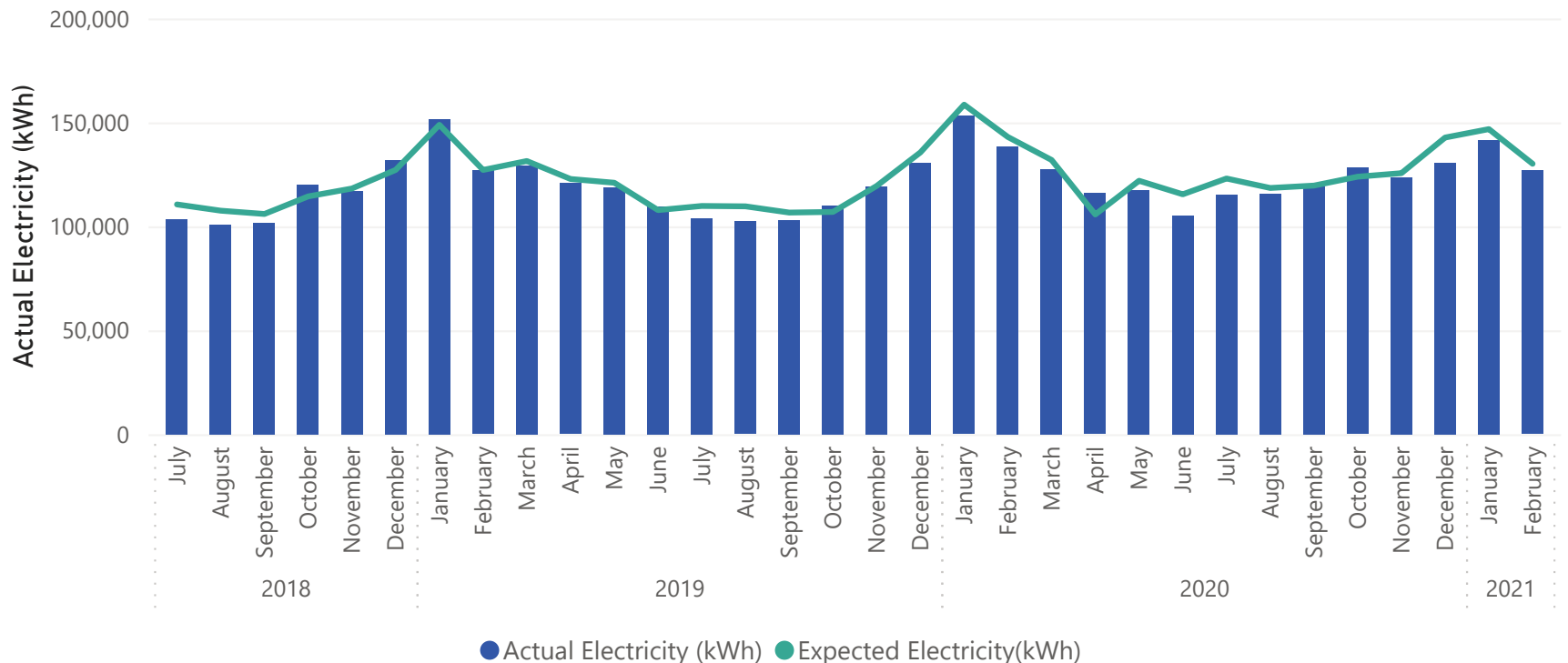
Water Treatment Plant

<p>\$330 Monthly Energy Cost Savings</p>	<p>3,253 Elec. Savings (kWh/mo)</p>	<p>2% Elec. Savings (%)</p>	<p>38,551 R12M Electricity Savings (kWh/yr)</p>	<p>419 CO2e Savings (kg/mo)</p>
<p>\$4,296 R12M Energy Cost Savings</p>				<p>4,962 R12M CO2e Savings (kg/yr)</p>

Comments:

Demand for water in February 2021 was 10% lower and electricity use was 8% less compared to February 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.

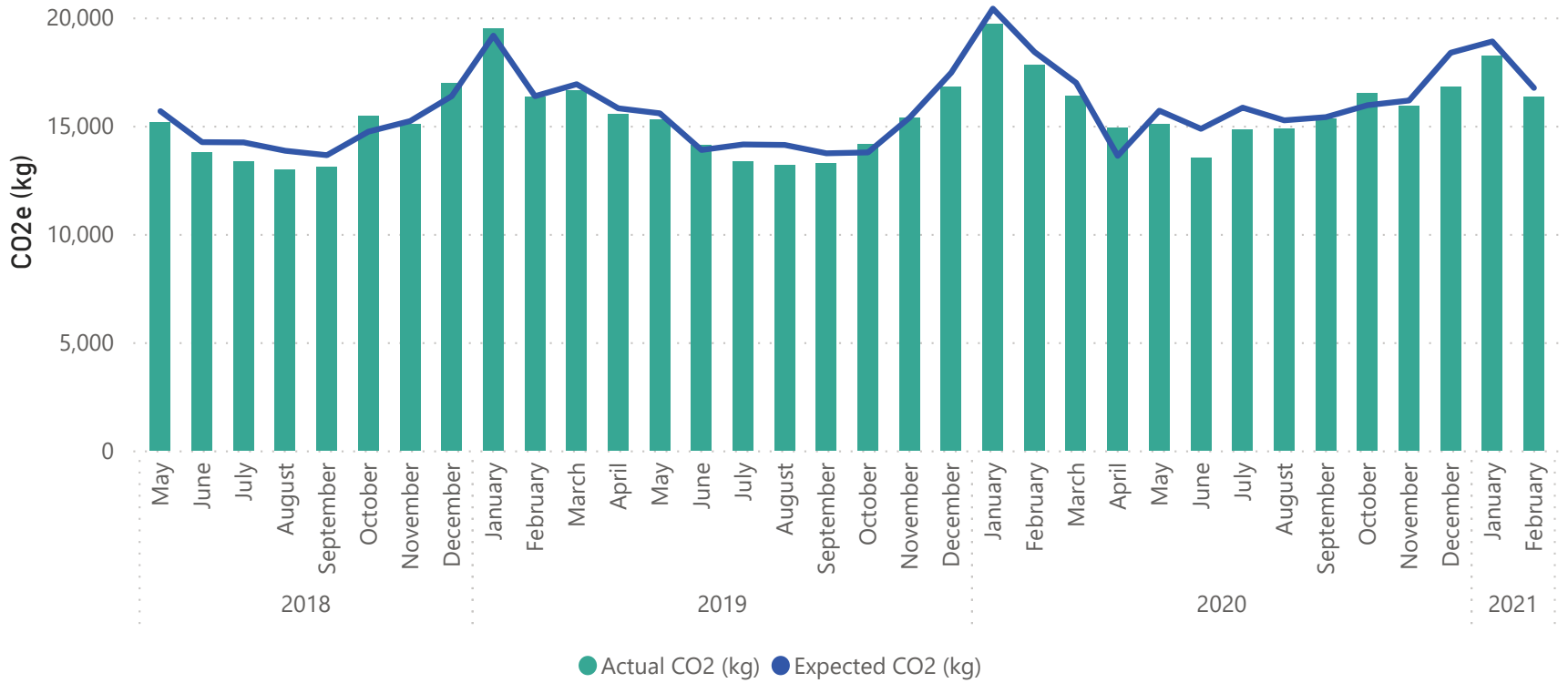
Water Treatment Plant Electricity Use Compared to Baseline (kWh)



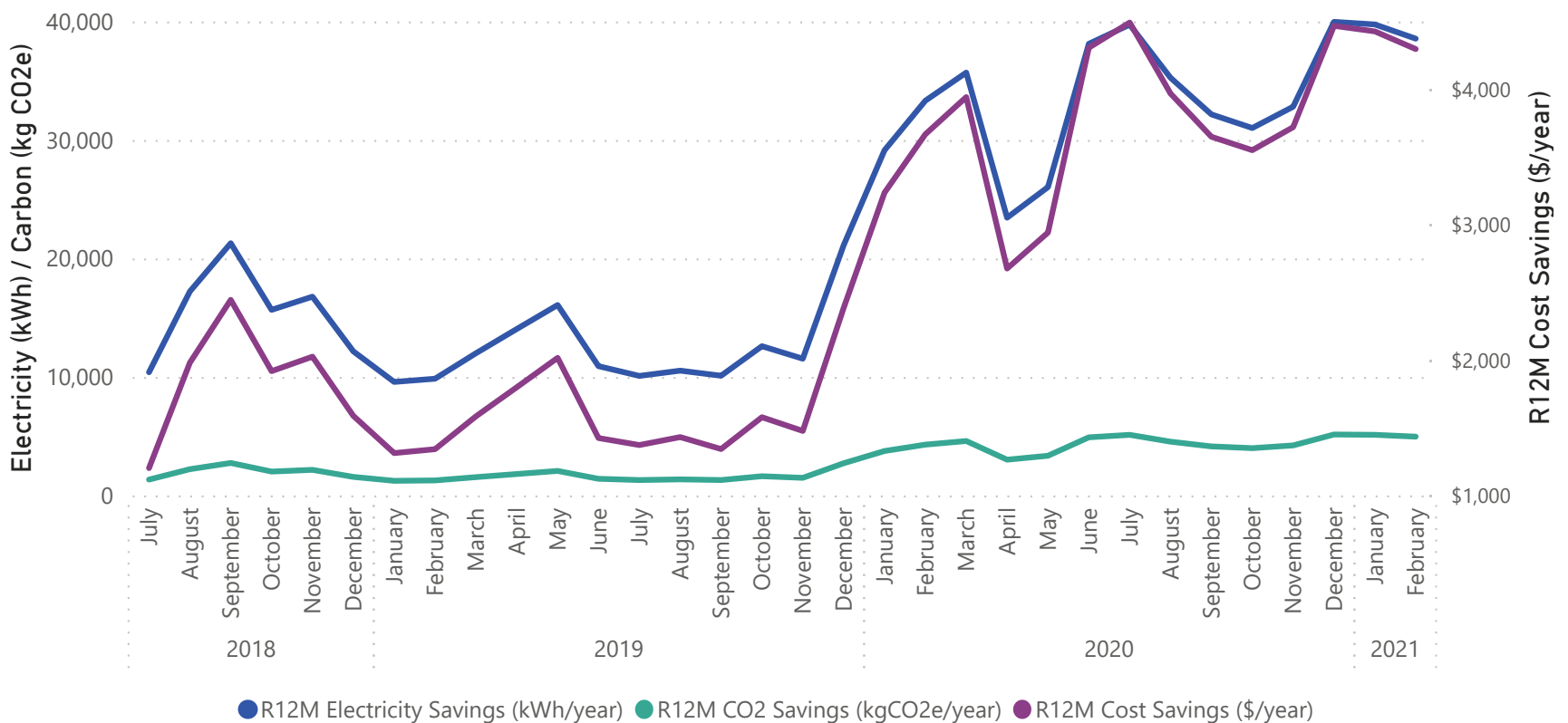
Whakatane District Council

Water Treatment Plant

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



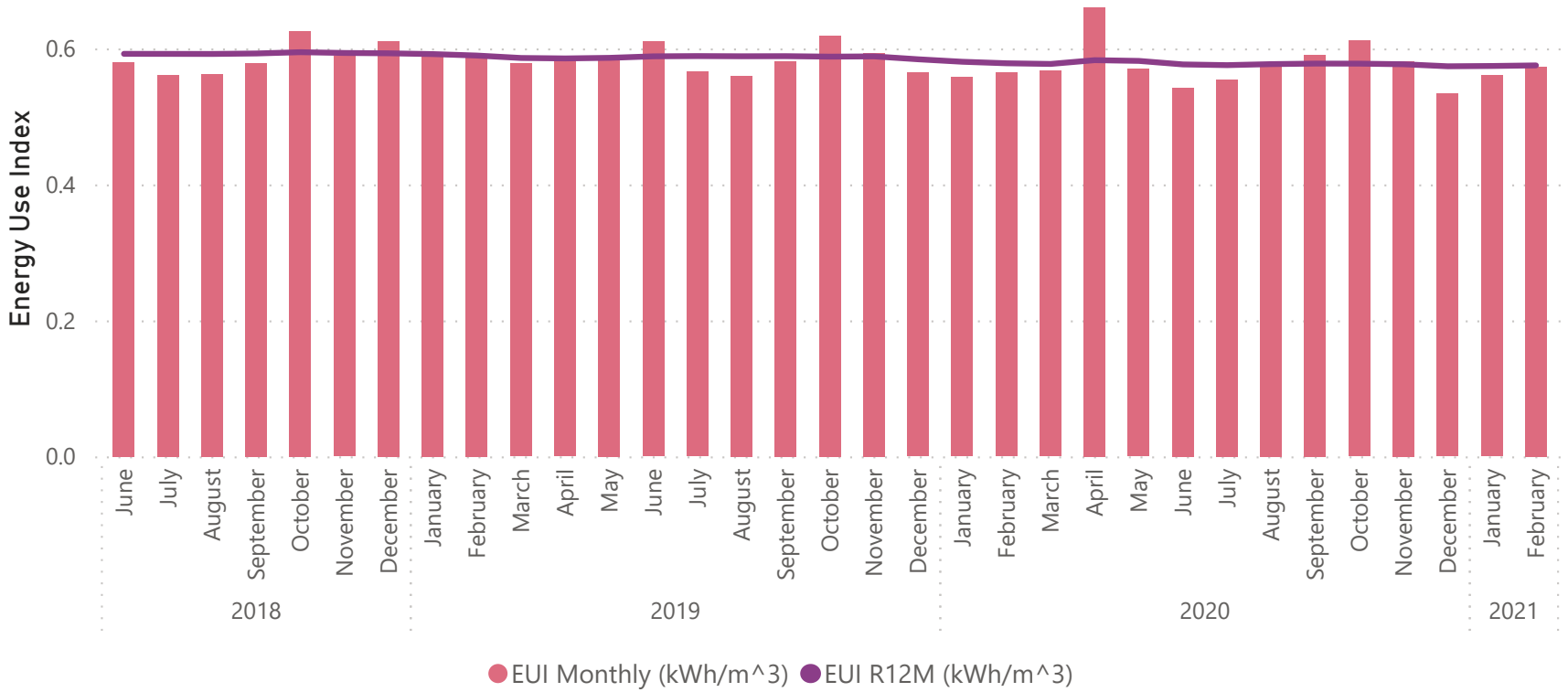
Water Treatment Plant Cumulative Rolling 12 Month Savings



Whakatane District Council

Water Treatment Plant

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



Whakatane District Council

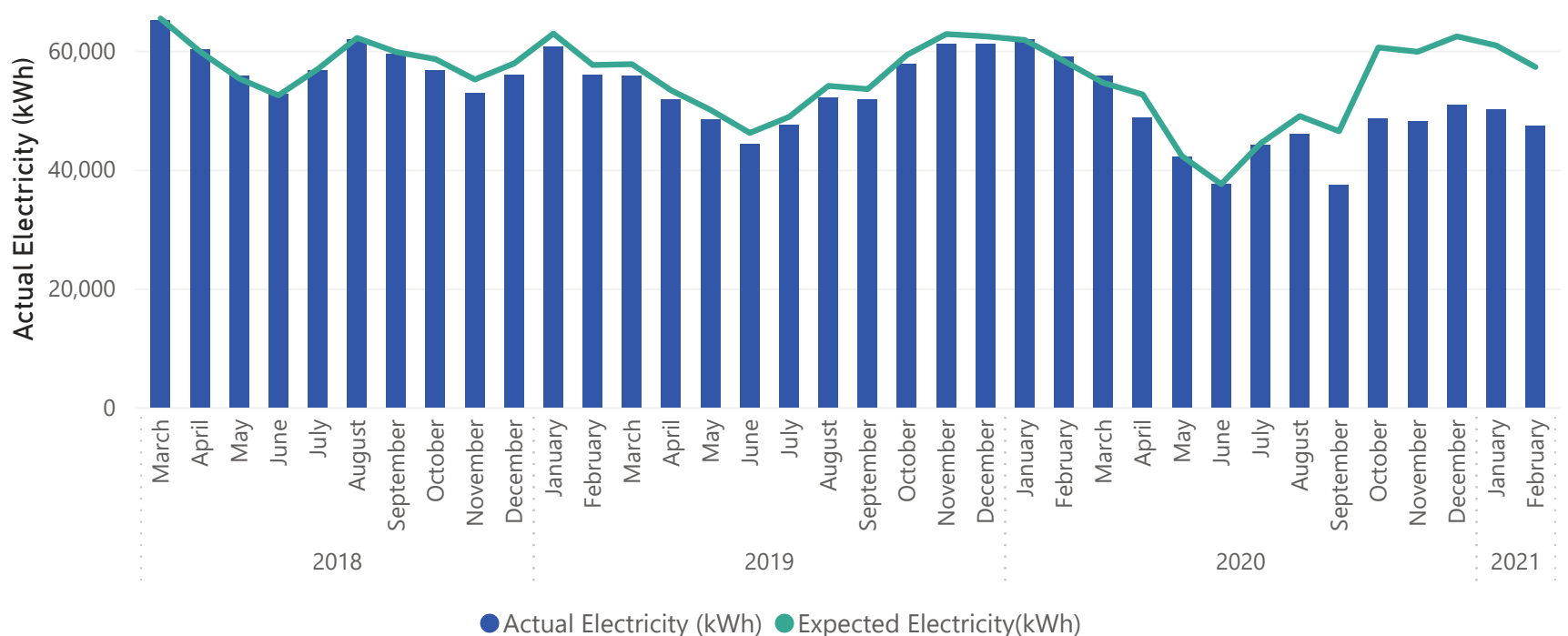
Braemar Road Pump Station

<p>\$1,045</p> <p>Monthly Energy Cost Savings</p>	<p>9,877</p> <p>Elec. Savings (kWh/mo)</p>	<p>17%</p> <p>Elec. Savings (%)</p>	<p>70,566</p> <p>R12M Electricity Savings (kWh/yr)</p>	<p>1,308</p> <p>CO2e Savings (kg/mo)</p>
<p>\$7,190</p> <p>R12M Energy Cost Savings</p>				<p>9,900</p> <p>R12M CO2e Savings (kg/yr)</p>

Comments:

Compared to baseline, Braemar Rd. has saved approximately 17% in electricity use in February 2021. This is the sixth month in a row that significant savings have been achieved. Over the past six months, electricity use has been 19% less than baseline. The savings are due to new, more efficient pumps installed late in August, which have consistently proven to use less electricity to pump water.

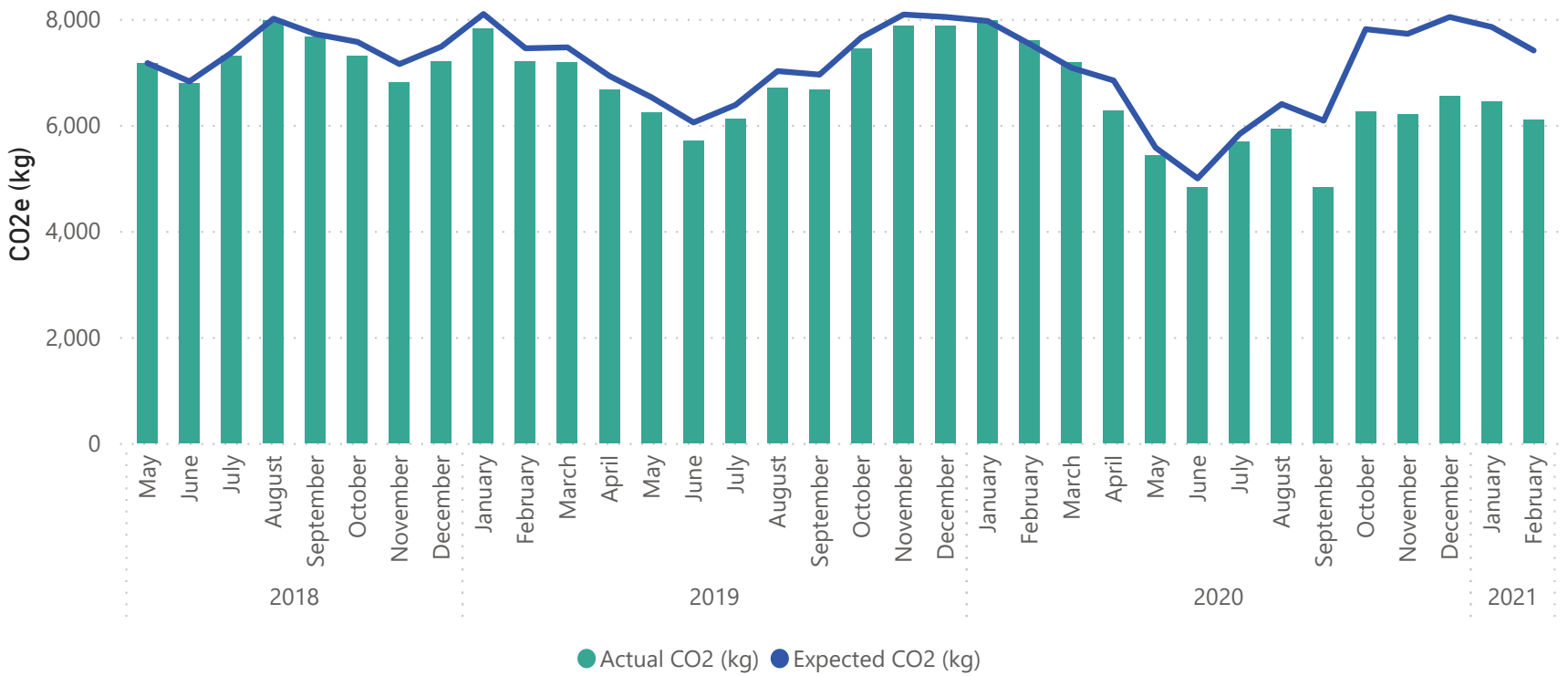
Braemar Rd Pumps Electricity Use Compared to Baseline (kWh)



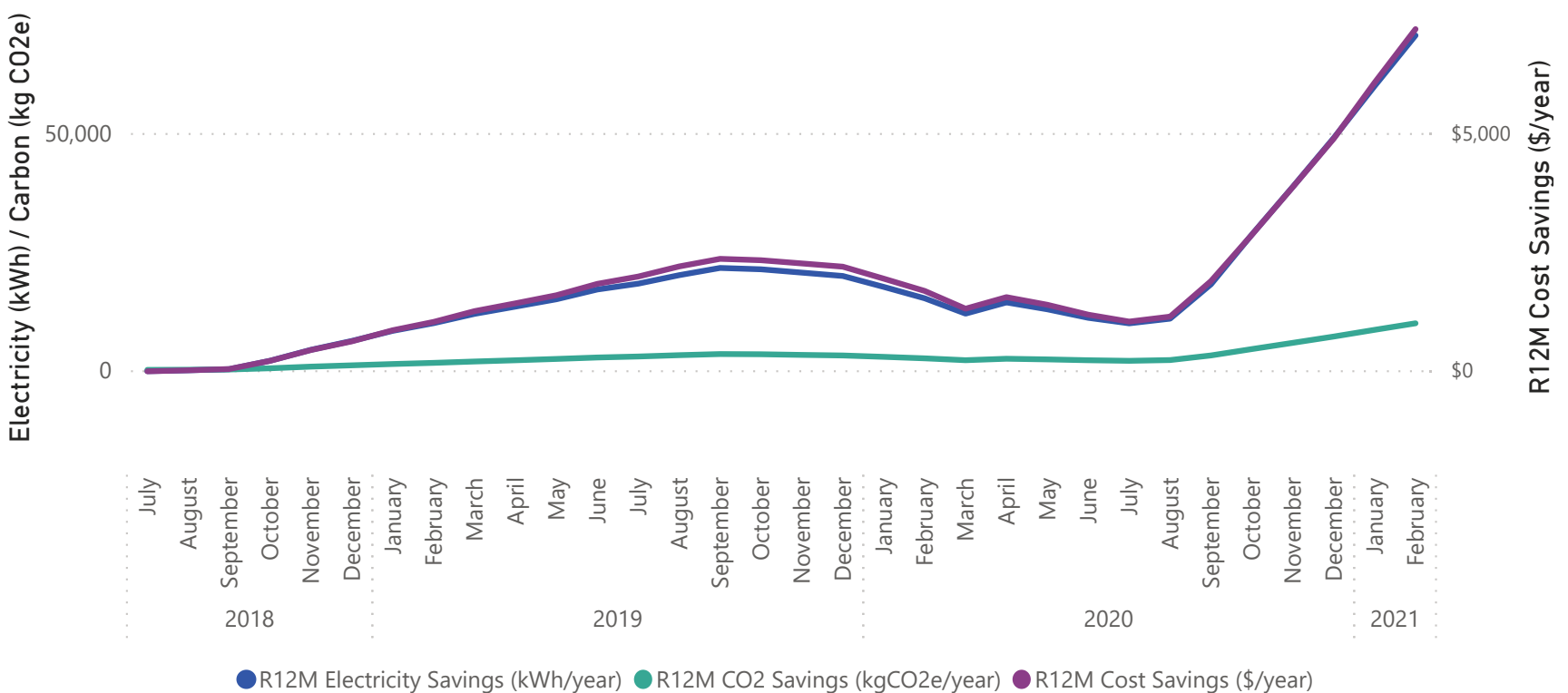
Whakatane District Council

Braemar Road Pump Station

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



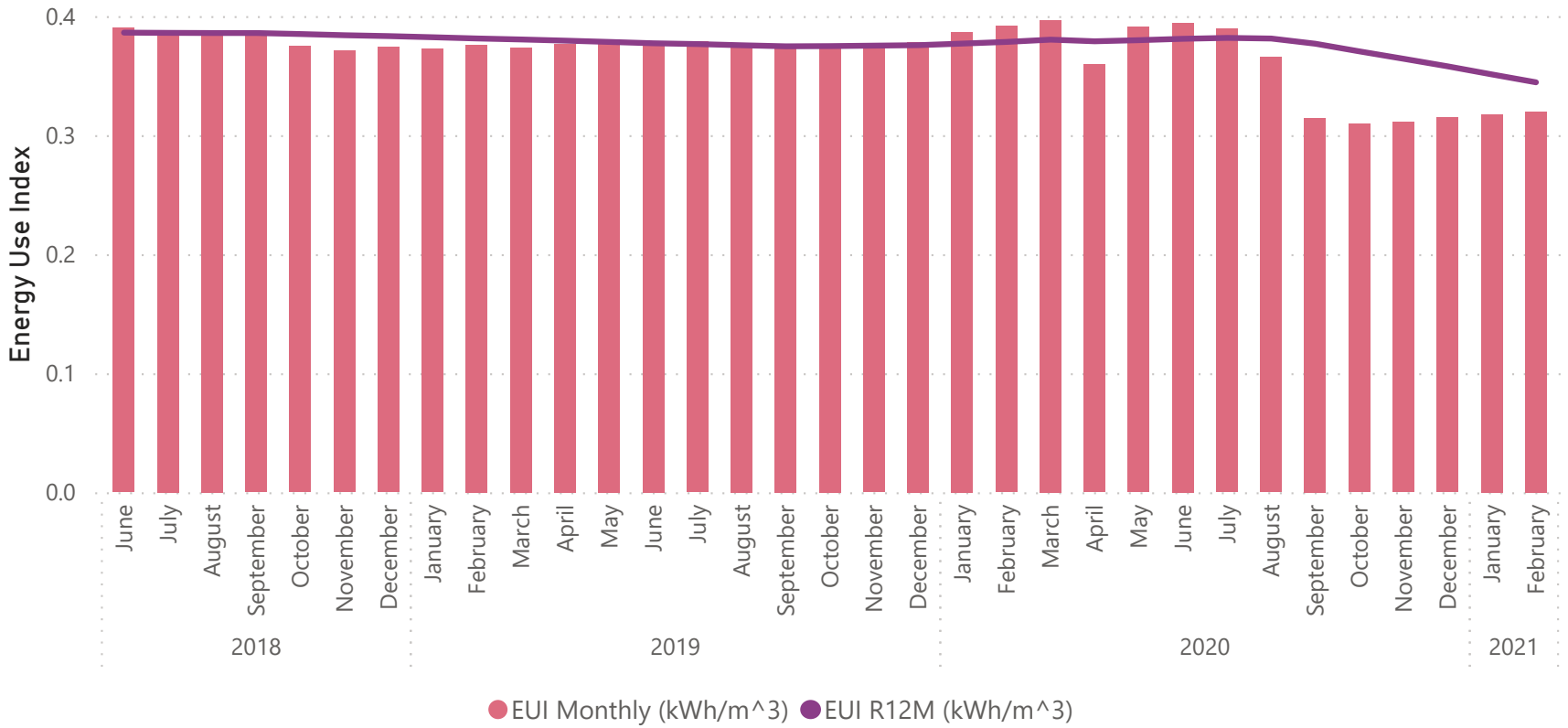
Braemar Rd Pumps Cumulative Rolling 12 Month Savings



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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

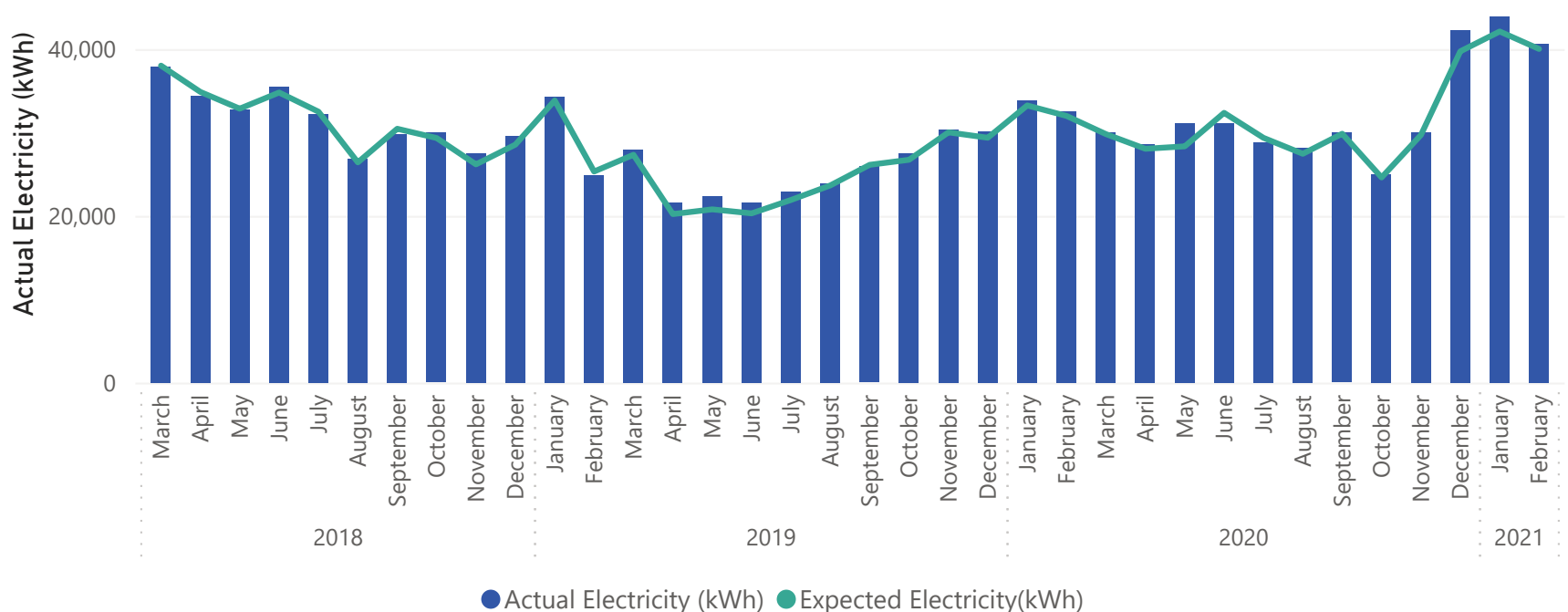
<p>-\$64 Monthly Energy Cost Savings</p>	<p>-625 Elec. Savings (kWh/mo)</p>	<p>-2% Elec. Savings (%)</p>	<p>-8,151 R12M Electricity Savings (kWh/yr)</p>	<p>-80 CO2e Savings (kg/mo)</p>
<p>-\$815 R12M Energy Cost Savings</p>				<p>-1,041 R12M CO2e Savings (kg/yr)</p>

Comments:

Paul Rd Pump Station electricity was above baseline in February 2021 and pumped water has increased by 29% compared to February 2020. On an EUI basis, the pumps are still operating consistently at a rate of approx 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.

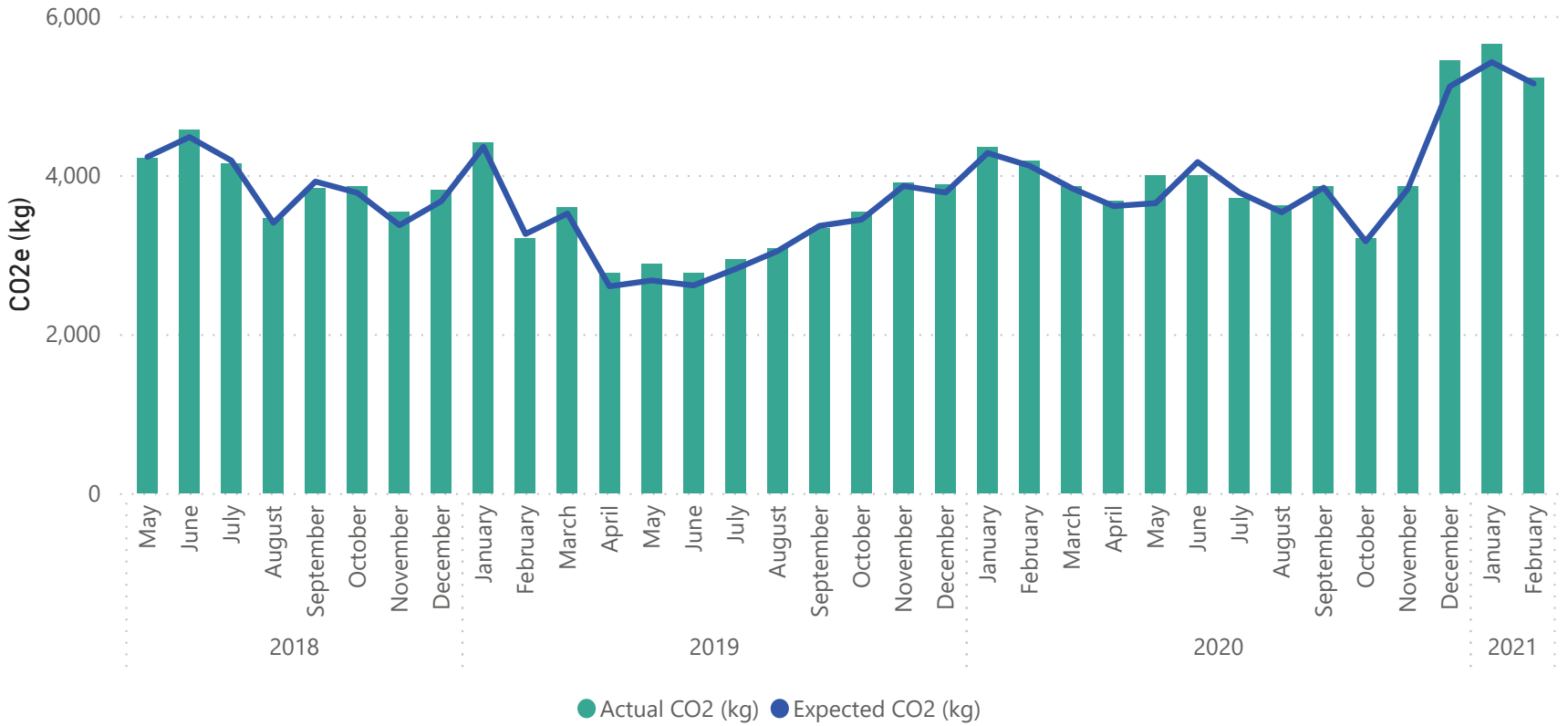
Paul Rd Pumps Electricity Use Compared to Baseline (kWh)



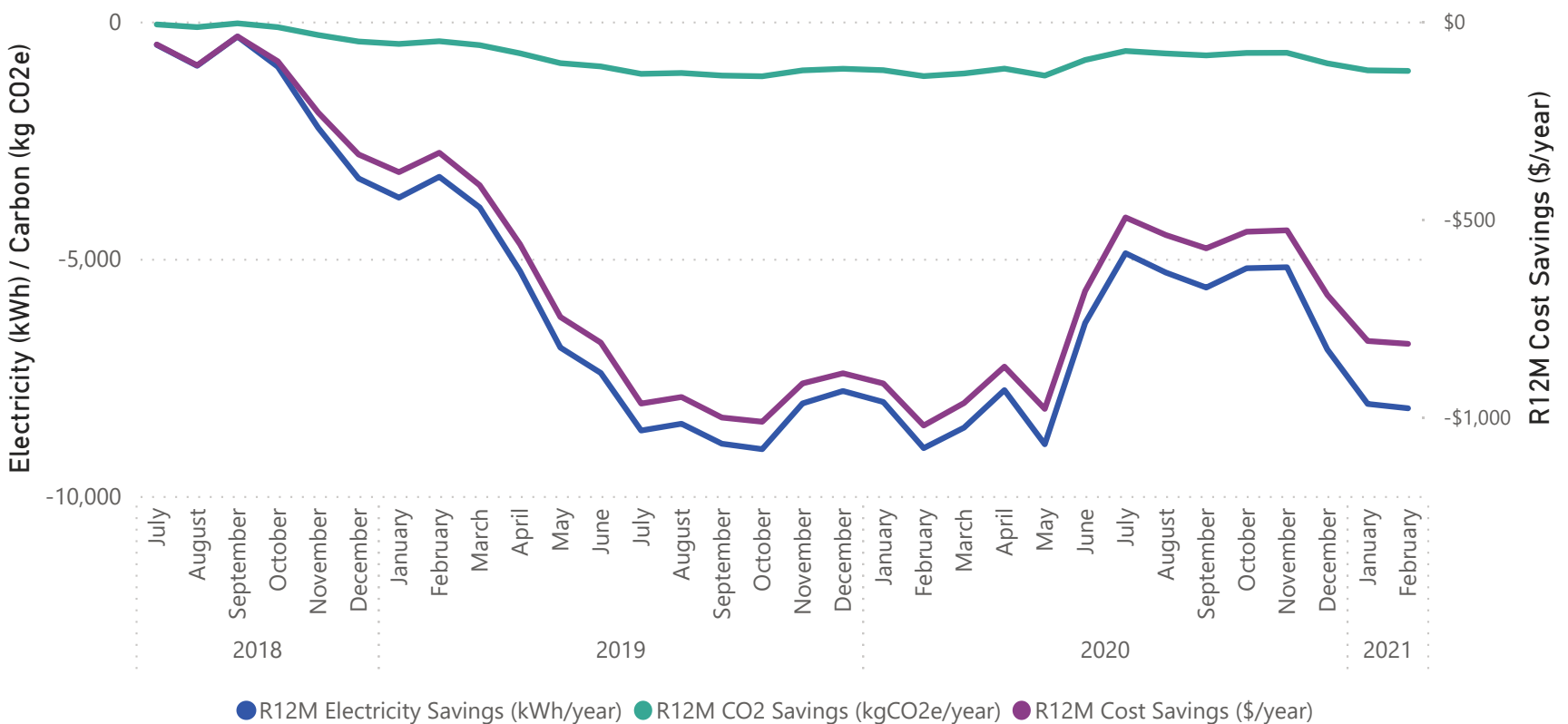
Whakatane District Council

Paul Road Pump Station

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



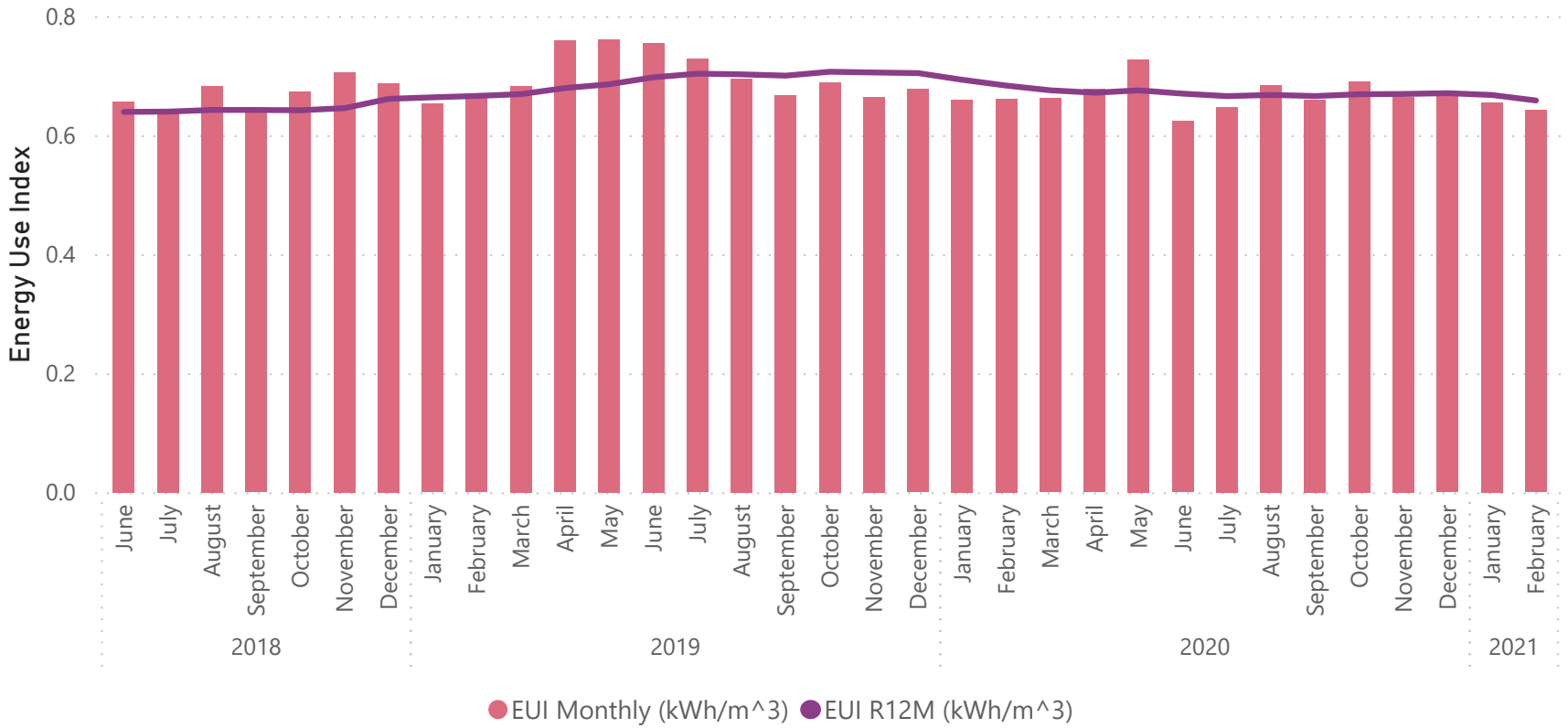
Paul Rd Pumps Cumulative Rolling 12 Month Savings



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

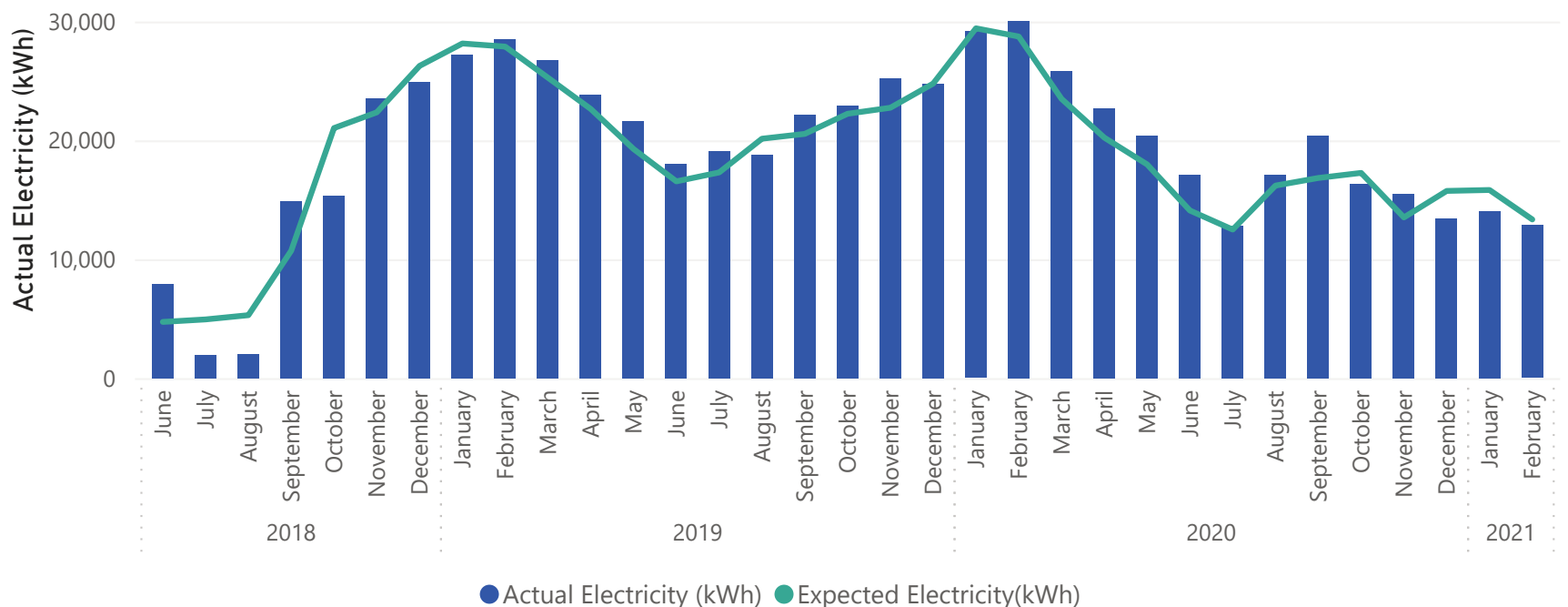
<p>\$105 Monthly Energy Cost Savings</p>	<p>484 Elec. Savings (kWh/mo)</p>	<p>4% Elec. Savings (%)</p>	<p>-11,566 R12M Electricity Savings (kWh/yr)</p>	<p>63 CO2e Savings (kg/mo)</p>
<p>-\$2,752 R12M Energy Cost Savings</p>				<p>-1,479 R12M CO2e Savings (kg/yr)</p>

Comments:

Electricity use was less than baseline at Johnson Rd in February 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, February 2021 is no different. Both Paul Road and Johnson Rd's EUs are approximately twice as high compared to Bridger Glade and Braemar Road, on a kWh per cubic meter pumped basis.

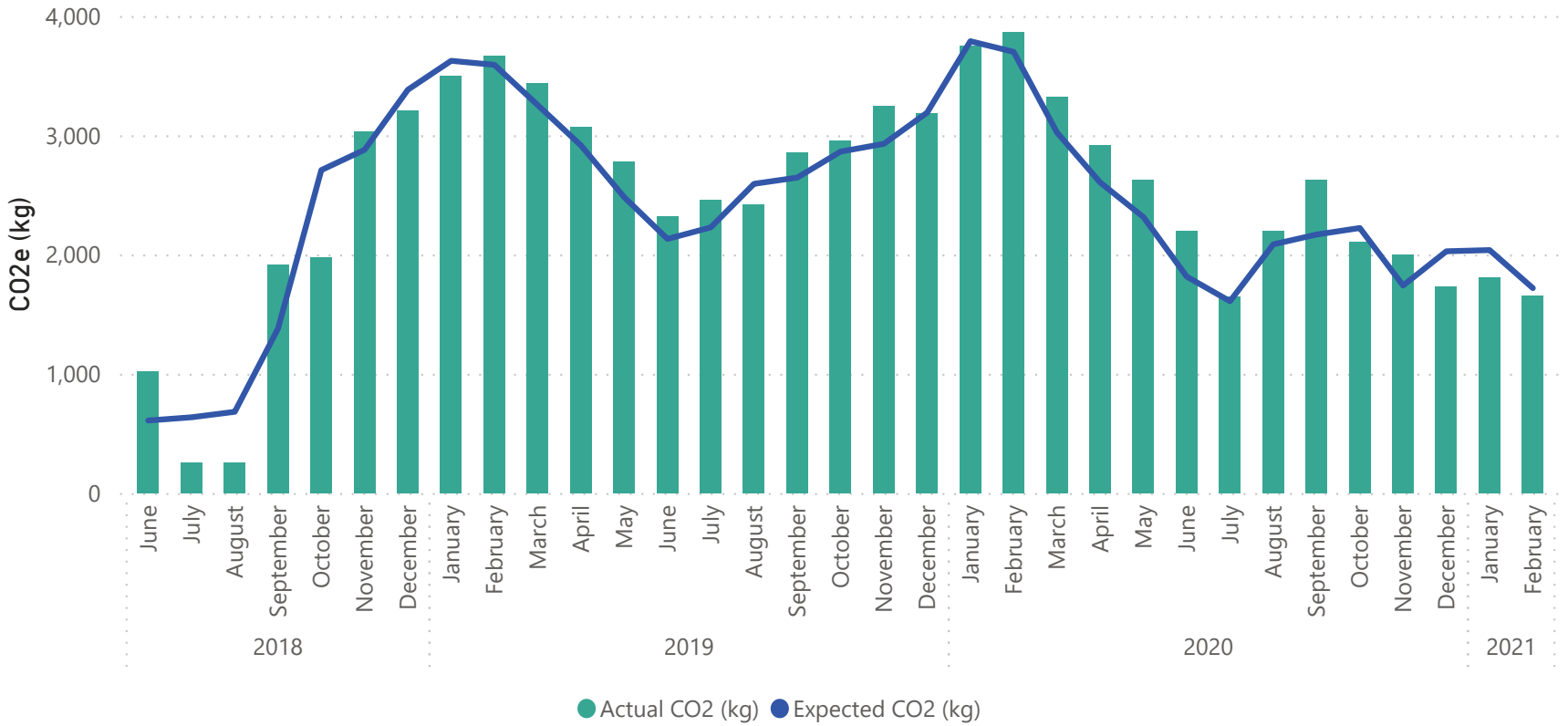
Johnson Rd Pumps Electricity Use Compared to Baseline (kWh)



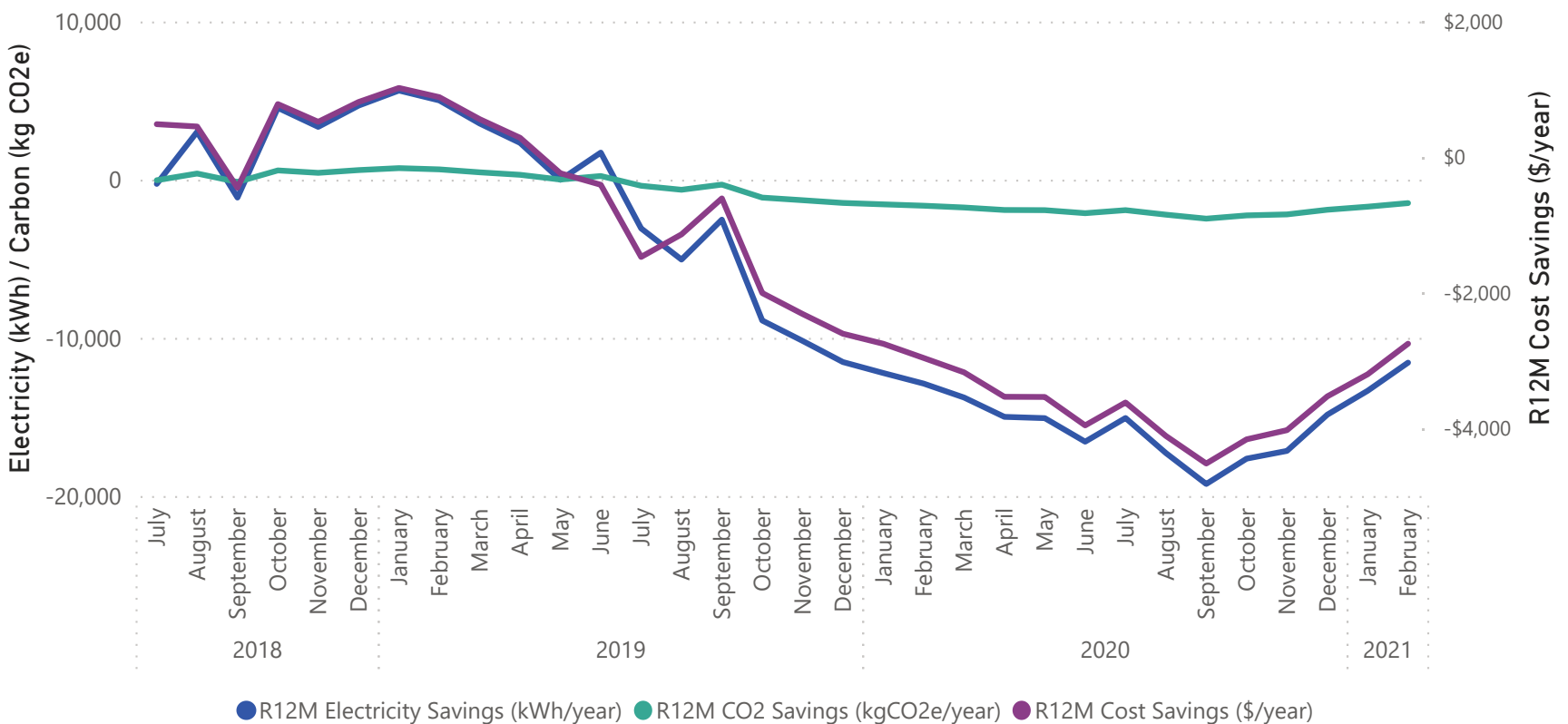
Whakatane District Council

Johnson Road Pump Station

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



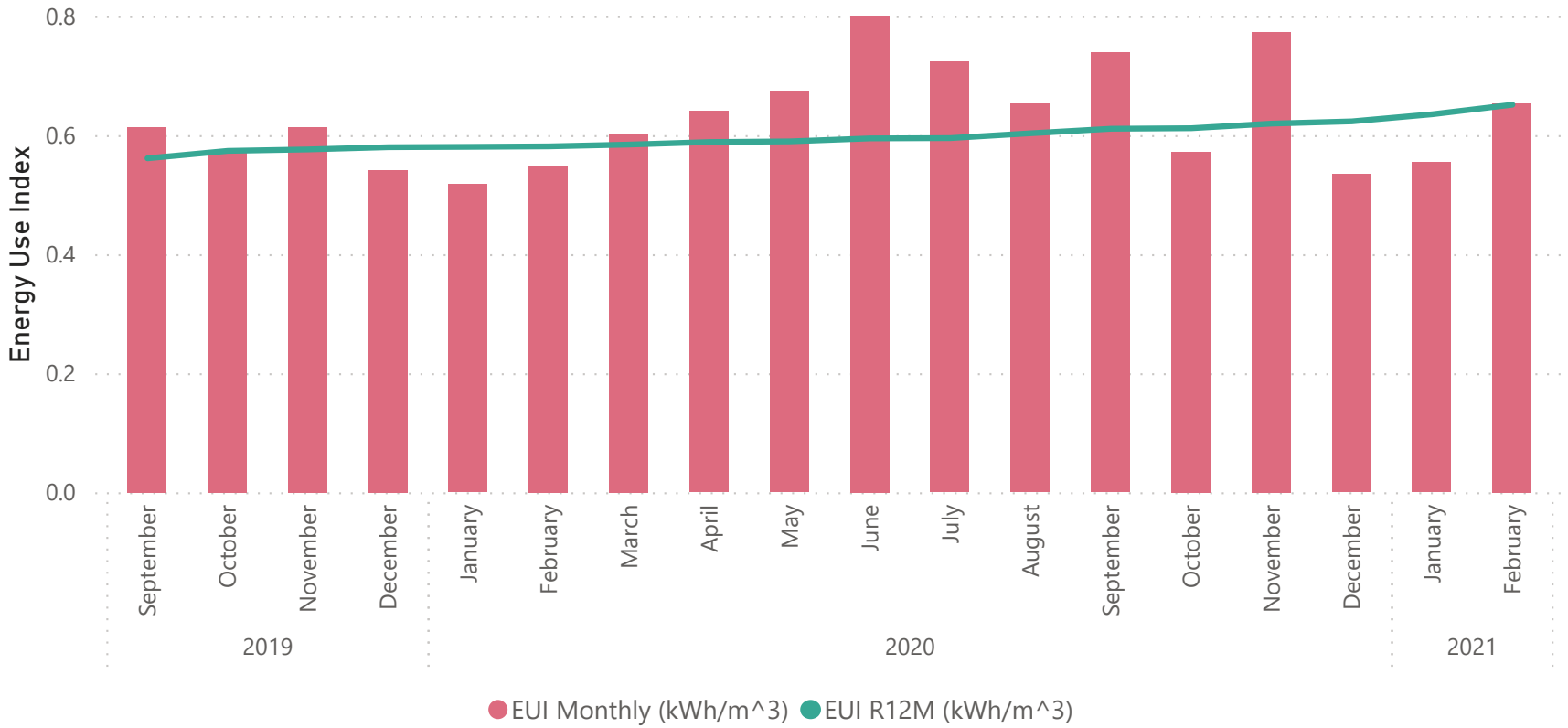
Johnson Rd Pumps Cumulative Rolling 12 Month Savings



Whakatane District Council

Johnson Road Pump Station

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



Whakatane District Council

Paul, Johnson, Braemar Rd Pump Stations

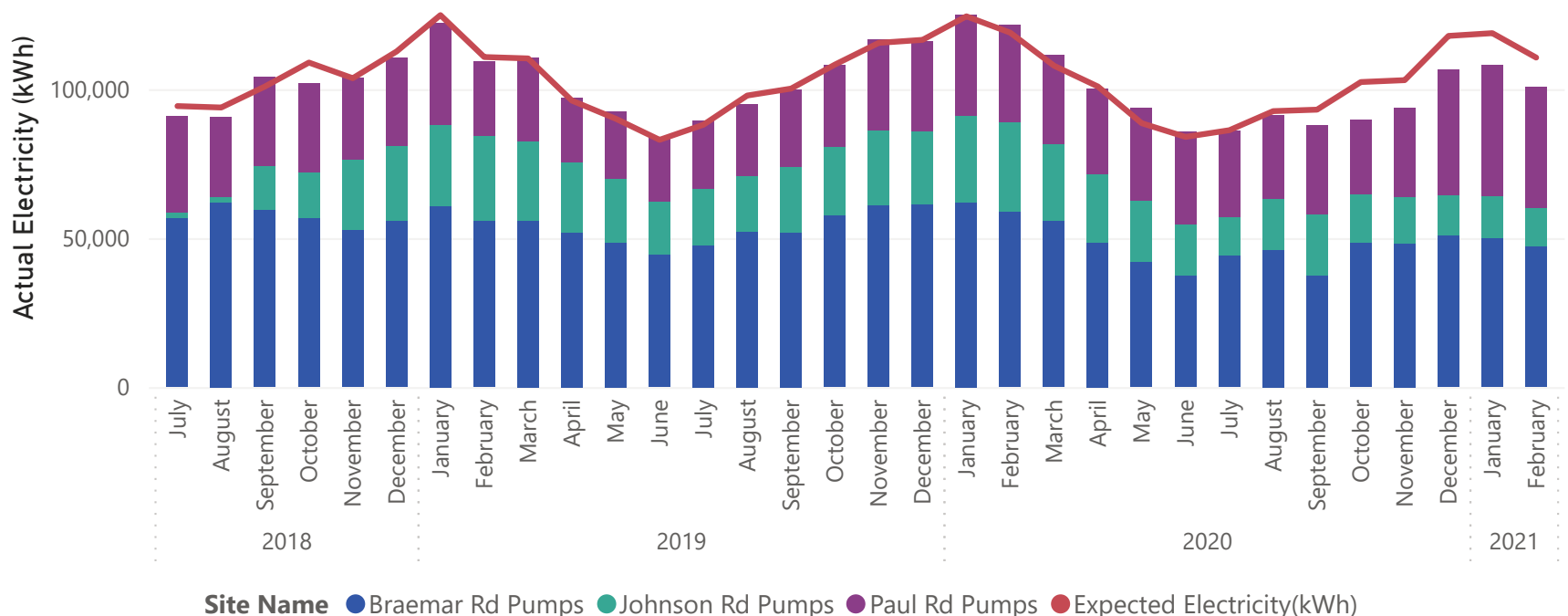
<p>\$1,086 Monthly Energy Cost Savings</p>	<p>9,736 Elec. Savings (kWh/mo)</p>	<p>9% Elec. Savings (%)</p>	<p>50,850 R12M Electricity Savings (kWh/yr)</p>	<p>1,292 CO2e Savings (kg/mo)</p>
<p>\$3,622 R12M Energy Cost Savings</p>				<p>7,381 R12M CO2e Savings (kg/yr)</p>

Comments:

Monitoring Paul Road, Johnson Road, and Braemar Road. pump stations together is a new addition to monitoring and targeting in February 2021. Baseline electricity is the sum of expected electricity for all three pump stations and is adjusted for the volume of water pumped.

It is clear from the combined monitoring how the new, more efficient pumps (installed September 2020) at Braemar Rd. greatly contribute to the collective savings. On an EUI basis, even before the more efficient pumps were installed, Braemar Road was pumping water more efficiently. Recently, the Braemar pumps are using approximately half as much energy to pump the same amount of water, on a kWh per cubic meter basis when compared to Johnson Road and Paul Road.

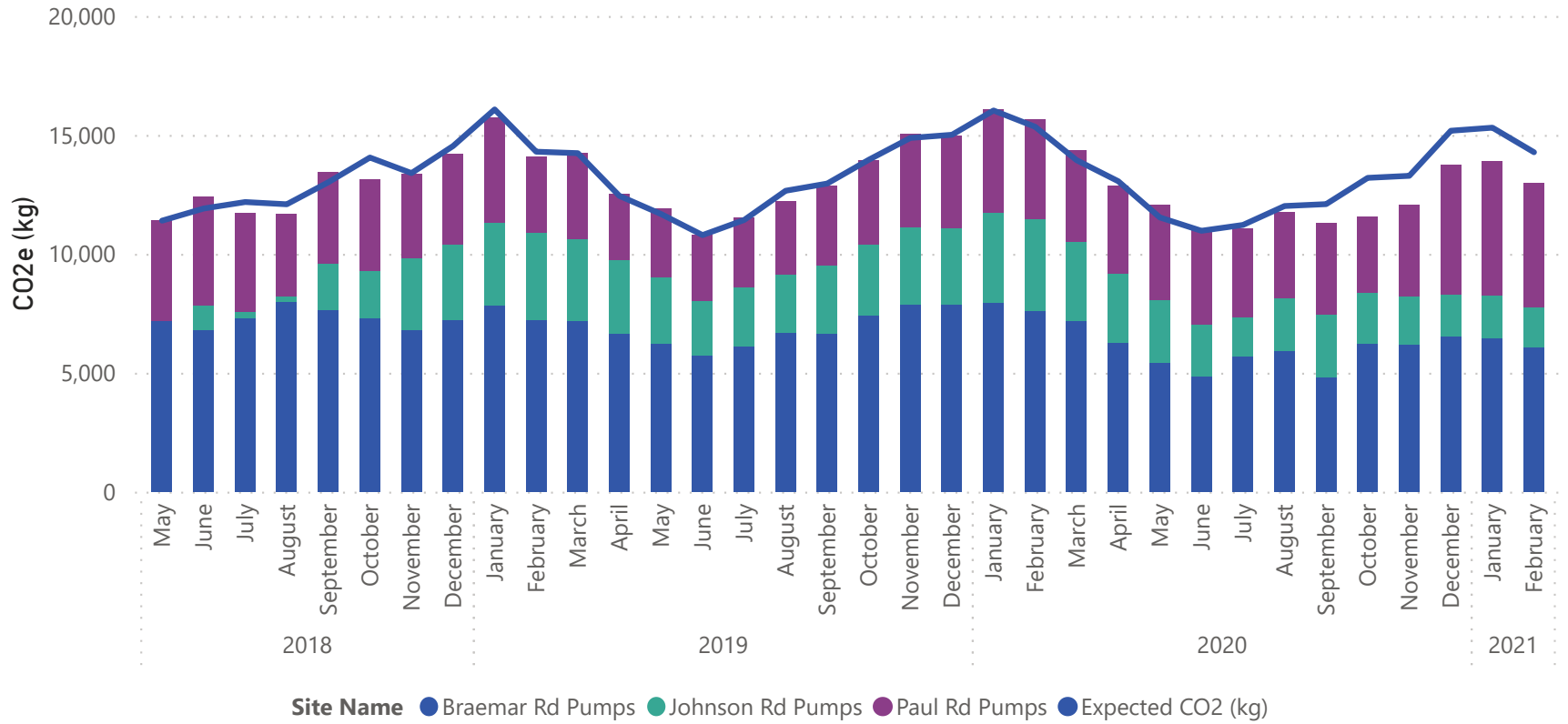
Paul, Johnson, Braemar Rd Pump Stations Electricity Use Compared to Baseline (kWh)



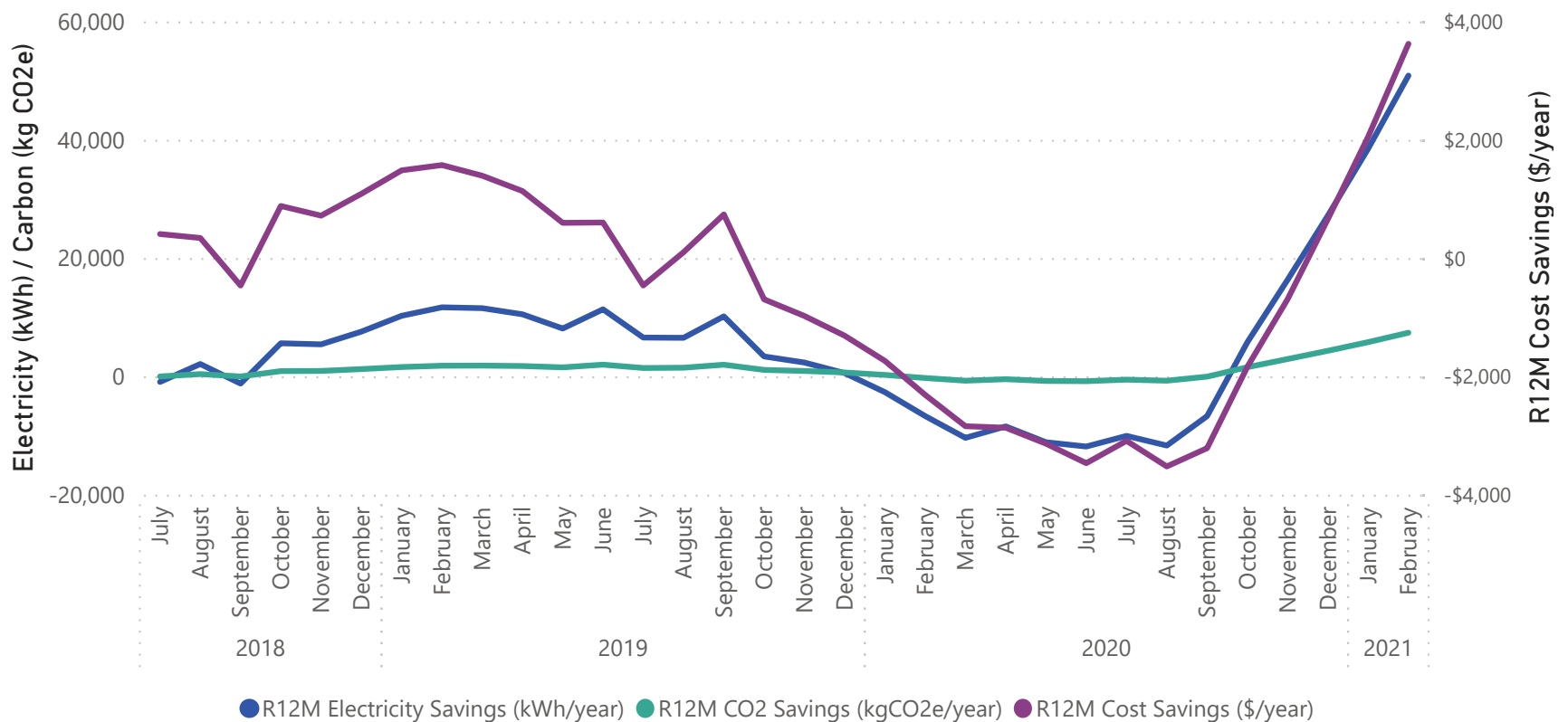
Whakatane District Council

Paul, Johnson, Braemar Rd Pump Stations

Paul, Johnson, Braemar Rd Pump Stations Carbon Emissions Compared to Baseline (kWh)



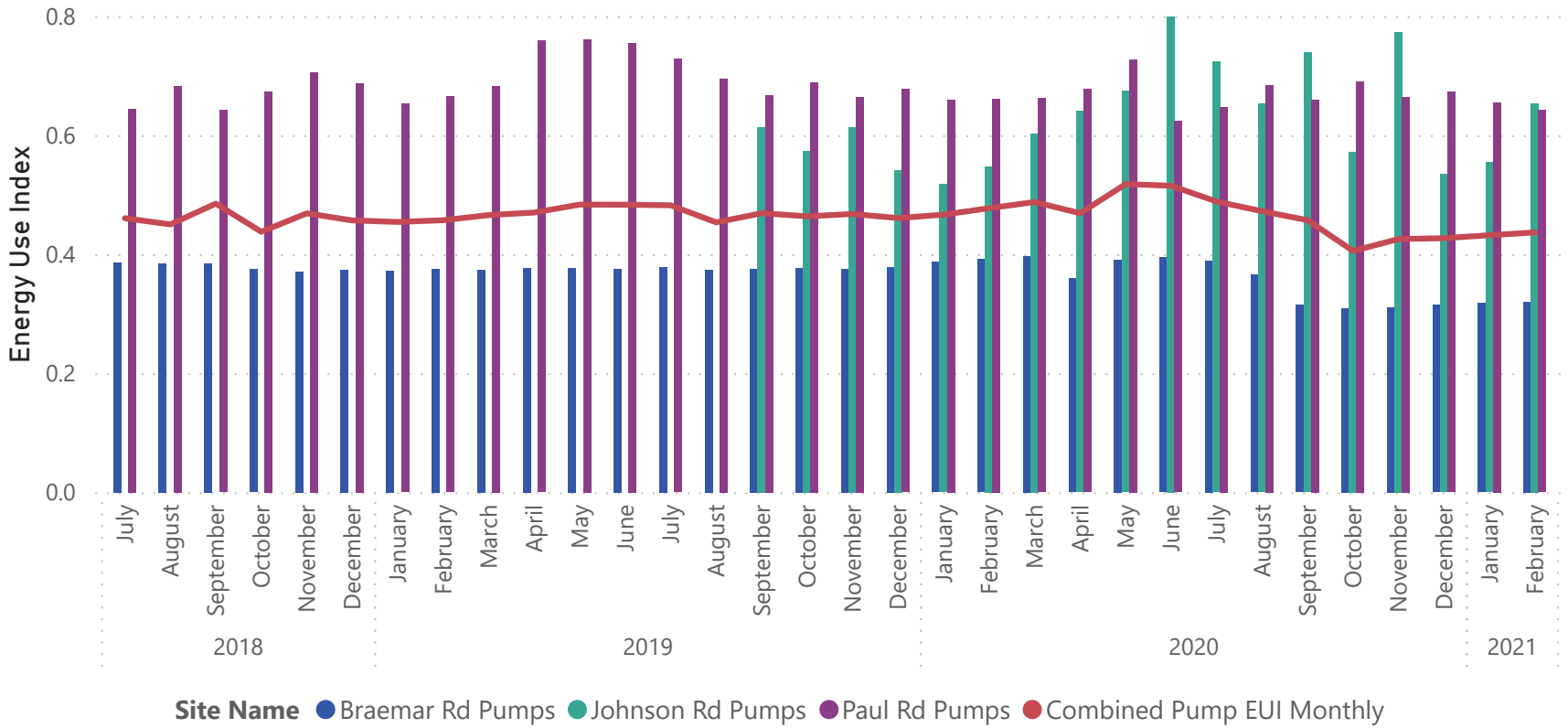
Paul, Johnson, Braemar Rd Pump Stations Cumulative Rolling 12 Month Savings



Whakatane District Council

Paul, Johnson, Braemar Rd Pump Stations

Paul, Johnson, Braemar Rd Pump Stations Energy Use Index by Month



Whakatane District Council

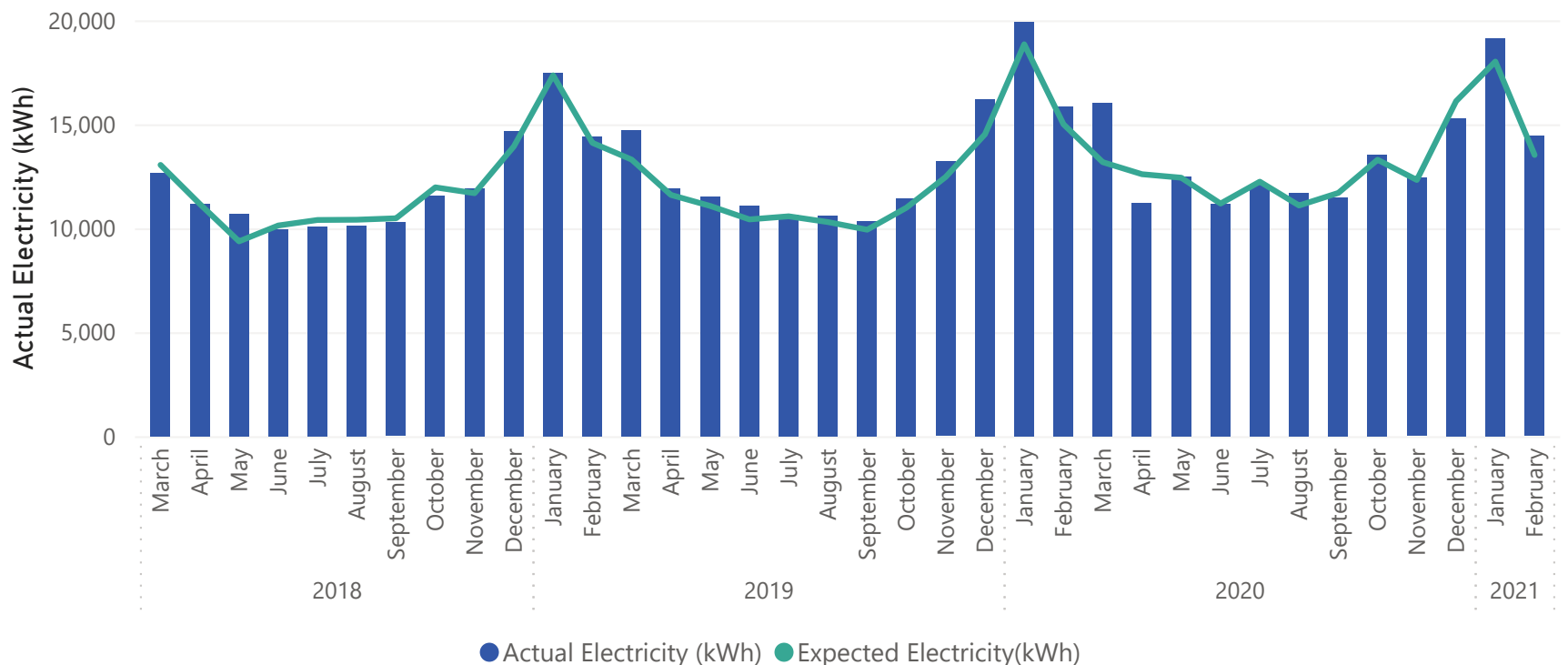
Bridger Glade Pump Station

<p>-\$164 Monthly Energy Cost Savings</p>	<p>-913 Elec. Savings (kWh/mo)</p>	<p>-7% Elec. Savings (%)</p>	<p>-3,290 R12M Electricity Savings (kWh/yr)</p>	<p>-118 CO2e Savings (kg/mo)</p>
<p>-\$622 R12M Energy Cost Savings</p>				<p>-423 R12M CO2e Savings (kg/yr)</p>

Comments:

Electricity use was more than baseline for the month of February 2021 at Bridger Glade pump station. Compared to February 2020, the volume of water supplied by Bridger Glade pumps has decreased by 10% and electricity use has decreased by 9%. 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.

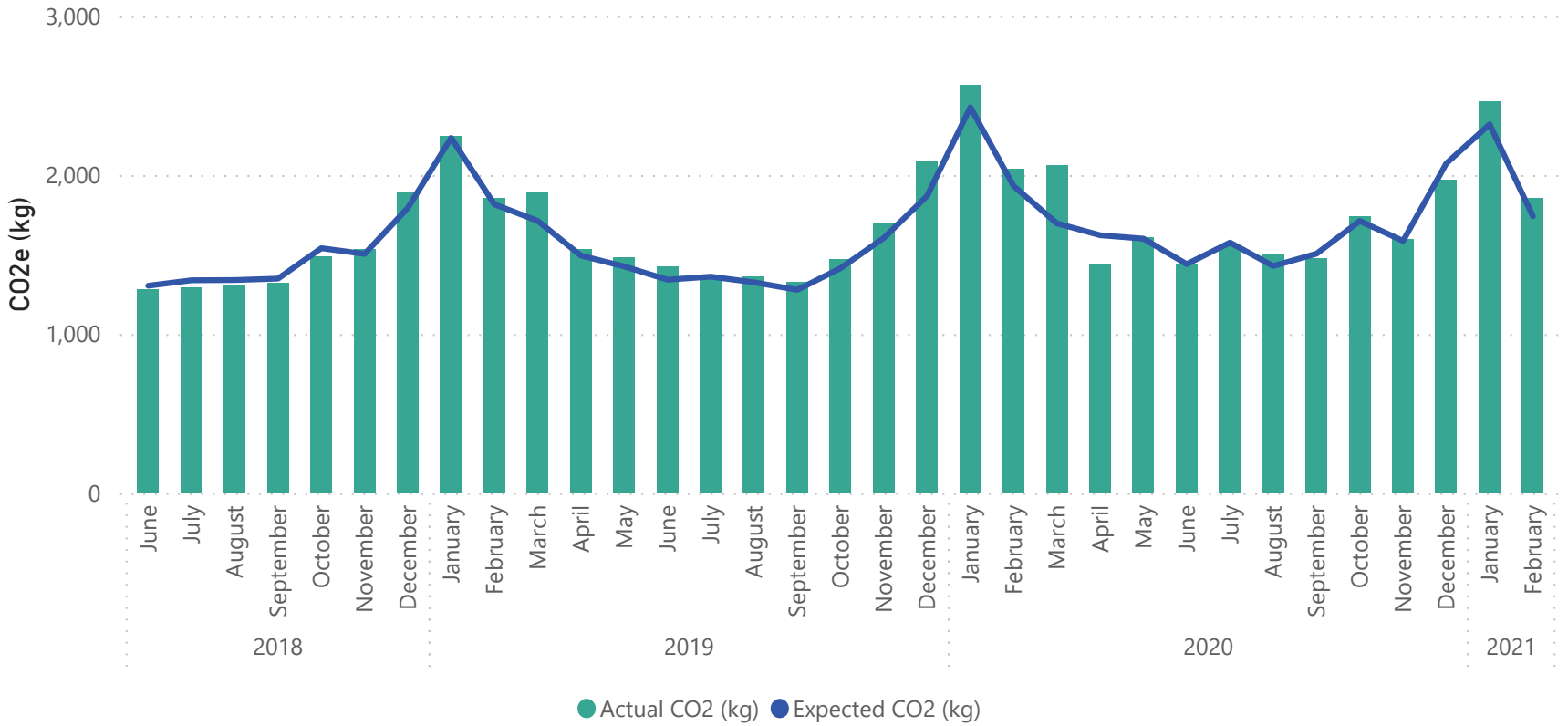
Bridger Glade Pumps Electricity Use Compared to Baseline (kWh)



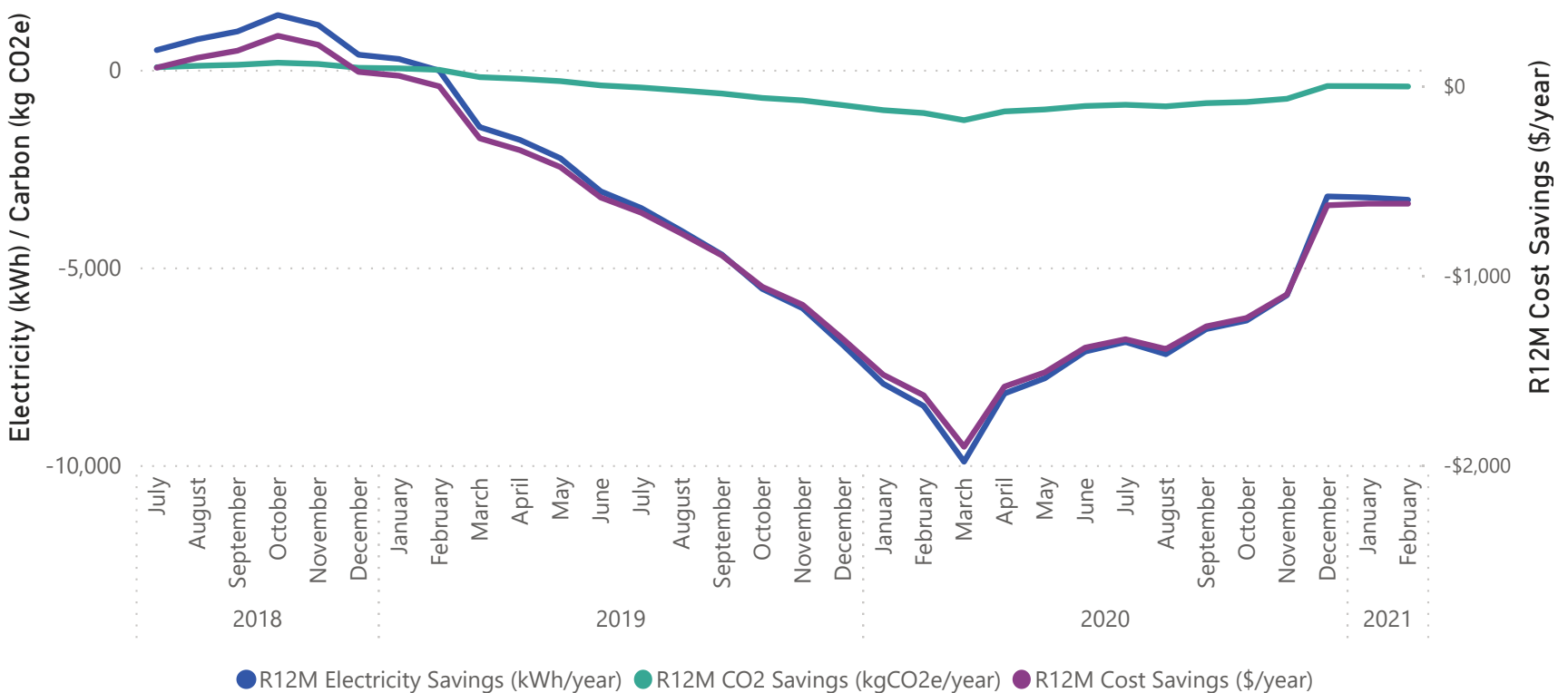
Whakatane District Council

Bridger Glade Pump Station

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



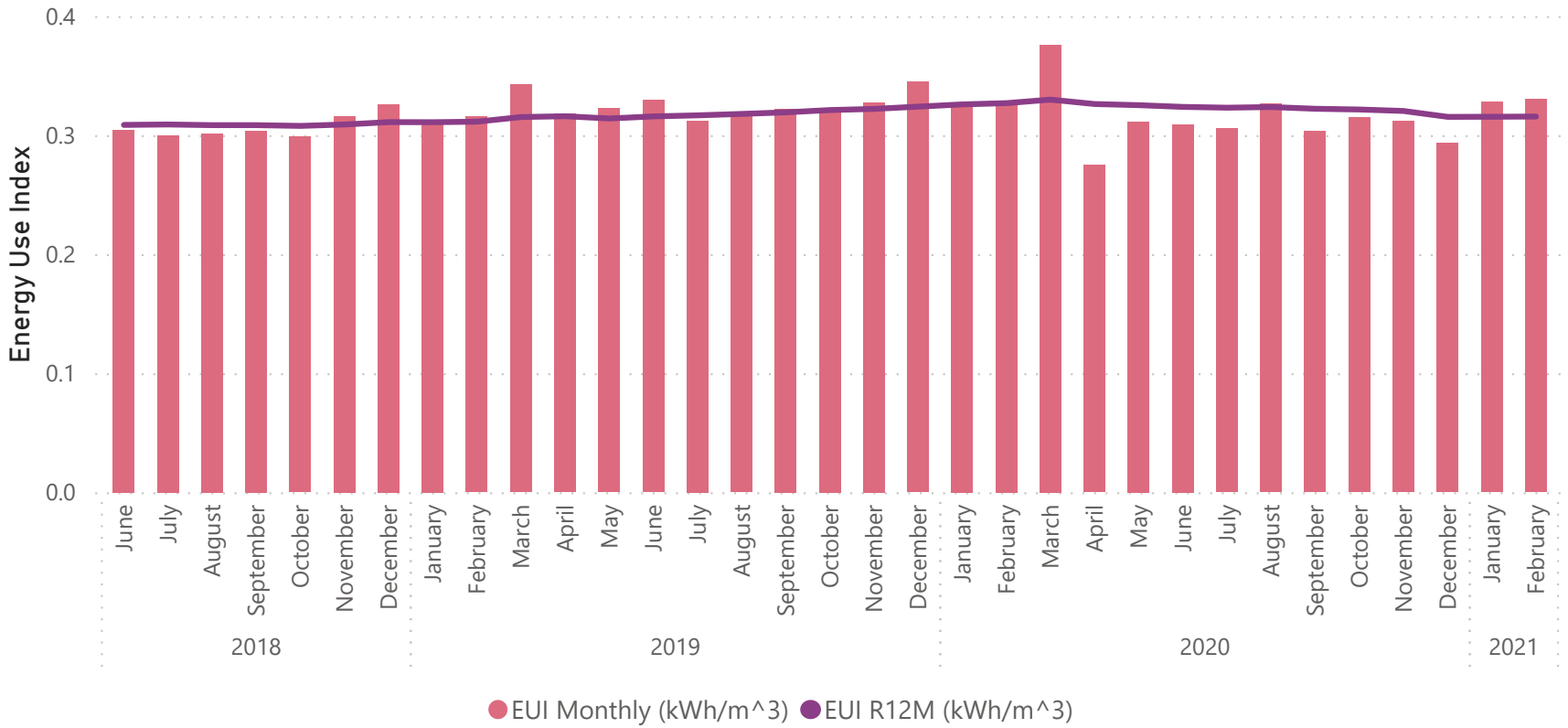
Bridger Glade Pumps Cumulative Rolling 12 Month Savings



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

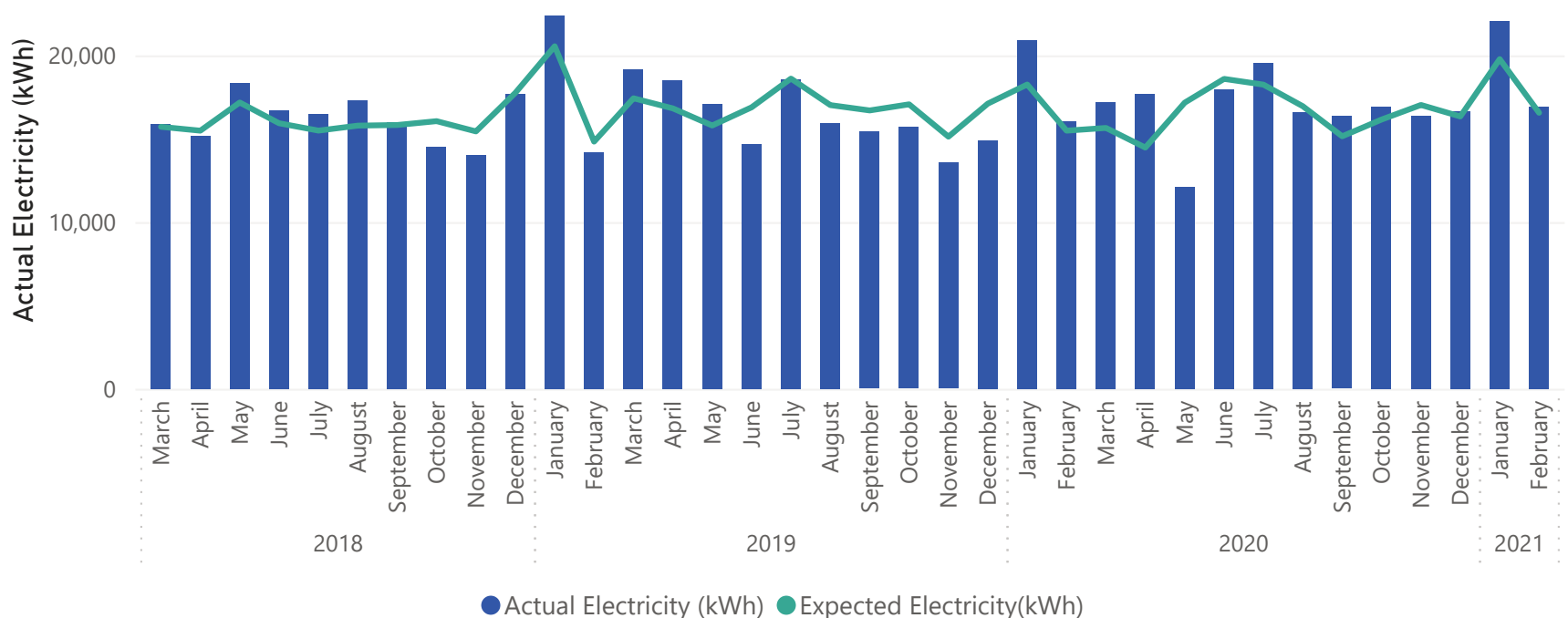
<p>-\$62 Monthly Energy Cost Savings</p>	<p>-355 Elec. Savings (kWh/mo)</p>	<p>-2% Elec. Savings (%)</p>	<p>-5,251 R12M Electricity Savings (kWh/yr)</p>	<p>-46 CO2e Savings (kg/mo)</p>
<p>-\$914 R12M Energy Cost Savings</p>				<p>-676 R12M CO2e Savings (kg/yr)</p>

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 2% more than expected in February 2021.

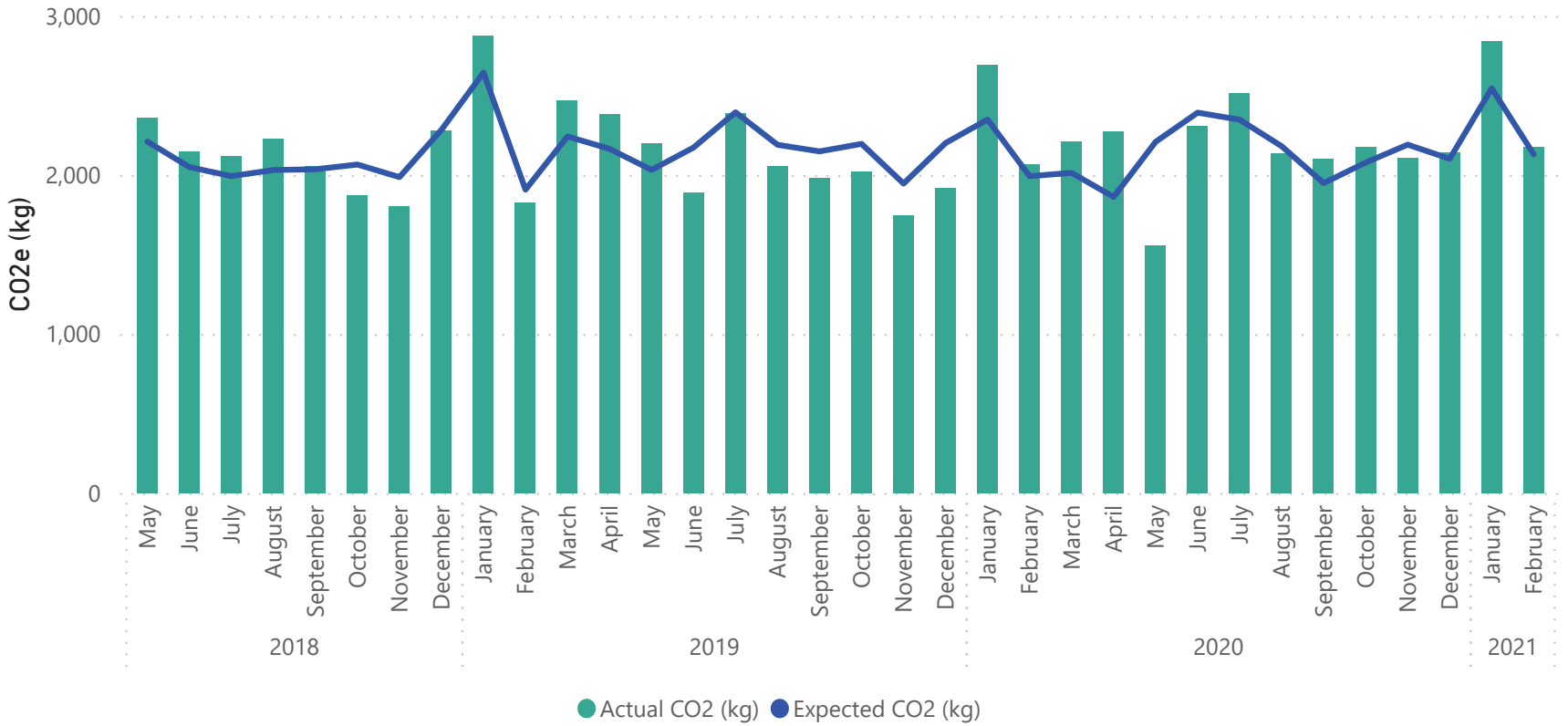
Ohope Oxidation Ponds Electricity Use Compared to Baseline (kWh)



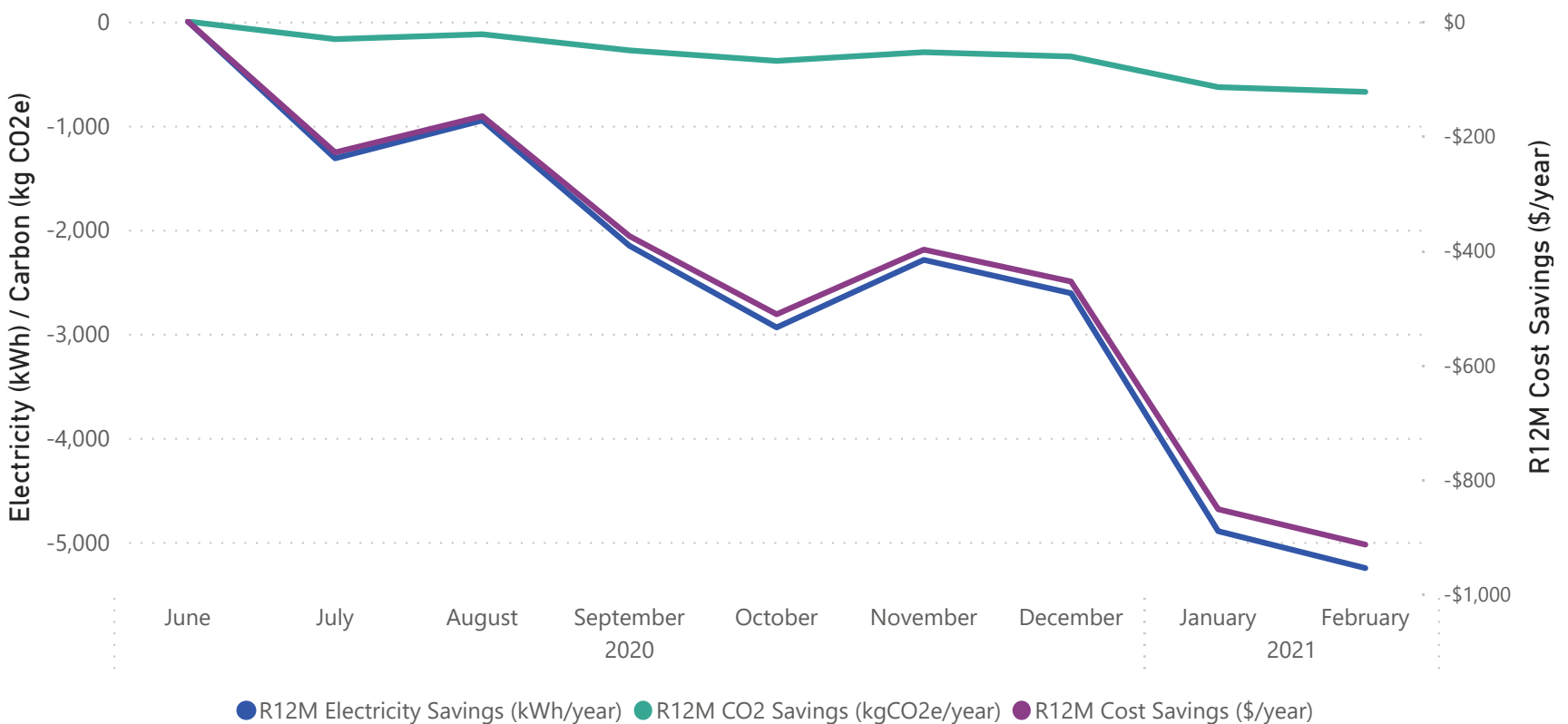
Whakatane District Council

Ohope Oxidation Ponds

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



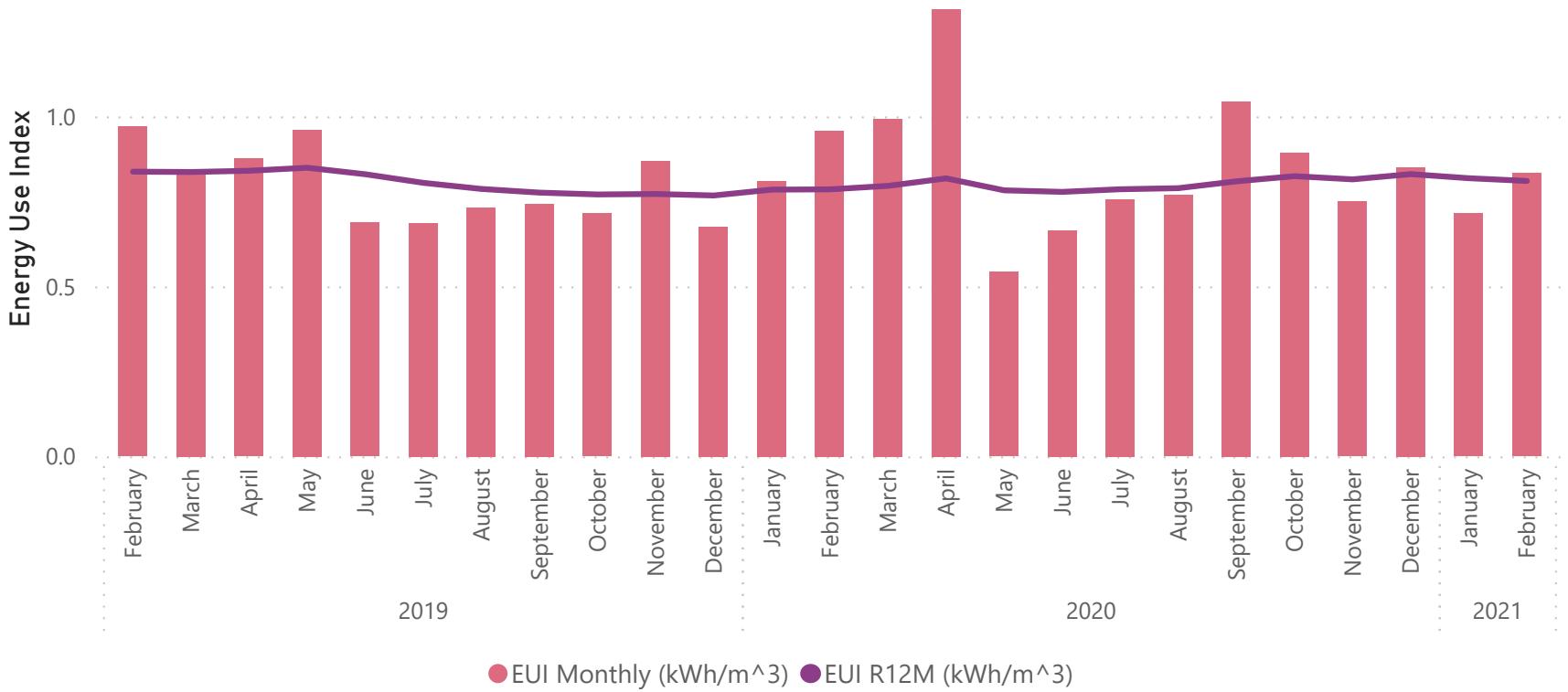
Ohope Oxidation Ponds Cumulative Rolling 12 Month Savings



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>\$985 Monthly Energy Cost Savings</p>	<p>7,428 Elec. Savings (kWh/mo)</p>	<p>20% Elec. Savings (%)</p>	<p>45,819 R12M Electricity Savings (kWh/yr)</p>	<p>956 CO2e Savings (kg/mo)</p>
<p>\$6,212 R12M Energy Cost Savings</p>				<p>5,897 R12M CO2e Savings (kg/yr)</p>

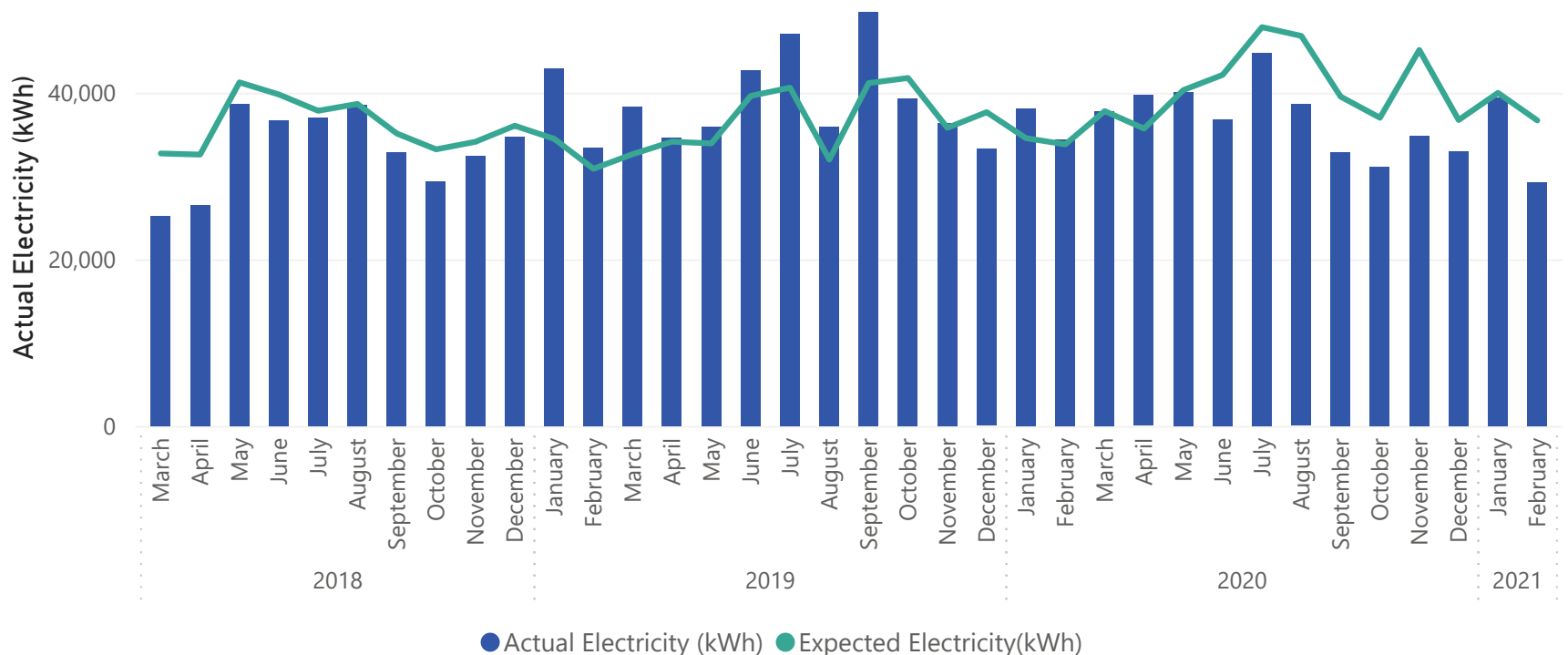
Comments:

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).

In February 2021, the oxidation ponds have achieved a 20% savings compared to baseline. Compared to February 2020, electricity demand in February 2021 has decreased by 15%.

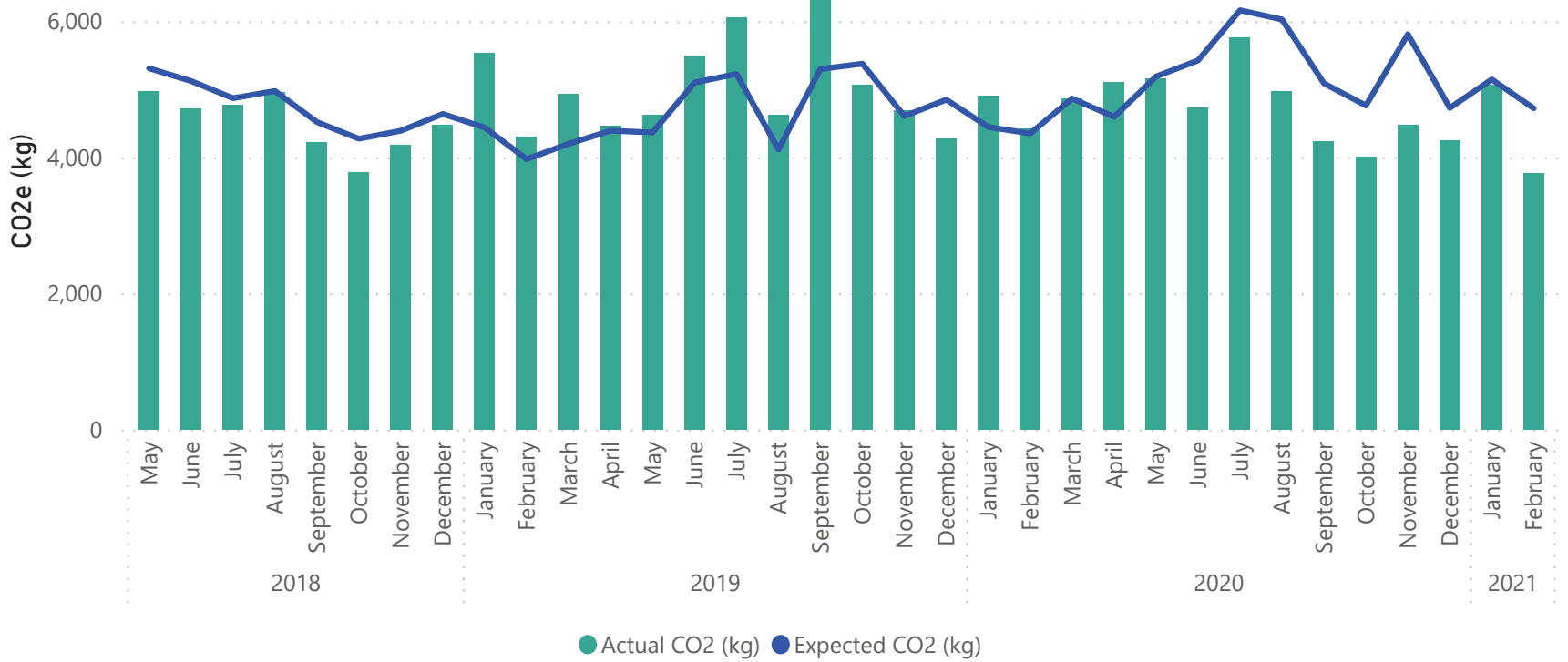
Whakatane Oxidation Ponds Electricity Use Compared to Baseline (kWh)



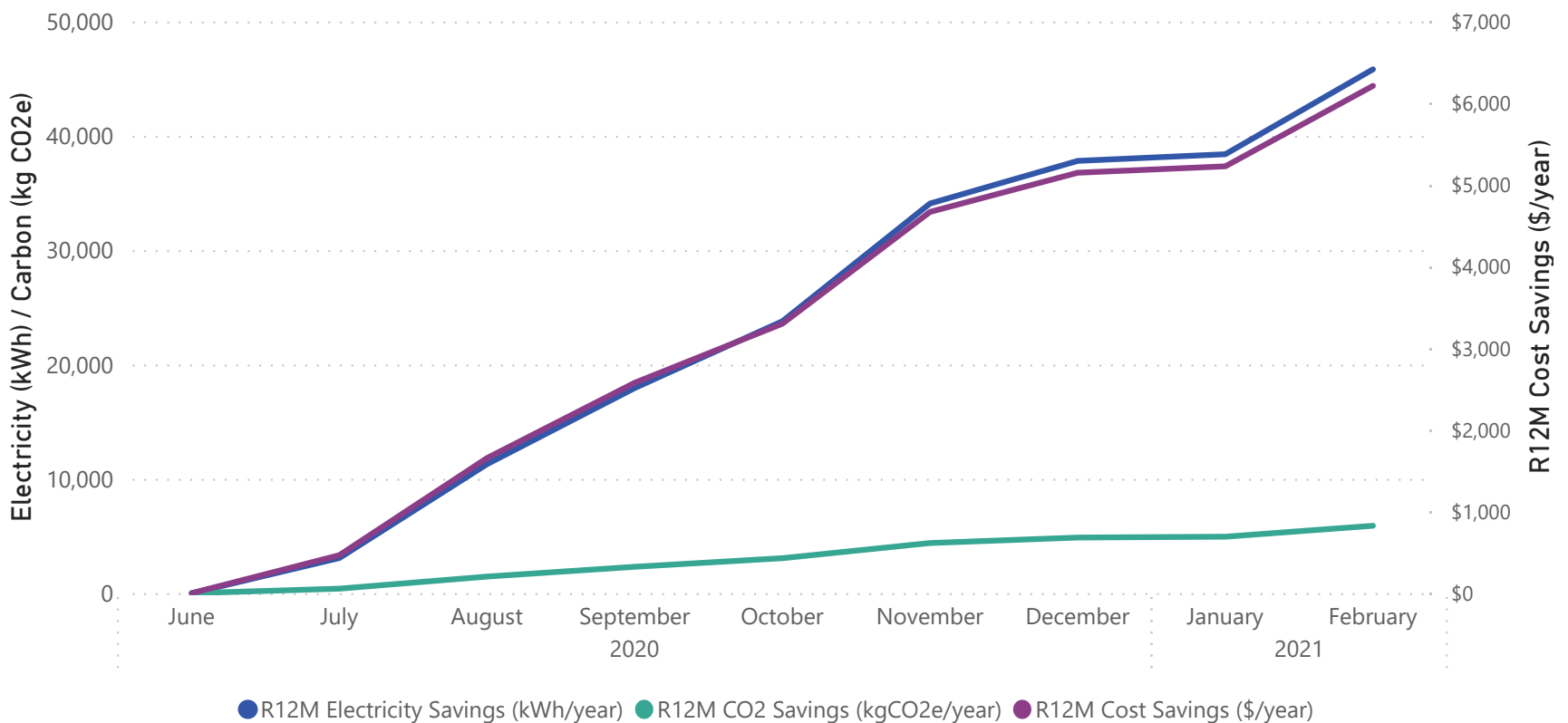
Whakatane District Council

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

