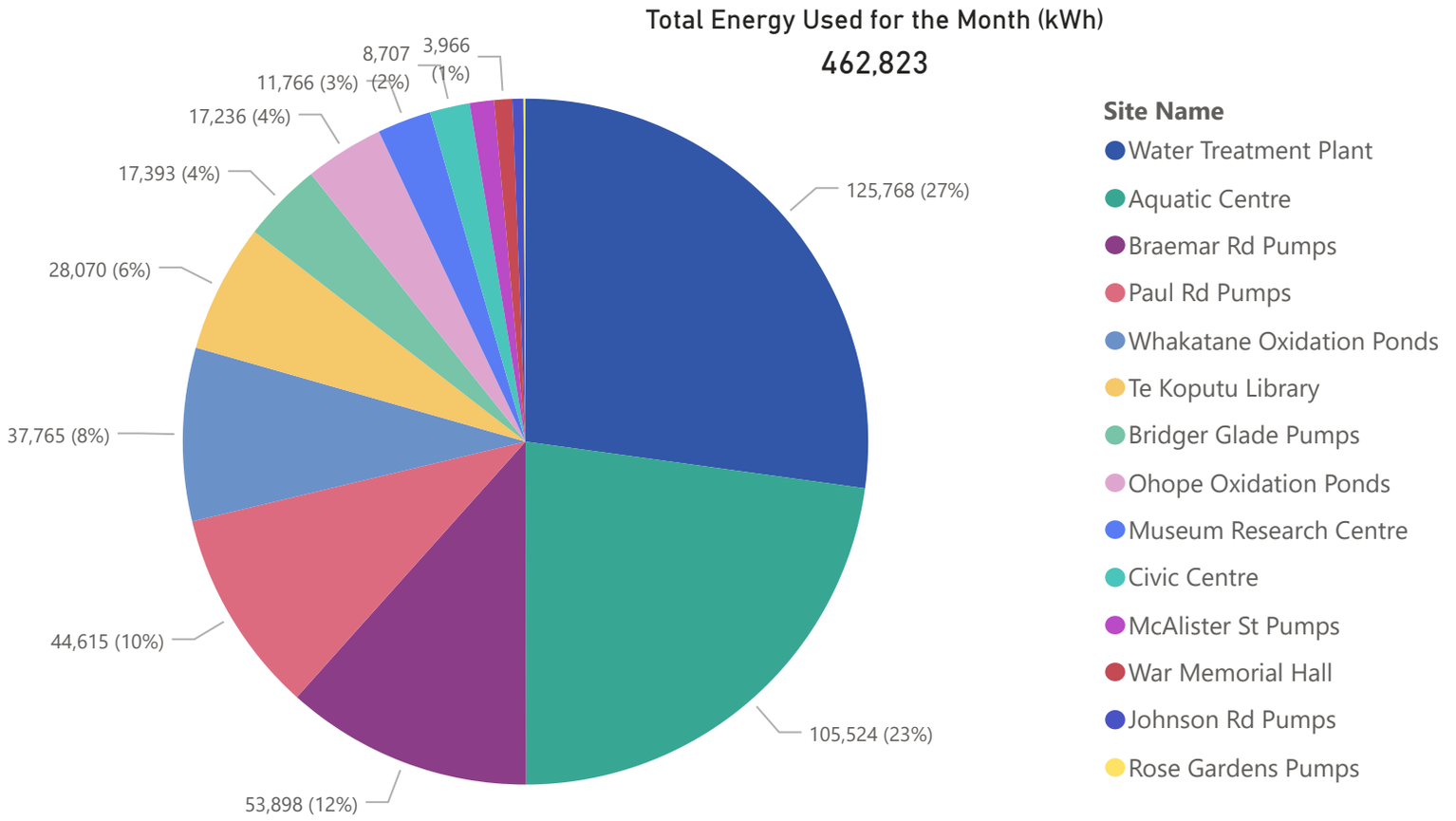
February 2022

Whakatane District Council

Summary

$7,239 Monthly Energy Cost Savings	39,249 Elec. Savings (kWh/mo)	8% Elec. Savings (%)	286,929 R12M Electricity Savings (kWh/yr)	11,445 CO2e Savings (kg/mo)
$139,226 R12M Energy Cost Savings	29,301 Gas. Savings (kWh/mo)	58% Gas. Savings (%)	1,421,004 R12M Gas Savings (kWh/yr)	345,474 R12M CO2e Savings (kg/yr)

Total Energy (kWh/Month)



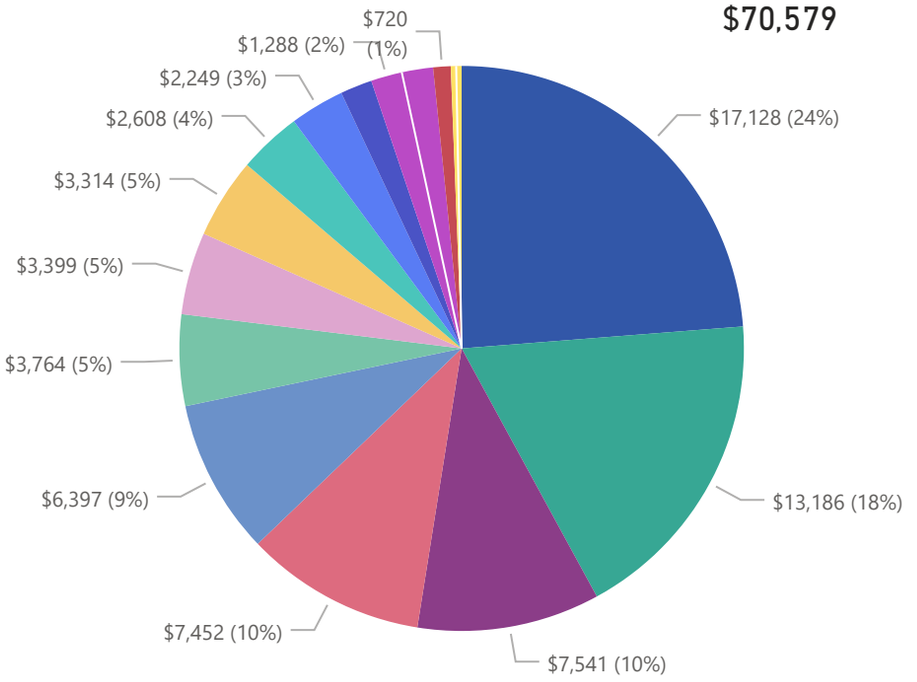
Whakatane District Council

Summary

Energy Cost ($/Month)

Energy Cost for the Month ($)

$70,579



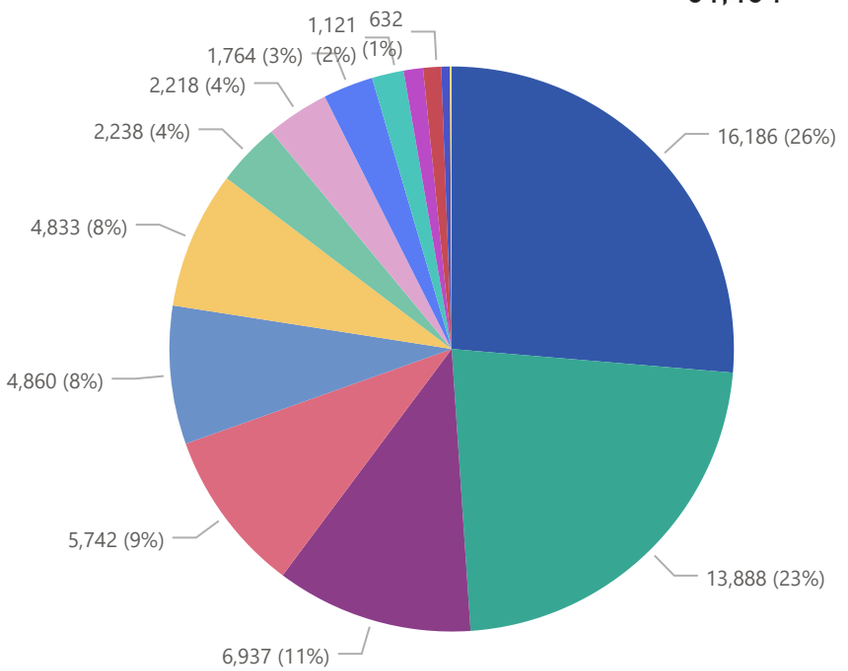
Site Name

- Water Treatment Plant
- Aquatic Centre
- Braemar Rd Pumps
- Paul Rd Pumps
- Whakatane Oxidation Ponds
- Bridger Glade Pumps
- Ohope Oxidation Ponds
- Te Koputu Library
- Civic Centre
- Museum Research Centre
- Johnson Rd Pumps
- McAlister St Pumps
- War Memorial Hall
- Rose Gardens Pumps

Carbon Emissions (kgCO2e/Month)

Carbon Emissions for the Month (kgCO2e)

61,464



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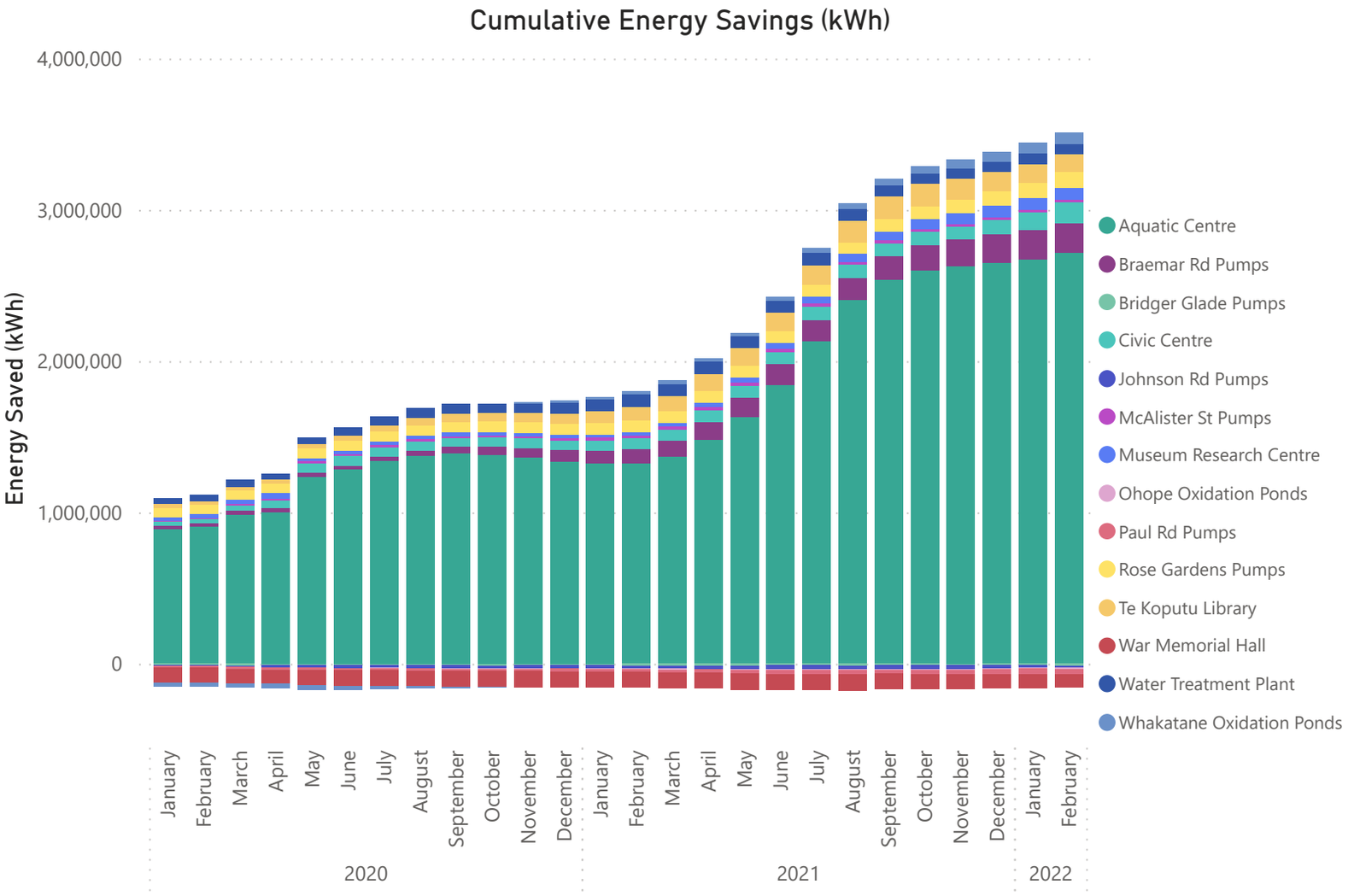
Whakatane District Council

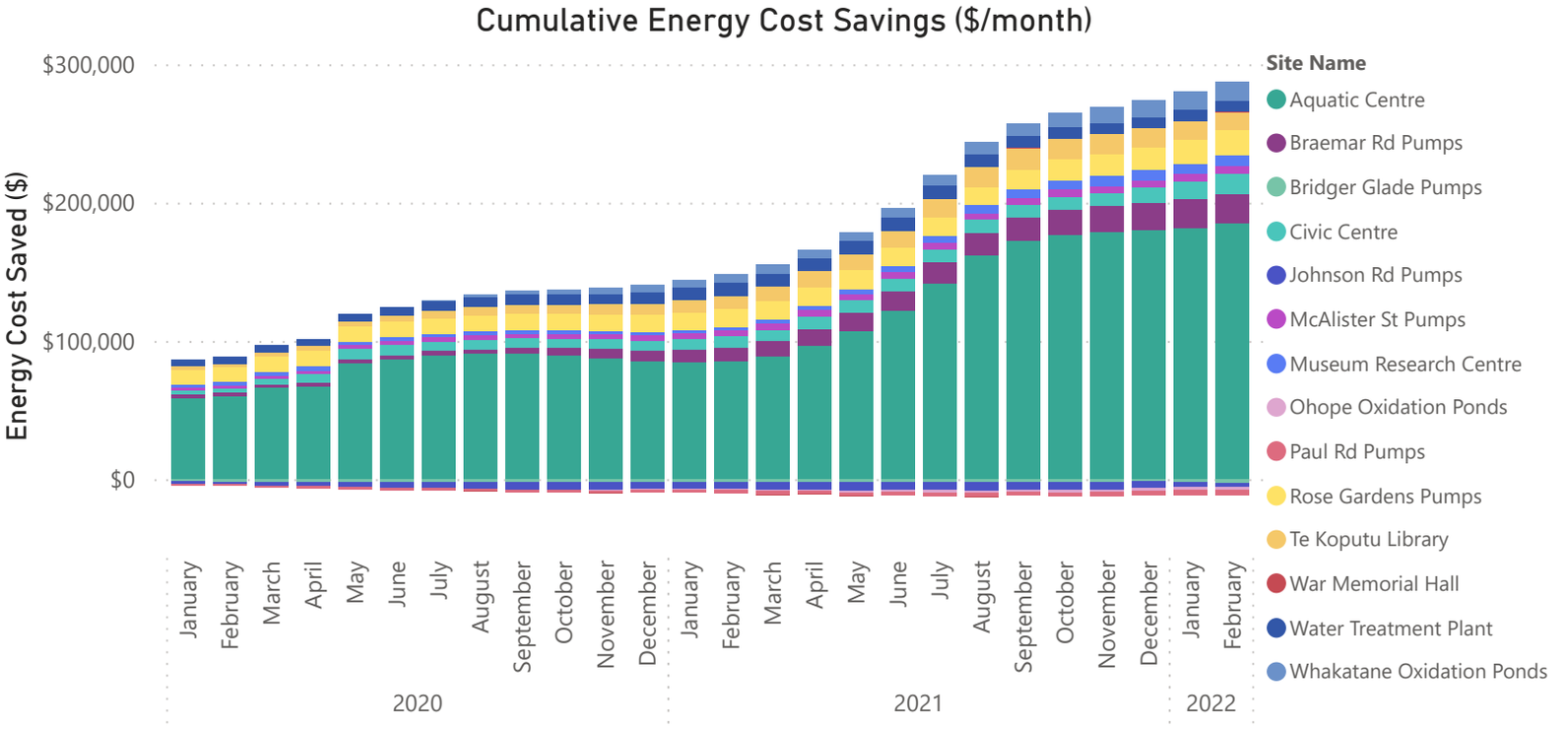
Summary

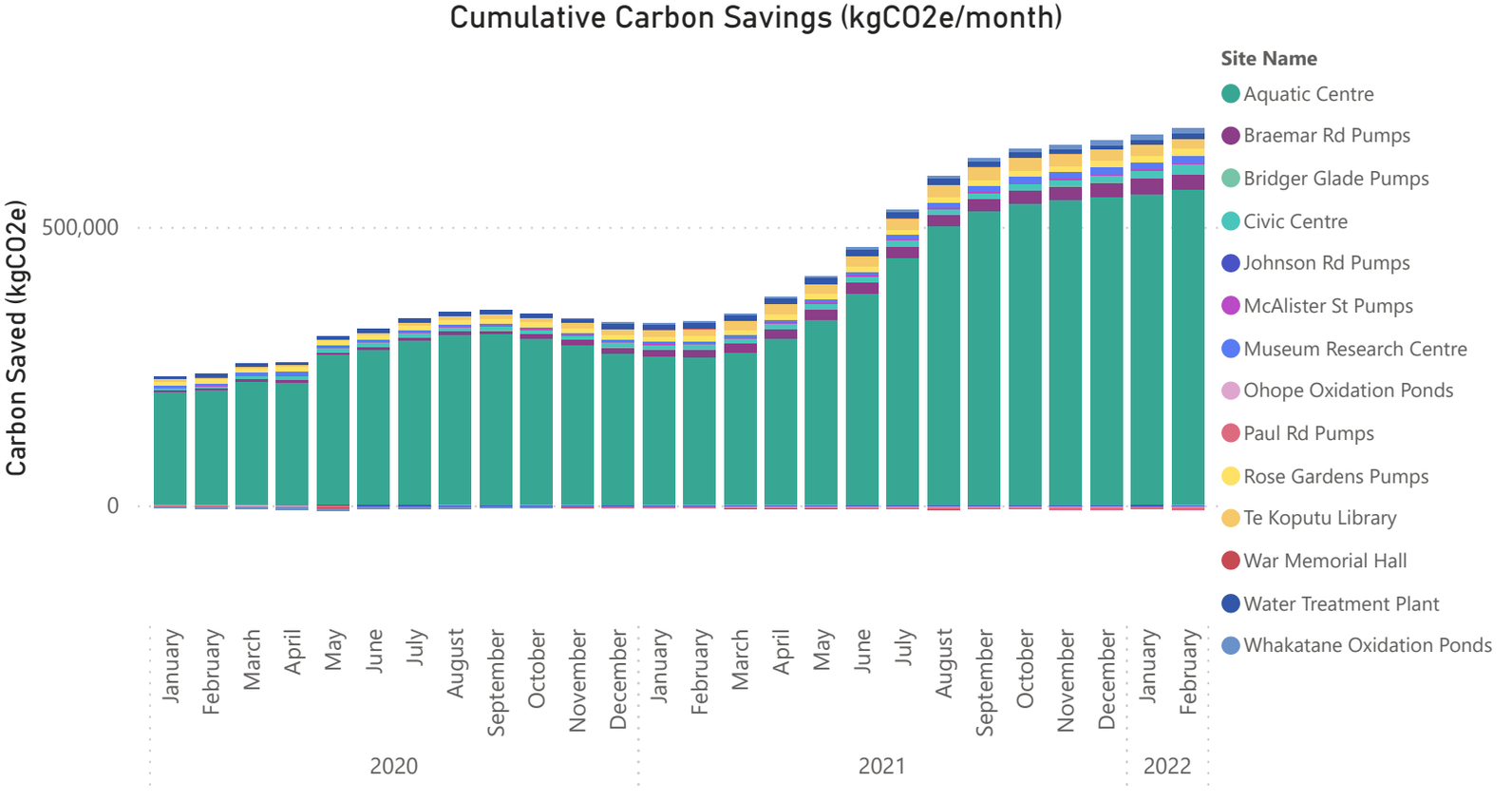


Note: New Zealand was in Covid-19 alert levels 3 and 4 from 23 March until 12 May, 2020. Energy use may have been impacted during this time

Whakatane District Council

Summary





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Whakatane District Council

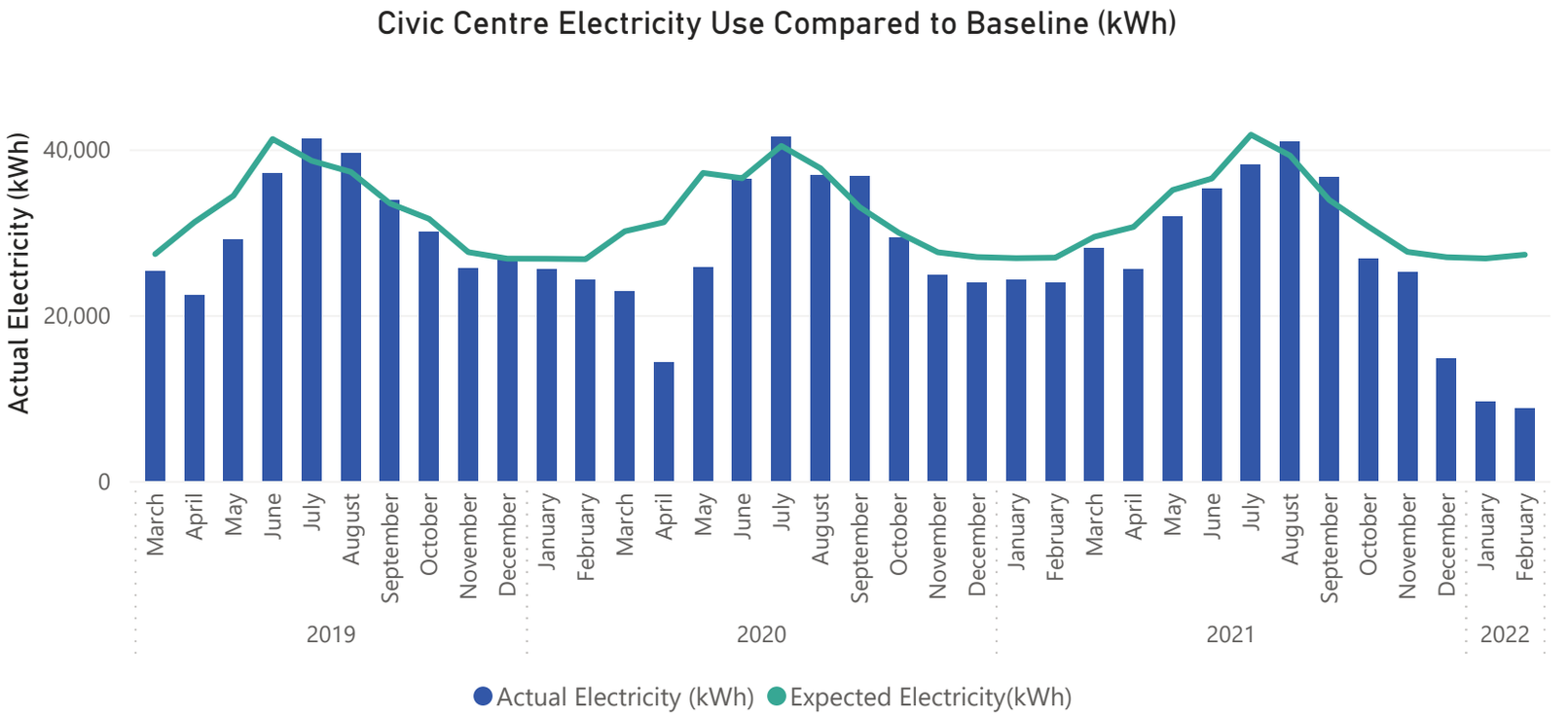
Civic Centre

$1,988 Monthly Energy Cost Savings	18,578 Elec. Savings (kWh/mo)	68% Elec. Savings (%)	64,683 R12M Electricity Savings (kWh/yr)	2,361 CO2e Savings (kg/mo)
$6,974 R12M Energy Cost Savings				7,883 R12M CO2e Savings (kg/yr)

Comments:

Electric vehicle charging stations have been in use from March 2021, non-routine adjustments are on-going to account for the increased electricity use.

Electricity savings are higher than usual for the month, the Civic Centre renovation has displaced many office workers, which has decreased electricity demand.



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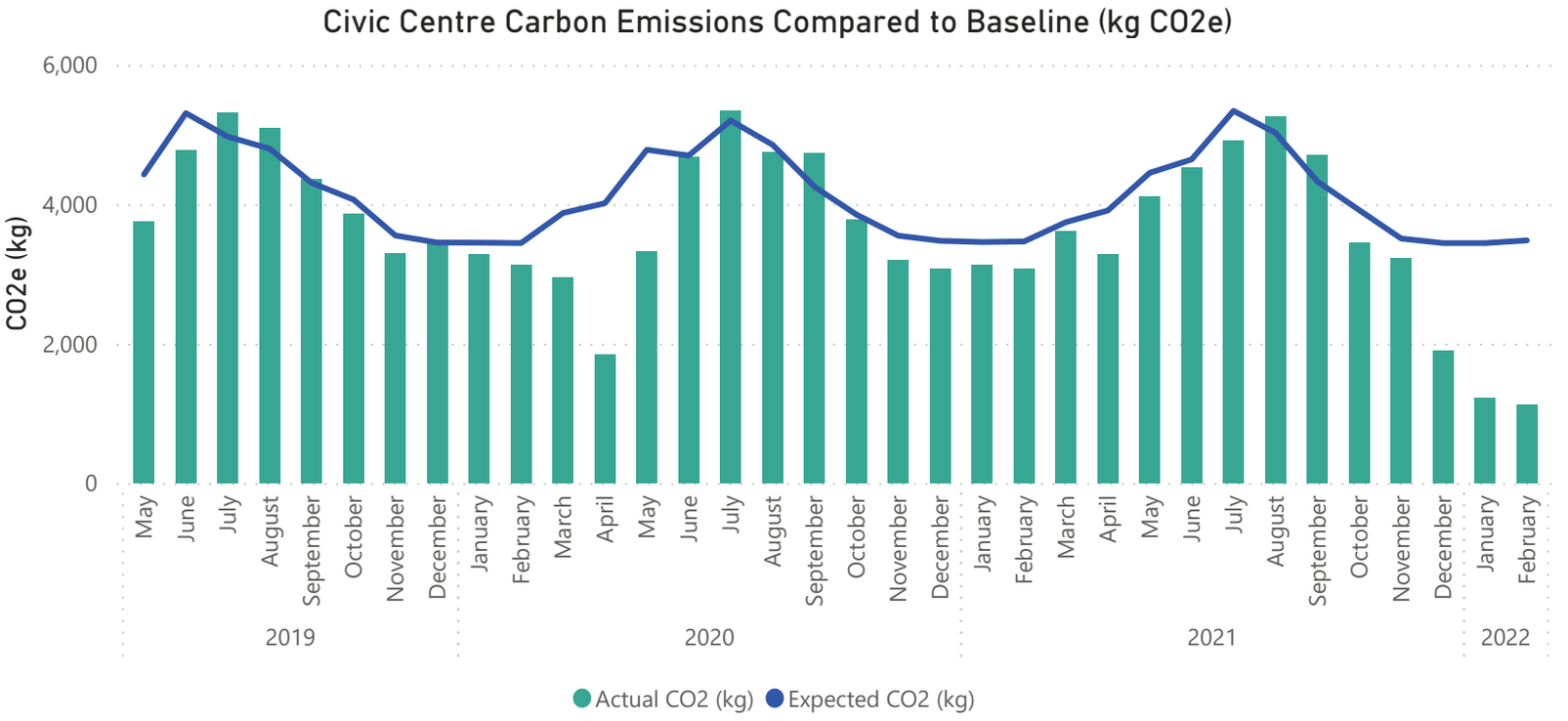
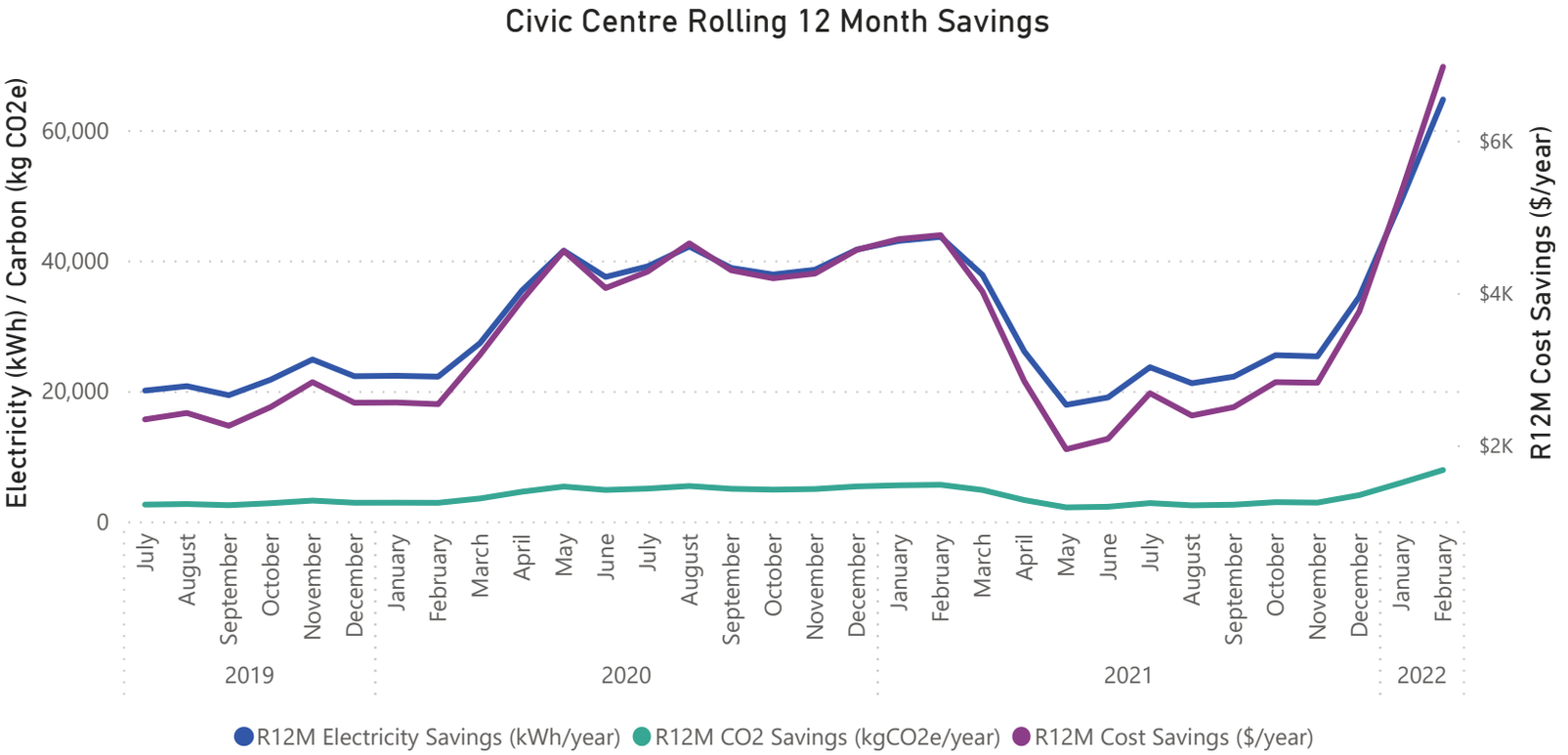
Whakatane District Council

Civic Centre





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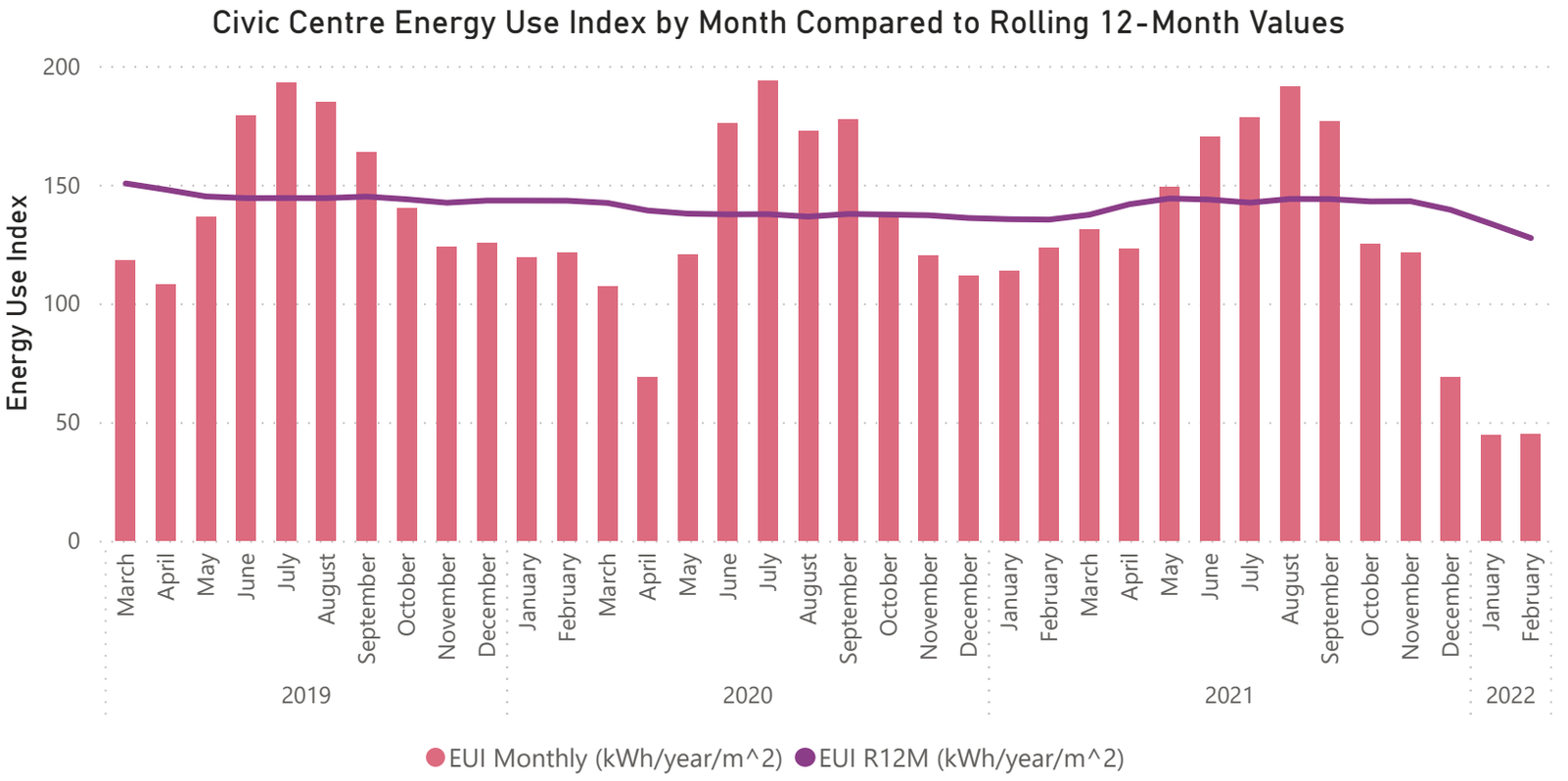
Whakatane District Council

Civic Centre



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Whakatane District Council

Aquatic Centre

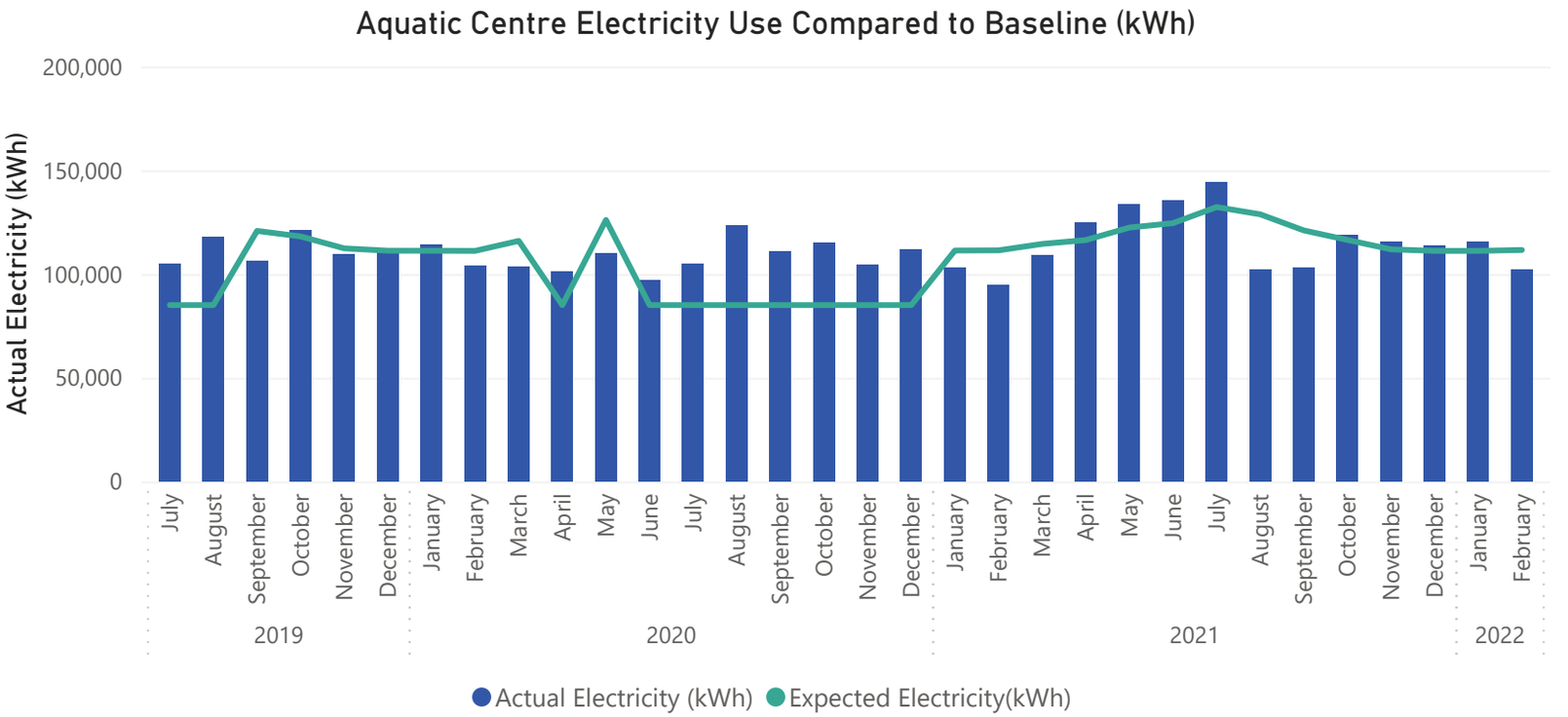
$3,317 Monthly Energy Cost Savings	9,535 Elec. Savings (kWh/mo)	9% Elec. Savings (%)	4,020 R12M Electricity Savings (kWh/yr)	8,317 CO2e Savings (kg/mo)
$99,545 R12M Energy Cost Savings	32,548 Gas. Savings (kWh/mo)	90% Gas. Savings (%)	1,387,698 R12M Gas Savings (kWh/yr)	301,782 R12M CO2e Savings (kg/yr)

Comments:

The outdoor pool is now open year-round and uses a baseline that reflects this change.

Unlike recent months, February 2022 achieved electricity savings, however, February has usually been a month of savings. Natural gas savings are still excellent, achieving 90% for the month of February 2022.

Rolling 12 month savings have reached a new record, with nearly $100,000 and 300 tonnes CO2e saved per year.



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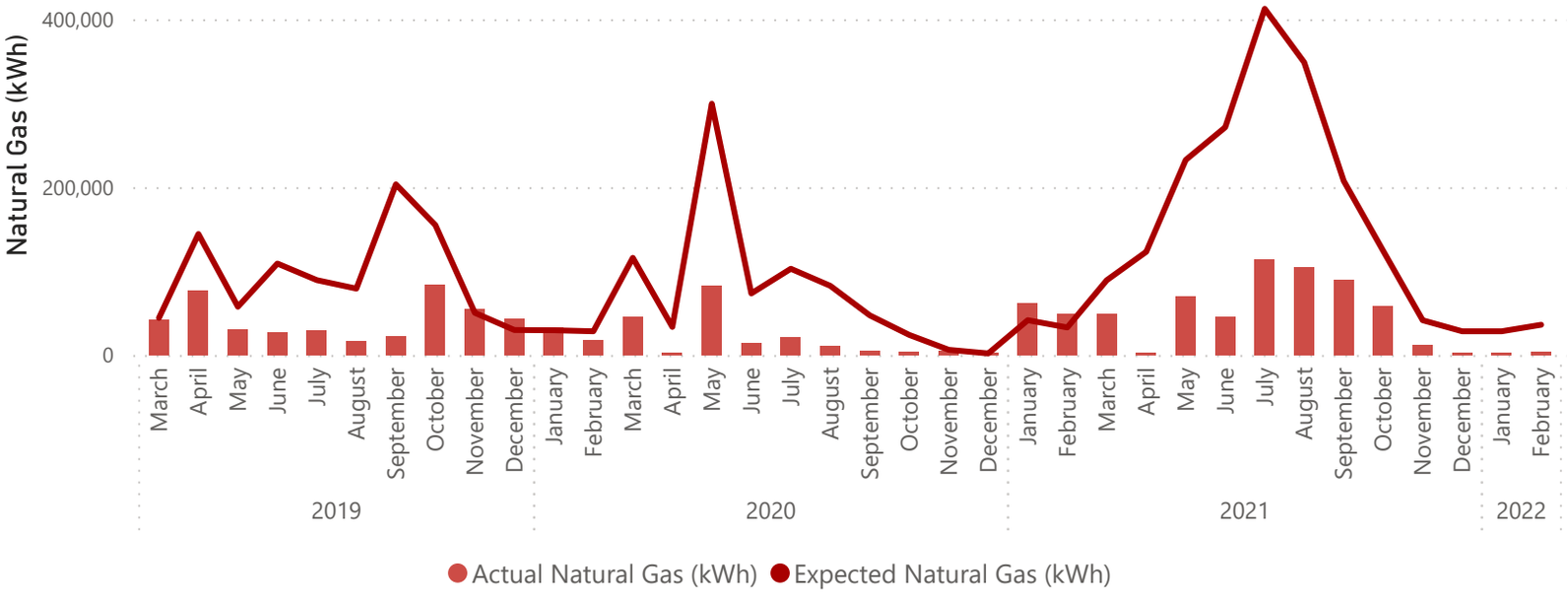
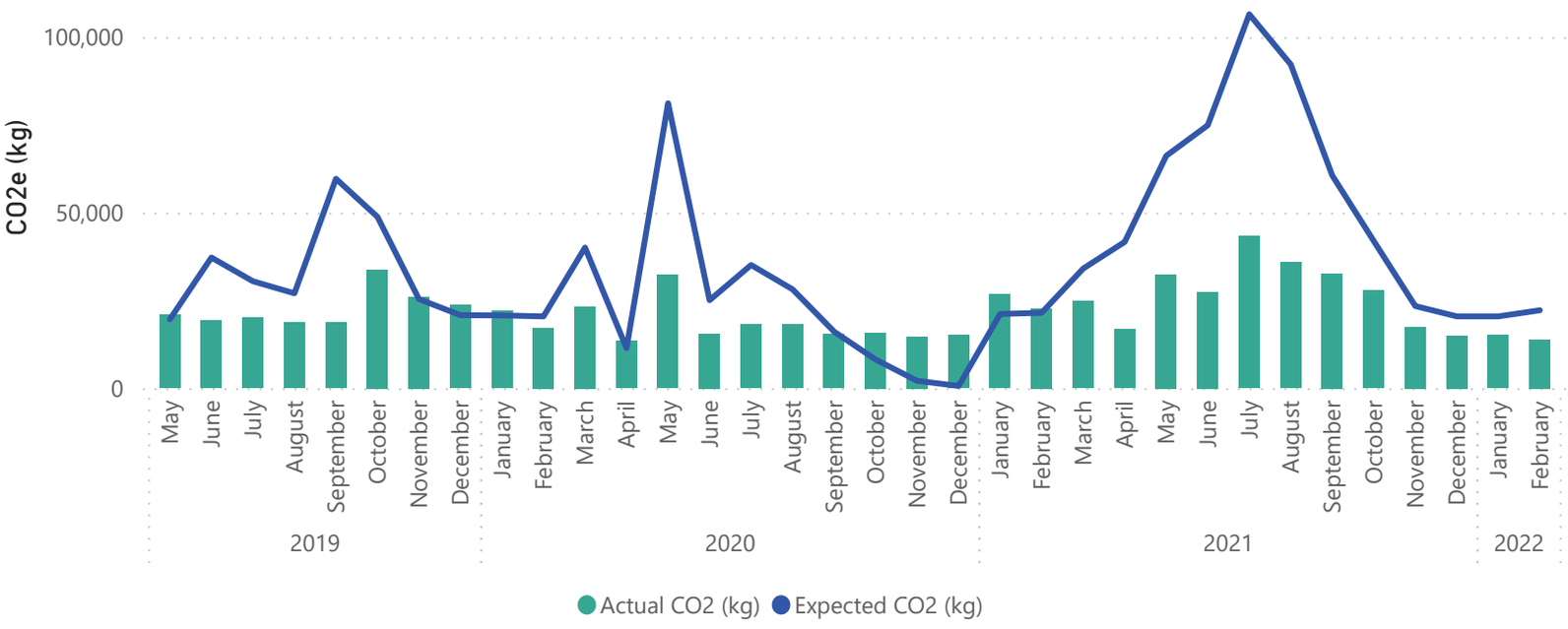
Whakatane District Council

Aquatic Centre

Aquatic Centre Natural Gas Compared to Baseline (kWh)



Aquatic Centre Carbon Emissions Compared to Baseline (kg CO2e)



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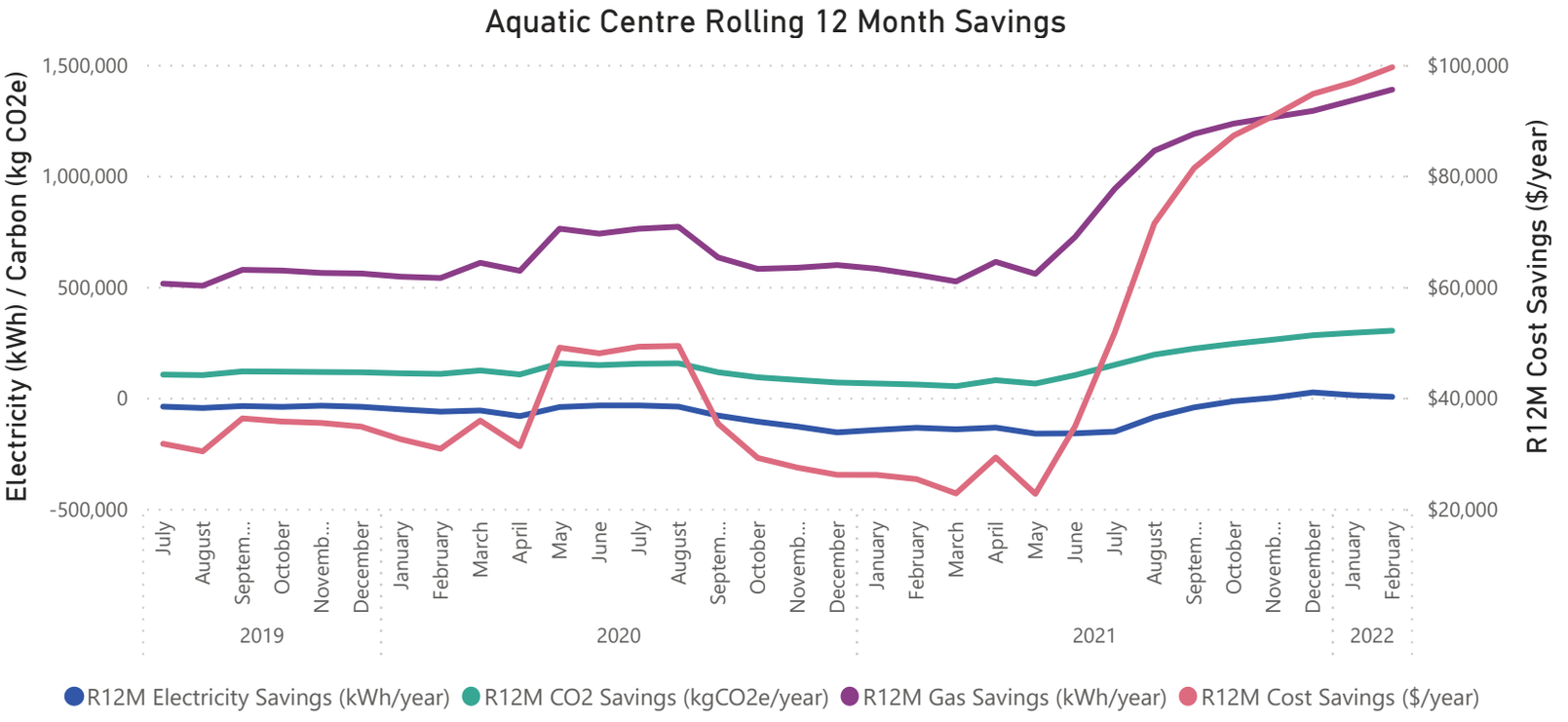
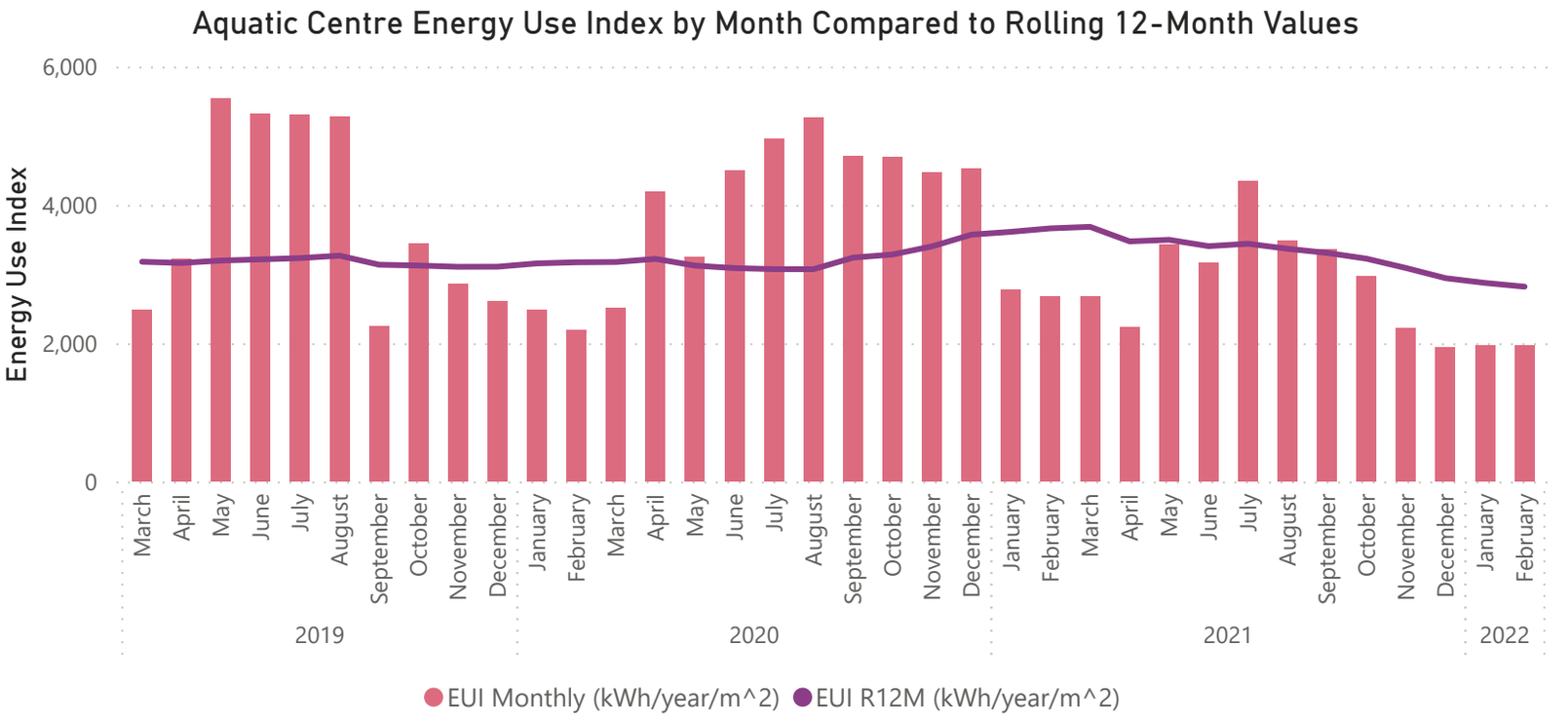
Whakatane District Council

Aquatic Centre





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Whakatane District Council

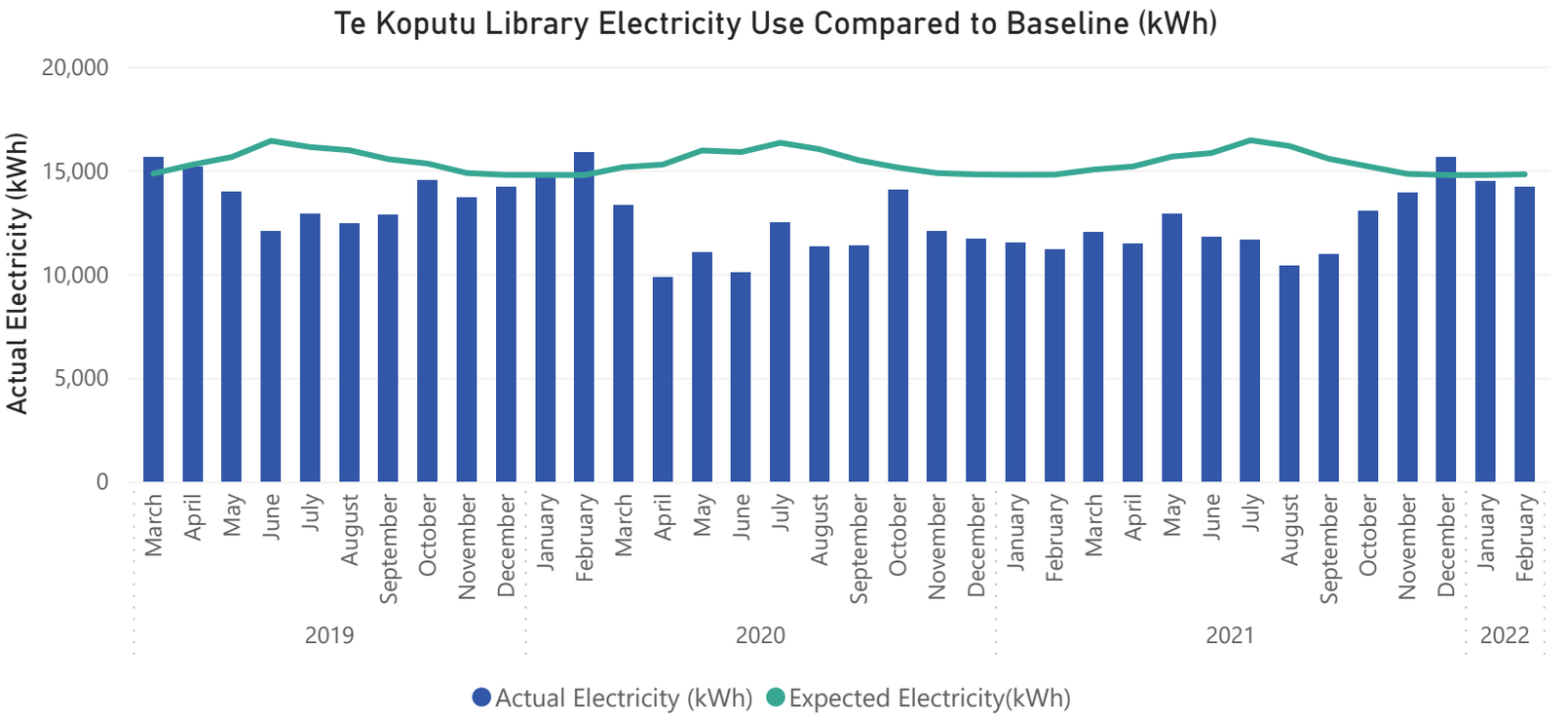
Te Koputu Library

-$460 Monthly Energy Cost Savings	584 Elec. Savings (kWh/mo)	4% Elec. Savings (%)	31,866 R12M Electricity Savings (kWh/yr)	-1,469 CO2e Savings (kg/mo)
$3,575 R12M Energy Cost Savings	-7,140 Gas. Savings (kWh/mo)	-106% Gas. Savings (%)	-845 R12M Gas Savings (kWh/yr)	3,971 R12M CO2e Savings (kg/yr)

Comments:

Gas use was more than twice of expected. Average ambient temperature was cooler in February, however, relative humidity was higher.

Dehumidification loads were significant in February and this requires both electricity for cooling as well as gas for re-heat. Control of relative humidity has improved, however further investigation is needed to understand if this is optimised or if the cooling and heating coils are fighting each other excessively.



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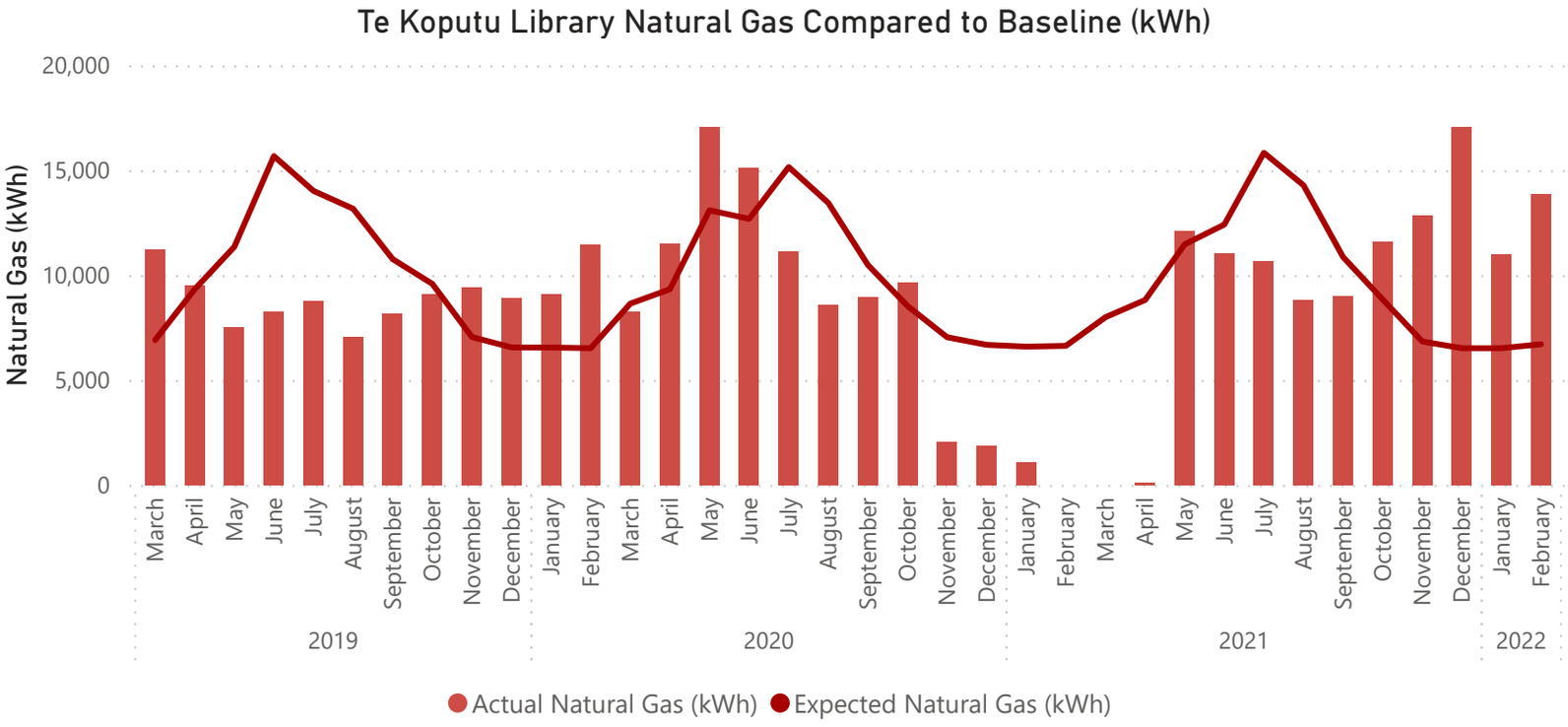
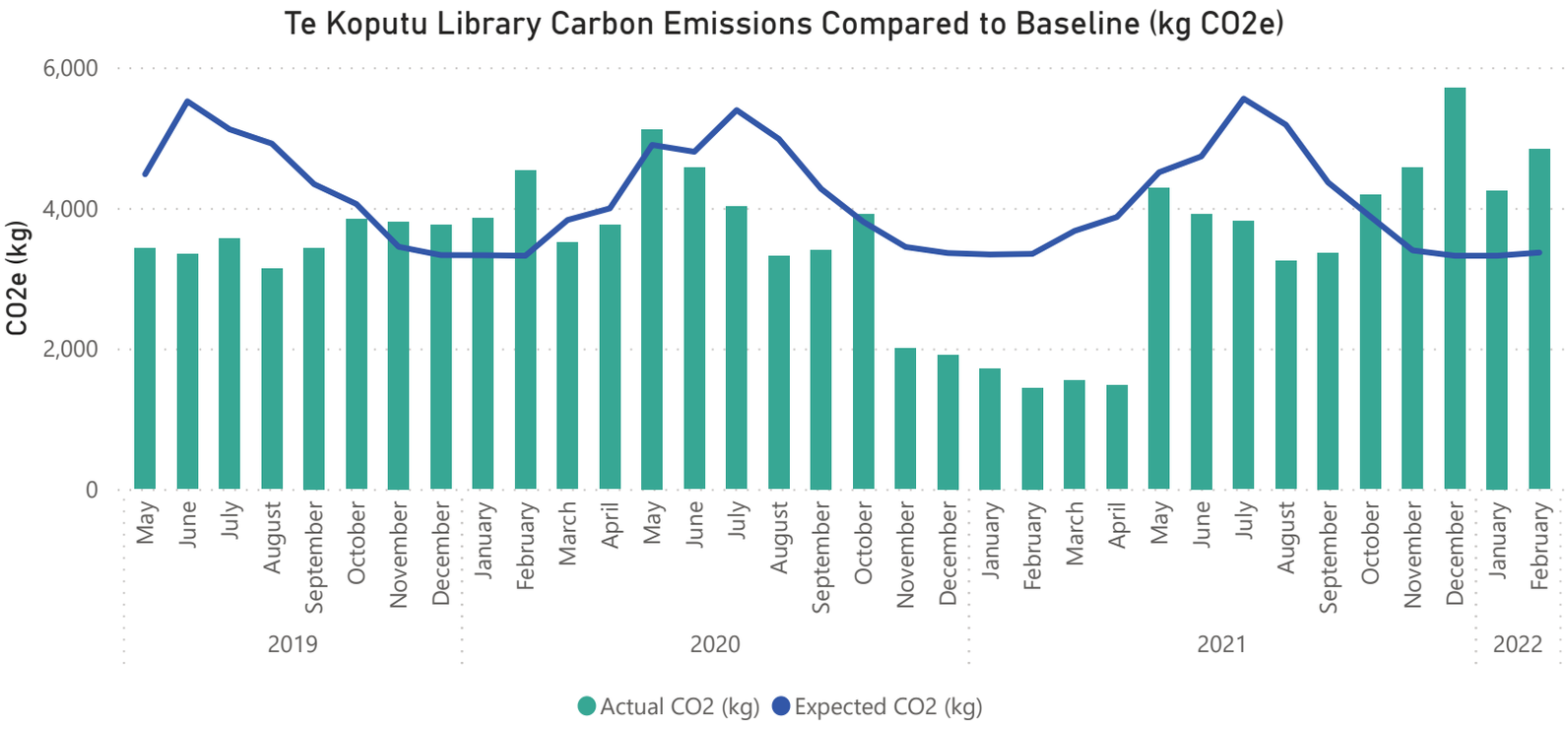
Whakatane District Council

Te Koputu Library





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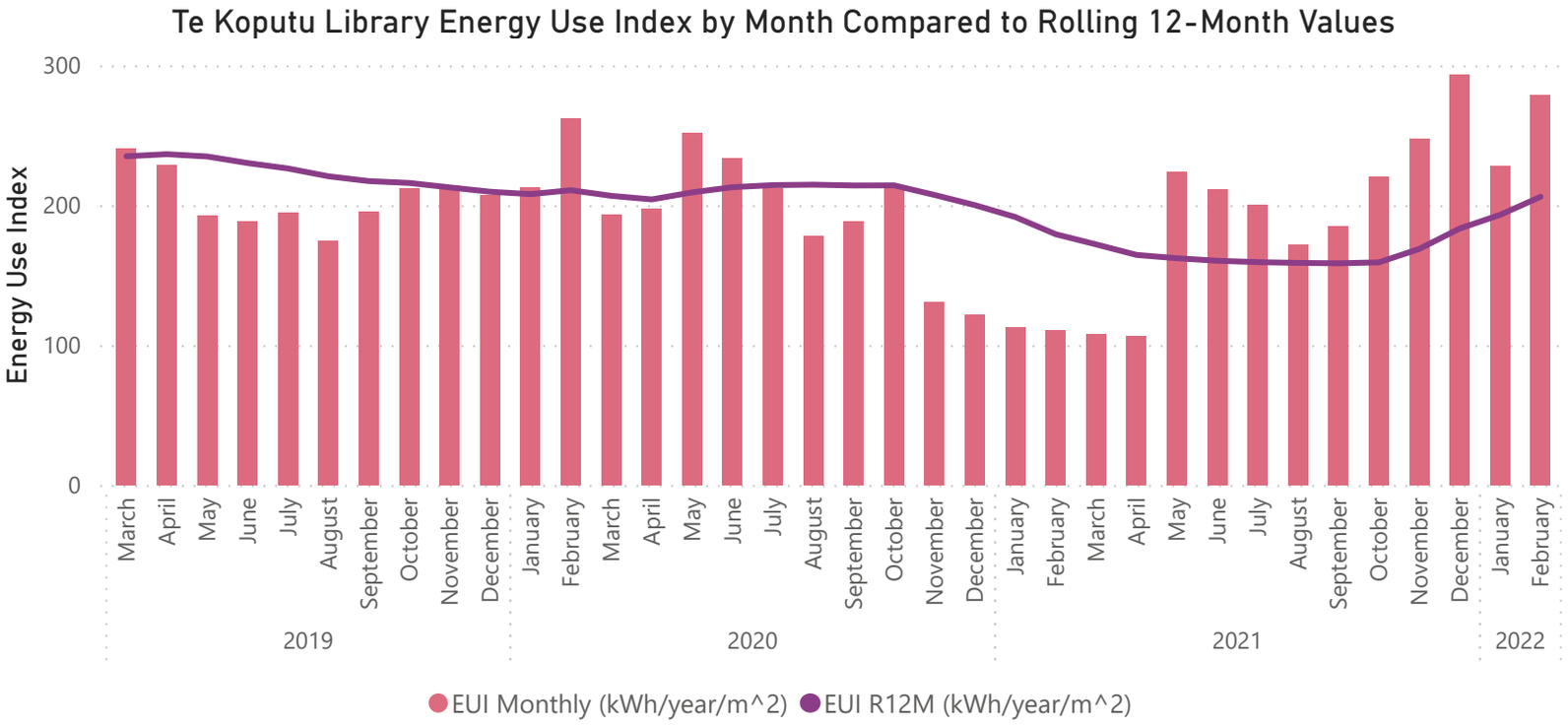
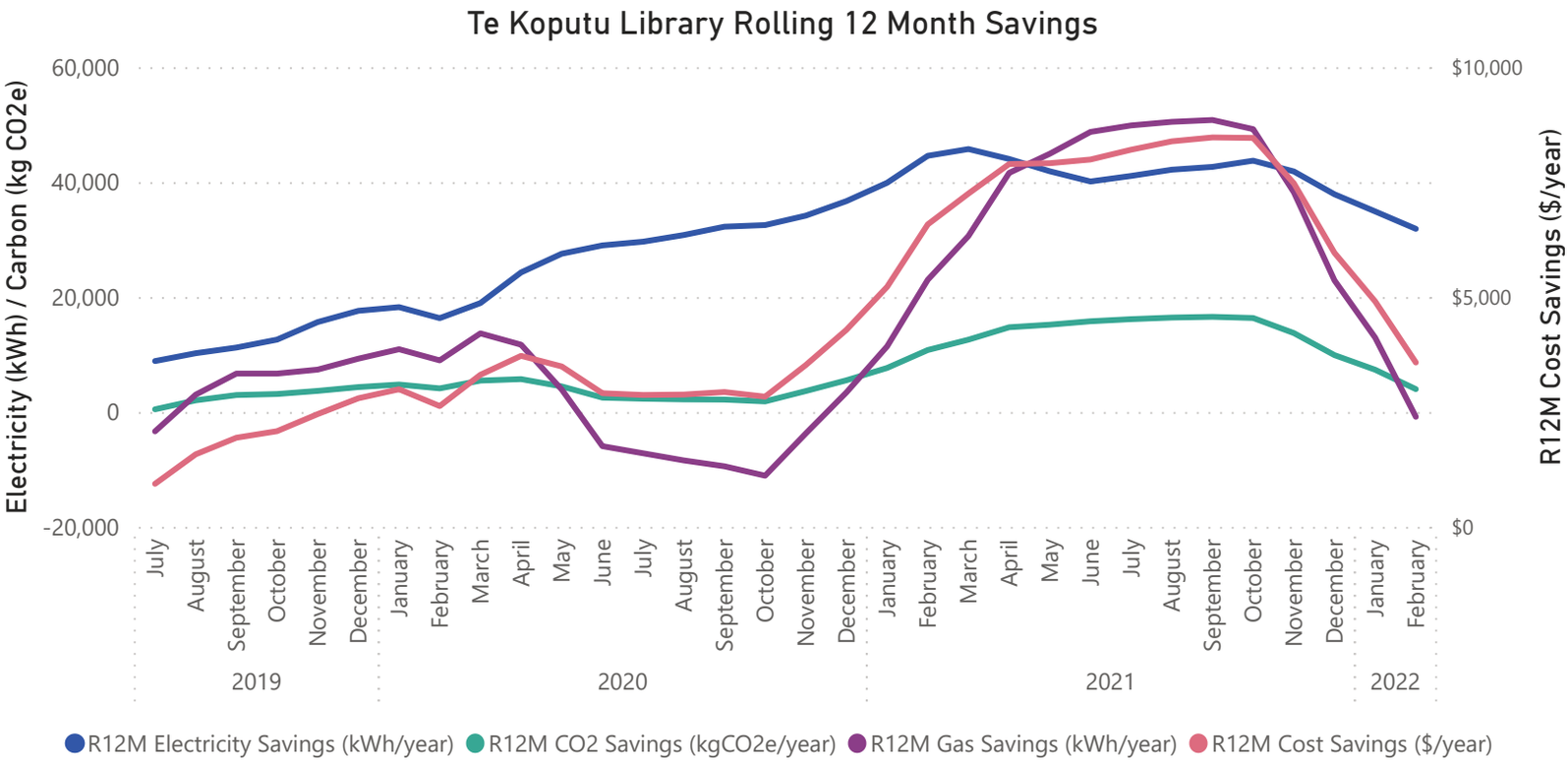
Whakatane District Council

Te Koputu Library





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Whakatane District Council

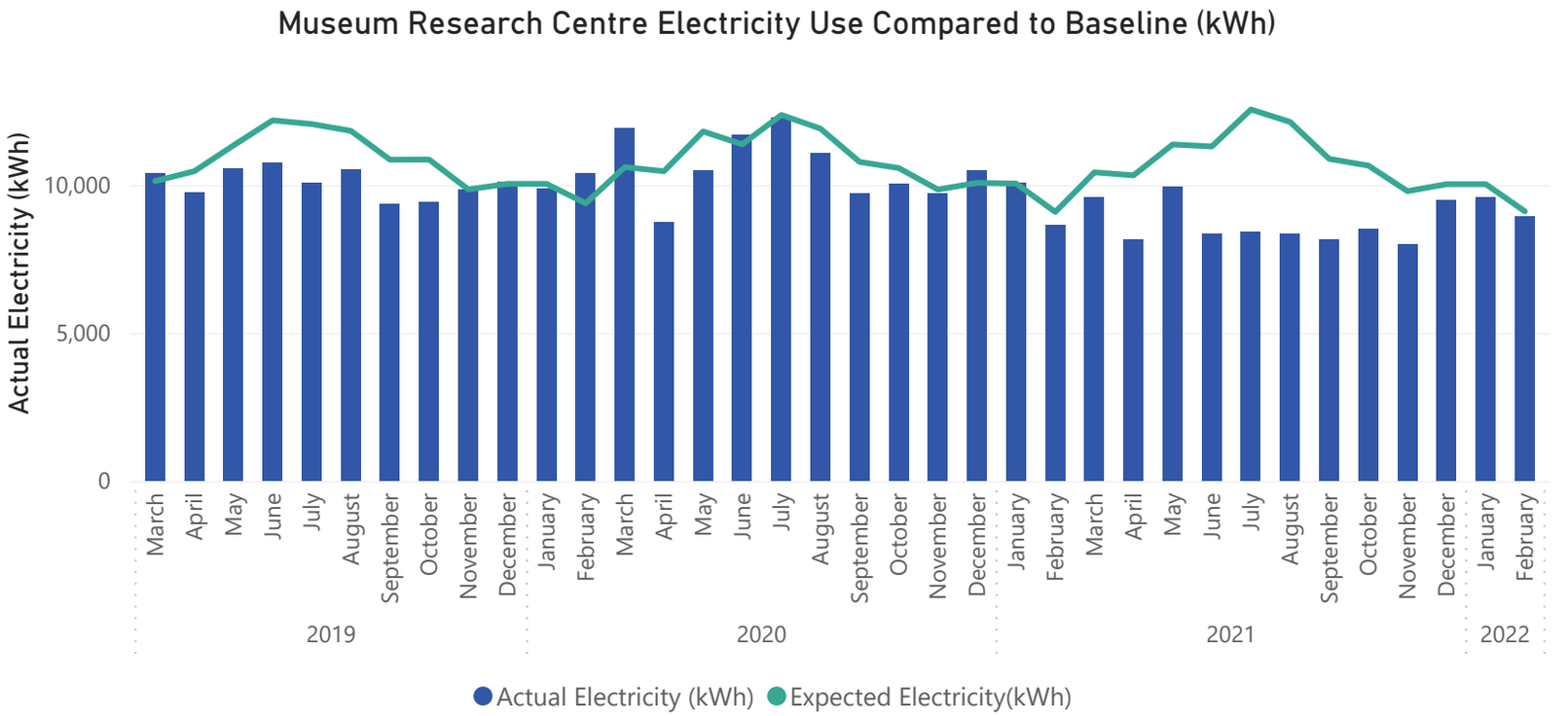
Museum and Research Centre

$253 Monthly Energy Cost Savings	174 Elec. Savings (kWh/mo)	2% Elec. Savings (%)	23,053 R12M Electricity Savings (kWh/yr)	716 CO2e Savings (kg/mo)
$5,228 R12M Energy Cost Savings	3,200 Gas. Savings (kWh/mo)	53% Gas. Savings (%)	35,892 R12M Gas Savings (kWh/yr)	10,748 R12M CO2e Savings (kg/yr)

Comments:

The rolling 12 month EUI continues to drop for the Museum and Research Centre, which is good. Electricity savings were achieved in February 2022 which is excellent, given that more council staff are occupying the building as the Civic Centre is being re-developed. Natural gas use has proven to be relatively steady over the past nine months, which demonstrates better control.

Some savings reflect the recent work on the HVAC system, operation of the air handling unit has been changed as well as modifying timing on air conditioning. Some of the savings in August and September 2021 are likely attributed to the Museum and Research Centre being closed to public during alert level 3.



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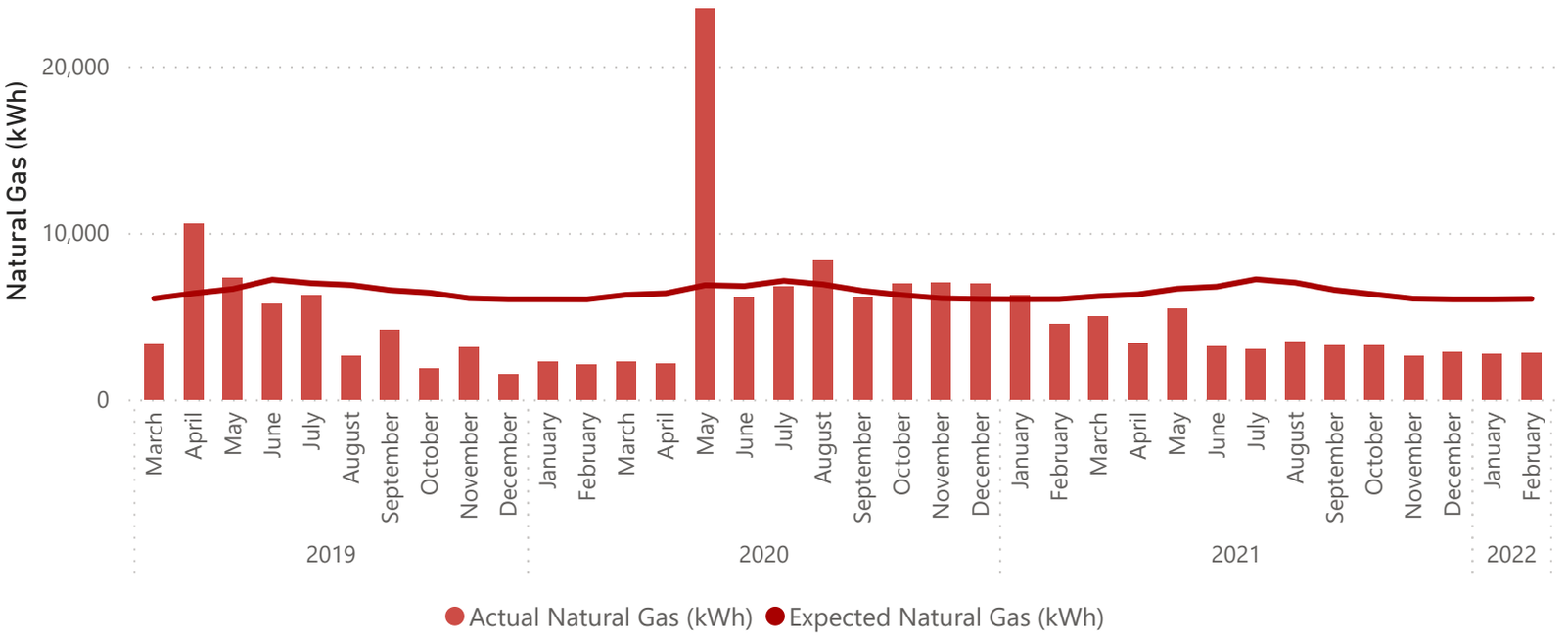
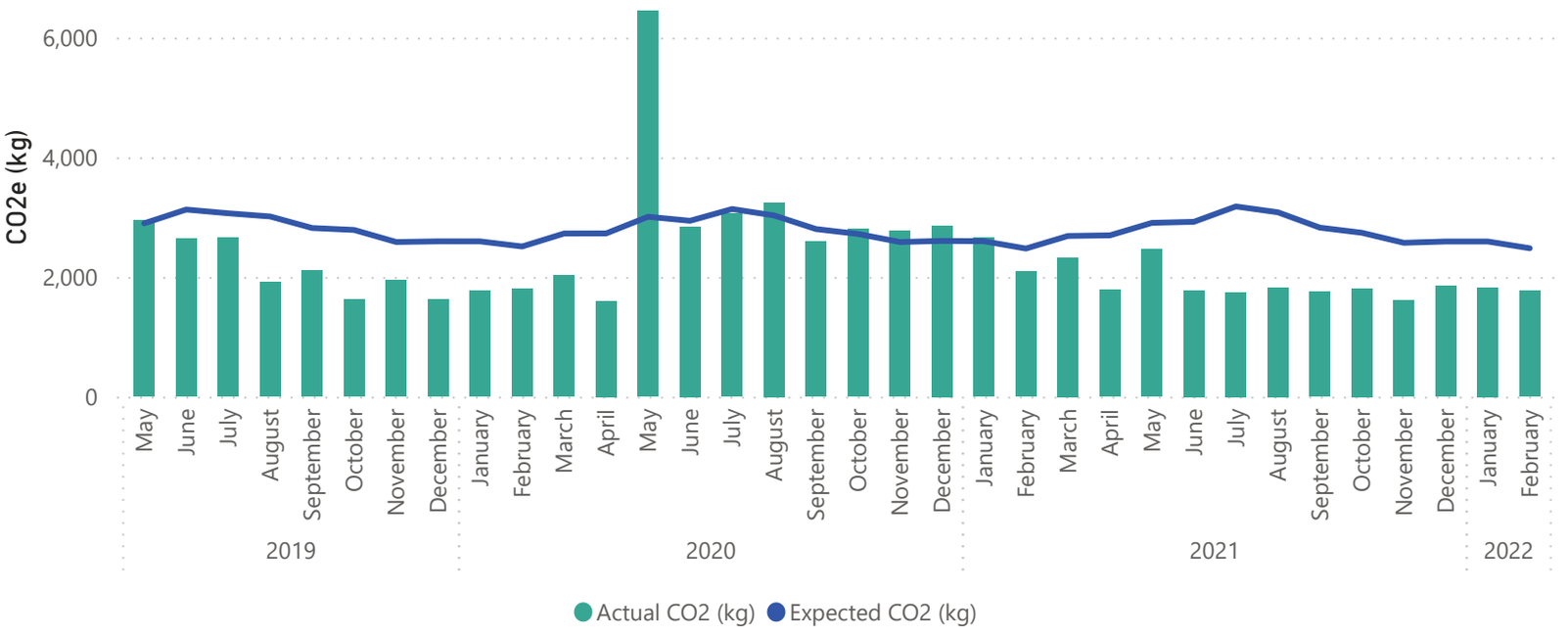
Whakatane District Council

Museum and Research Centre

Museum Research Centre Natural Gas Compared to Baseline (kWh)



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



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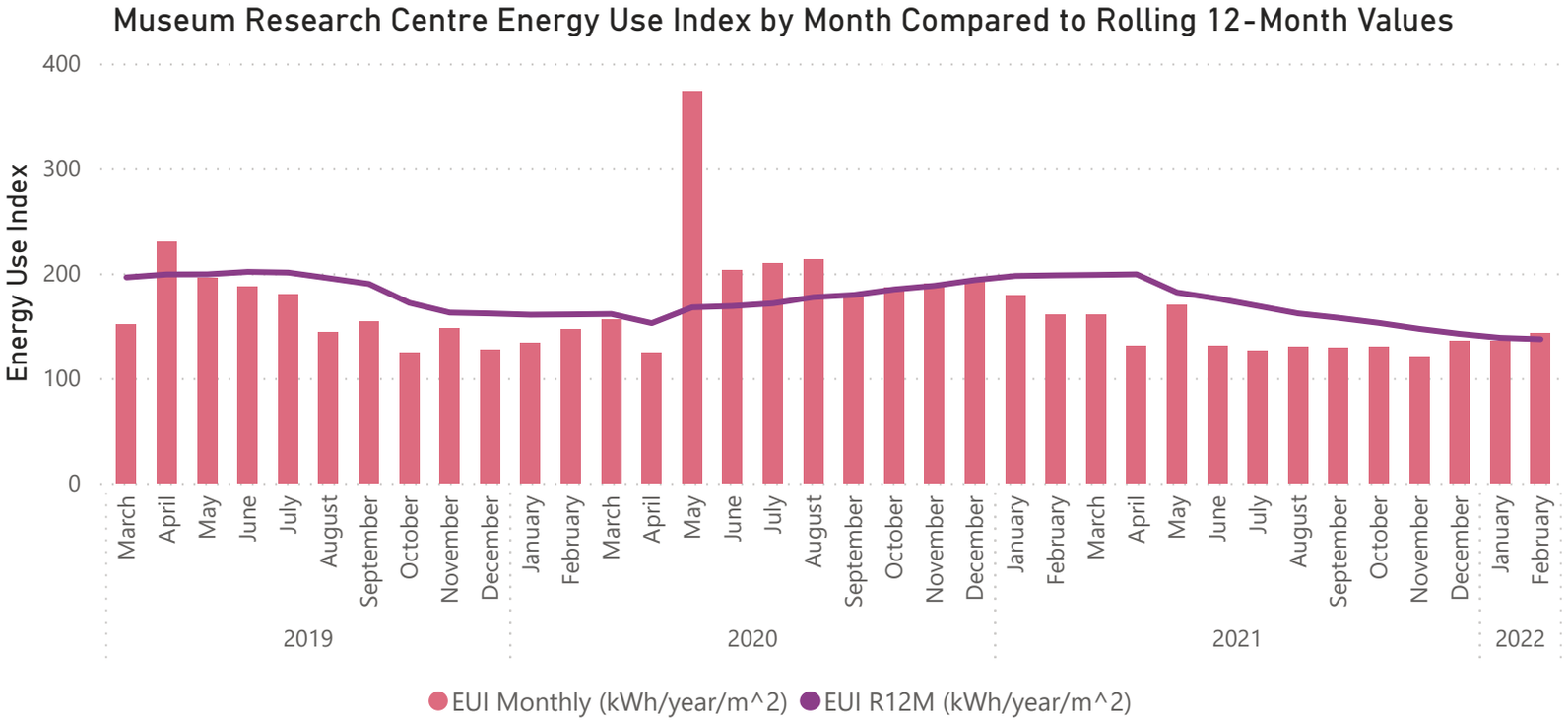
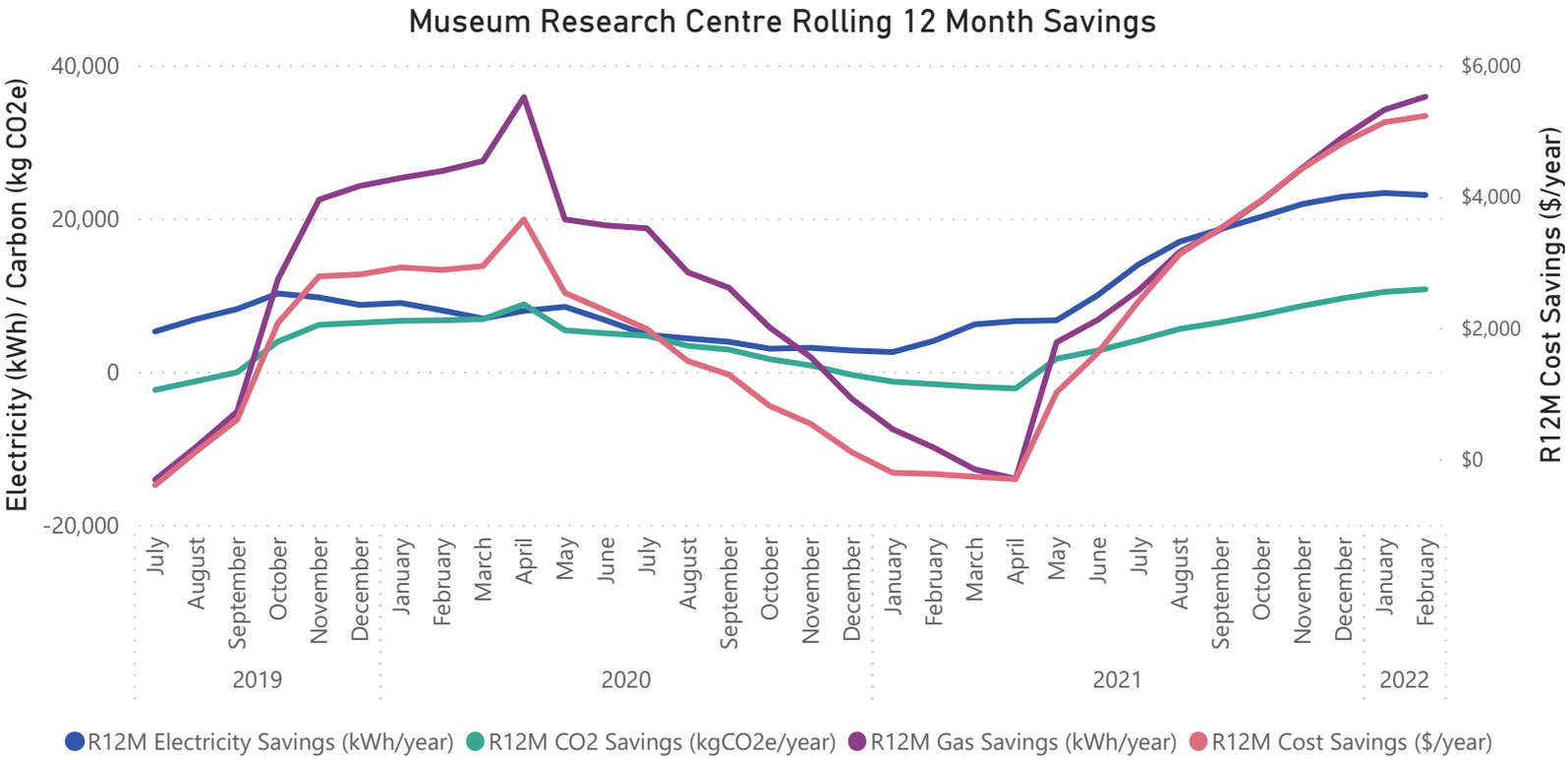
Museum and Research Centre





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February 2022

Whakatane District Council

War Memorial Hall

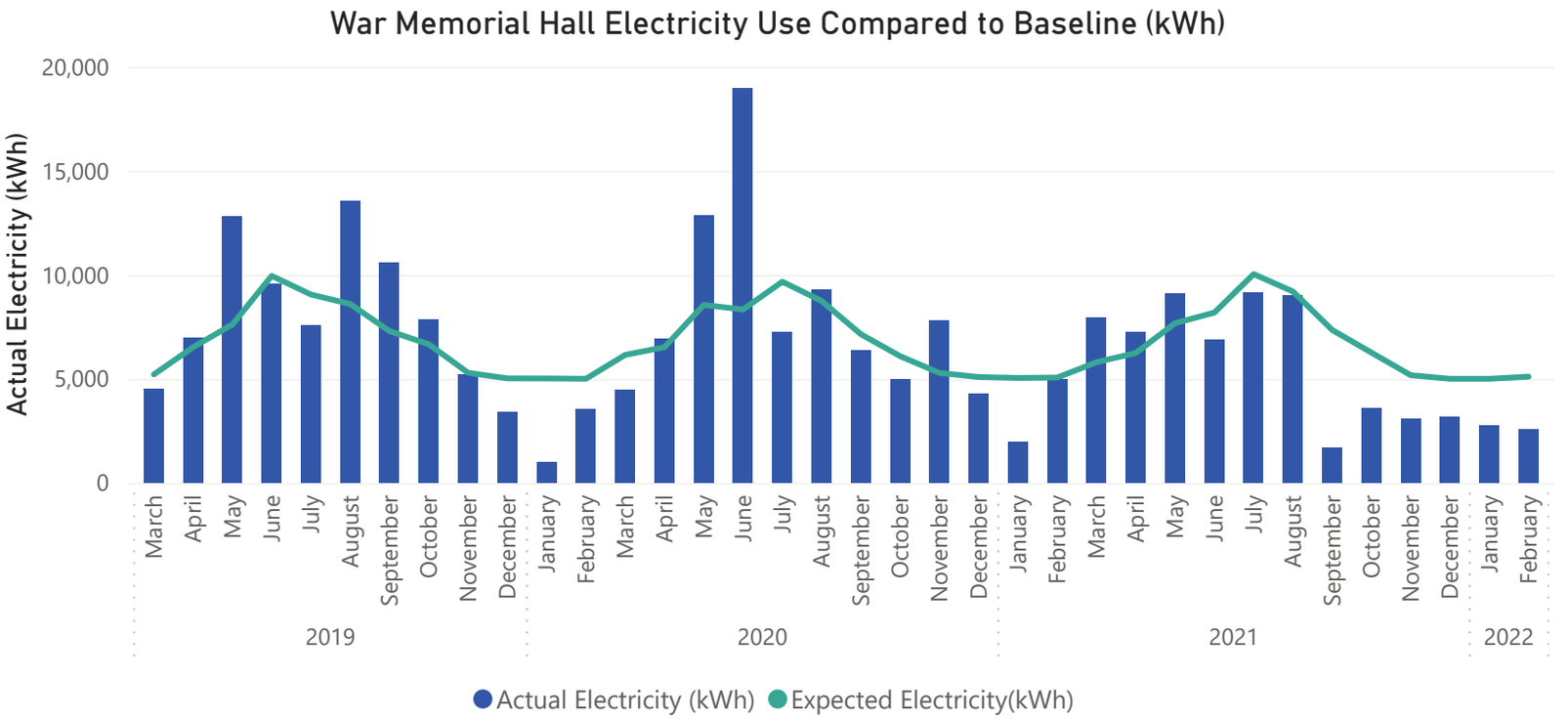
$320 Monthly Energy Cost Savings	2,509 Elec. Savings (kWh/mo)	49% Elec. Savings (%)	14,803 R12M Electricity Savings (kWh/yr)	473 CO2e Savings (kg/mo)
$1,408 R12M Energy Cost Savings	693 Gas. Savings (kWh/mo)	34% Gas. Savings (%)	-1,741 R12M Gas Savings (kWh/yr)	1,528 R12M CO2e Savings (kg/yr)

Comments:

A baseline was created for War Memorial Hall that adjusts for ambient temperature. The baseline period is July 2020 to June 2021. The War Memorial Hall uses more electricity and gas in winter months.

The War Memorial Hall is on a NHH account, some months' usage may be estimated by the retailer and captured by a subsequent meter reading. Manual meter readings can improve accuracy of electricity and gas usage.

A new trend emerges from October 2021 as the relative amount of savings achieved at the War Memorial Hall has increased over previous years. Although this may be due to a reduced level of occupancy as a result of Covid-19.



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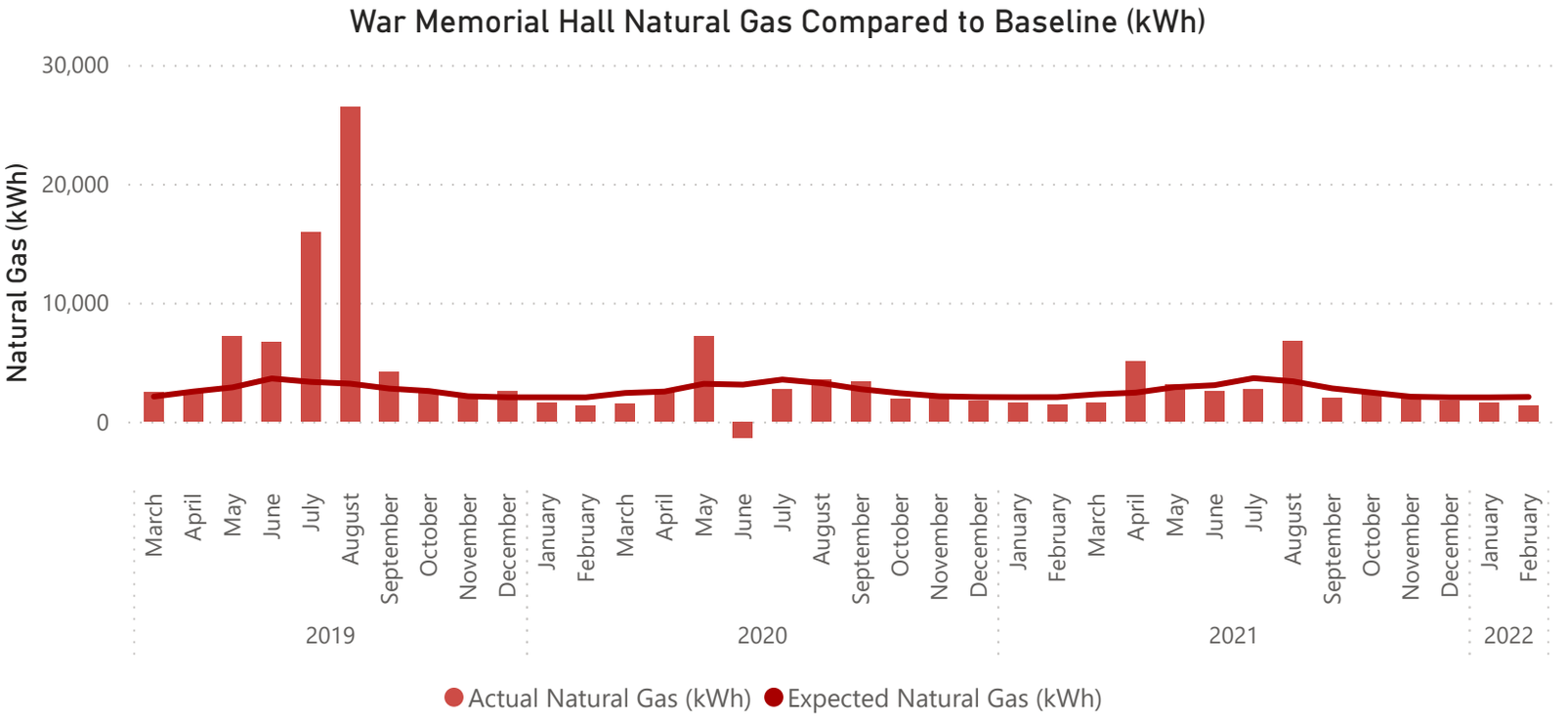
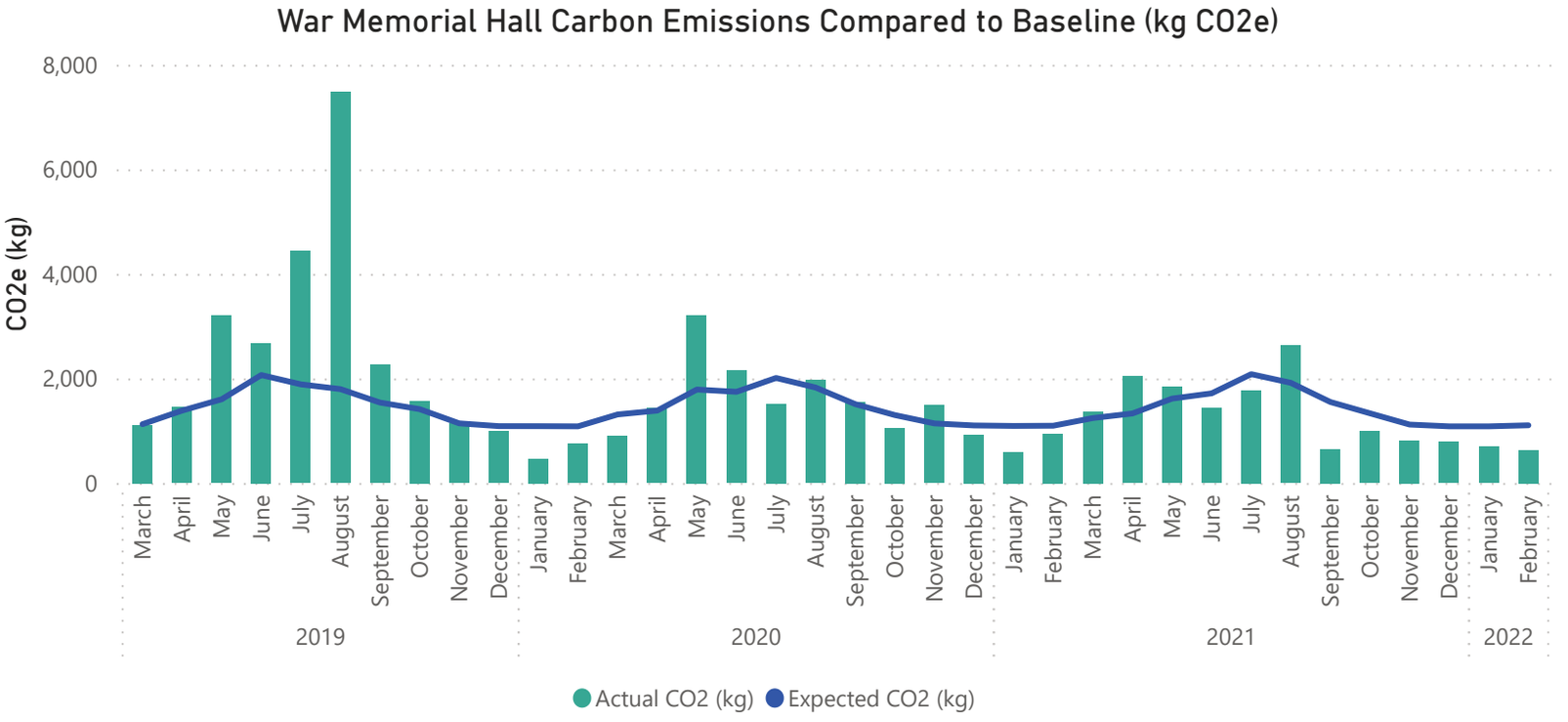
Whakatane District Council

War Memorial Hall





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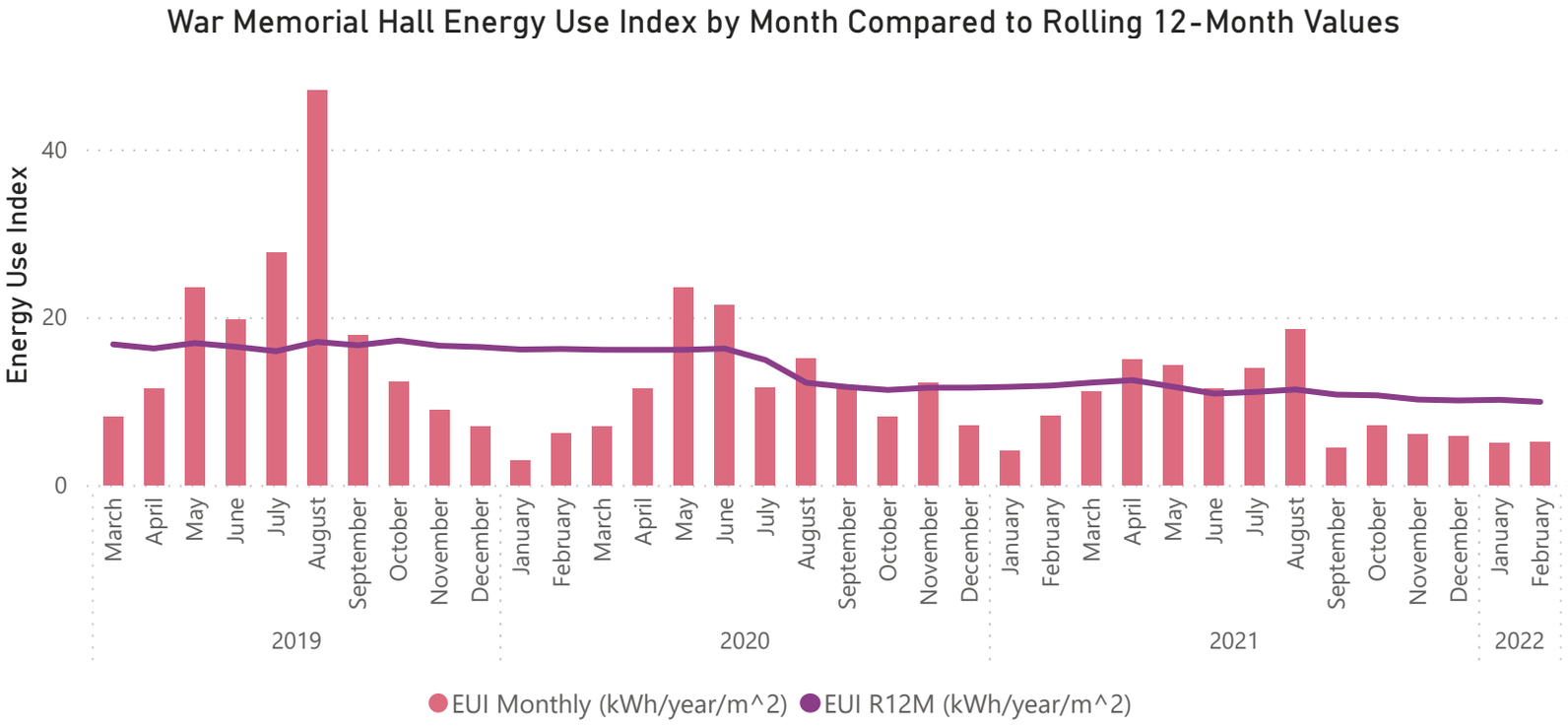
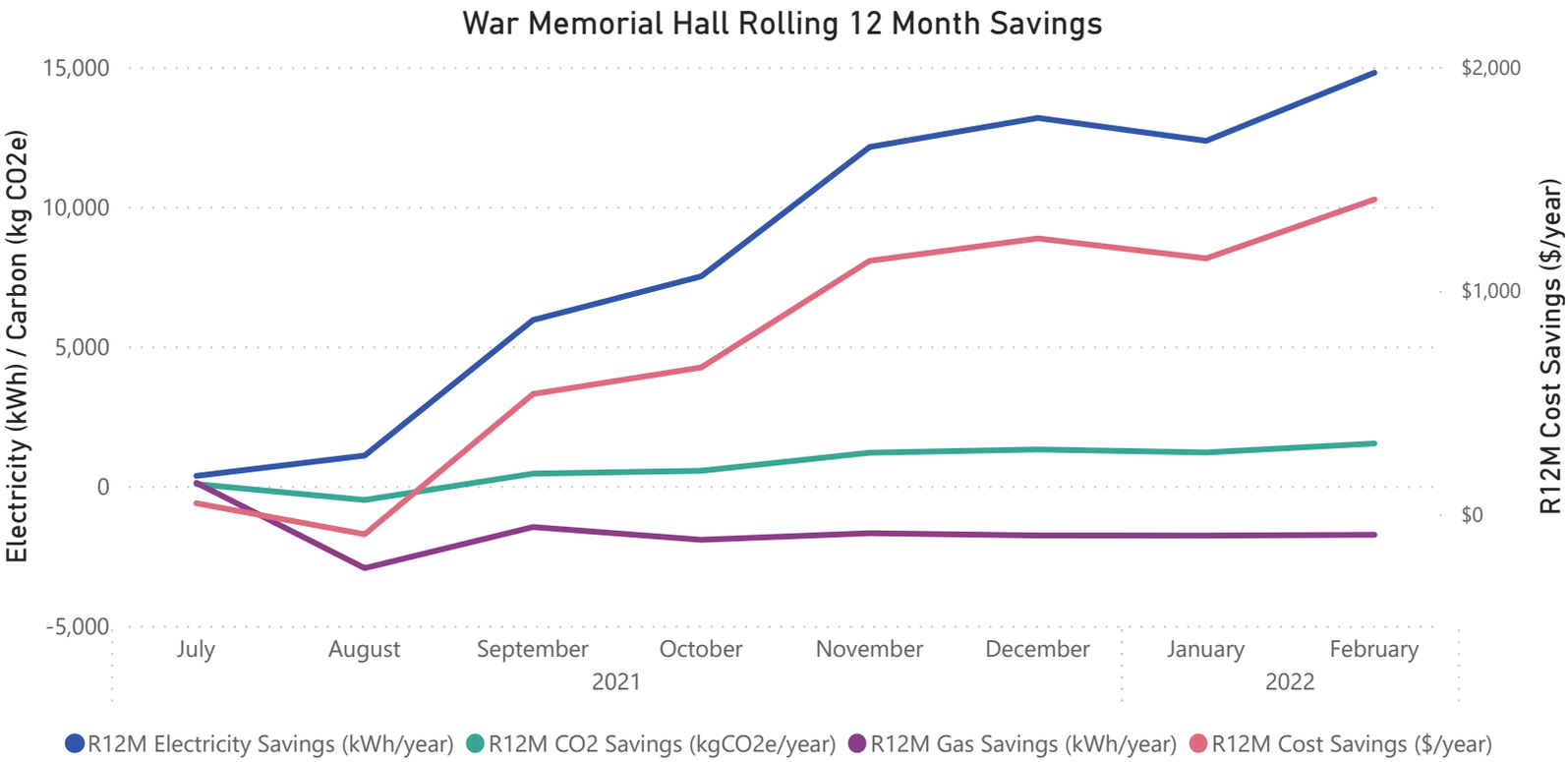
War Memorial Hall





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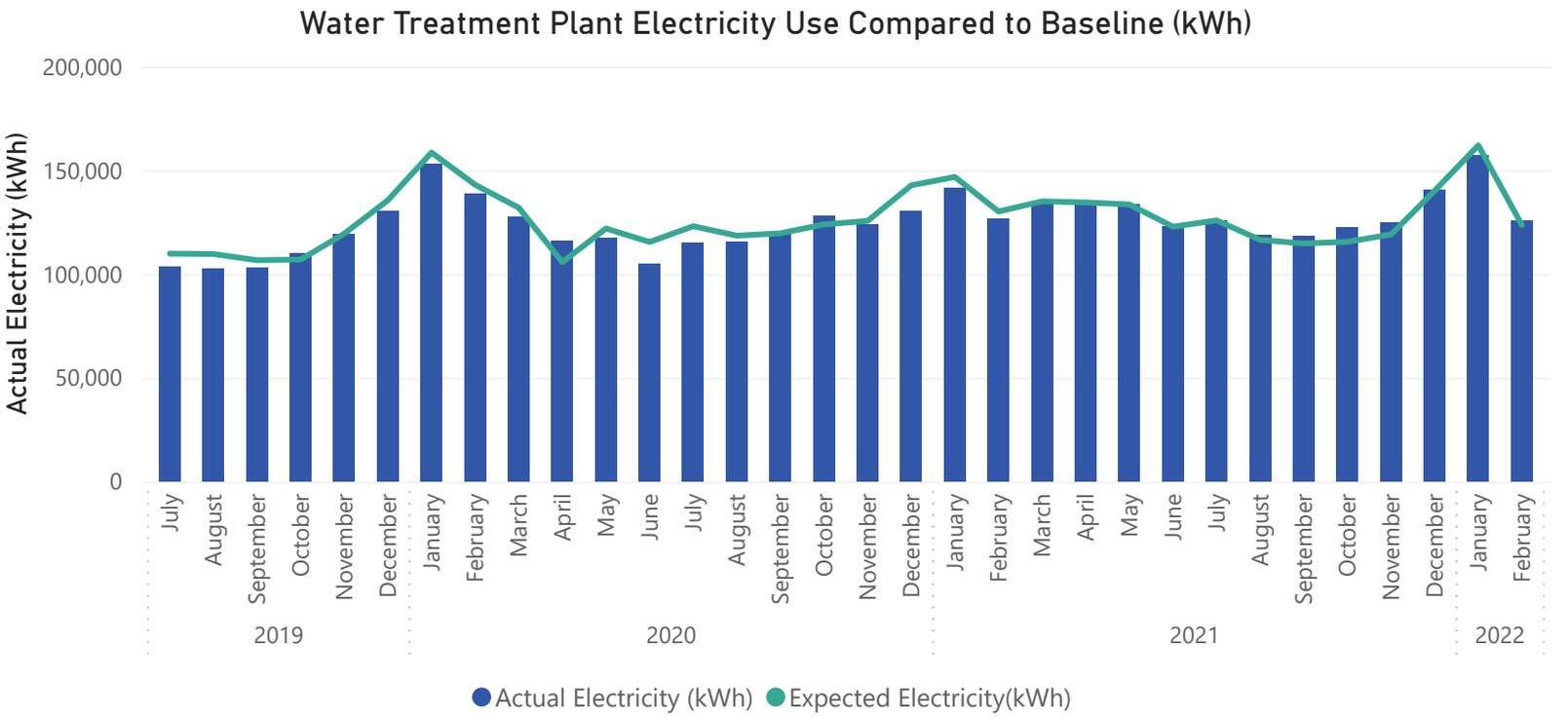
Whakatane District Council

Water Treatment Plant

-$232 Monthly Energy Cost Savings	-2,229 Elec. Savings (kWh/mo)	-2% Elec. Savings (%)	-15,957 R12M Electricity Savings (kWh/yr)	-287 CO2e Savings (kg/mo)
-$1,547 R12M Energy Cost Savings				-2,054 R12M CO2e Savings (kg/yr)

Comments:
Demand decreased for the month of February and electricity use was slightly more than expected. The EUI is close to the average over the past 12 months.



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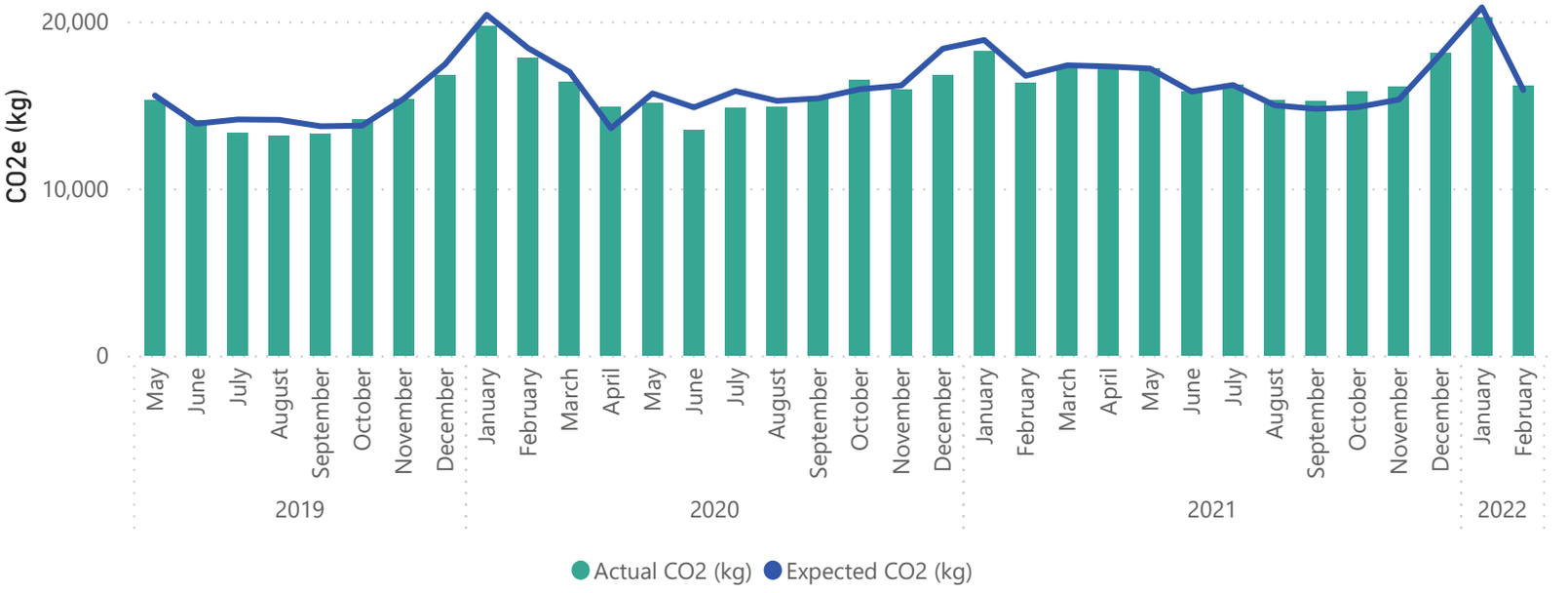
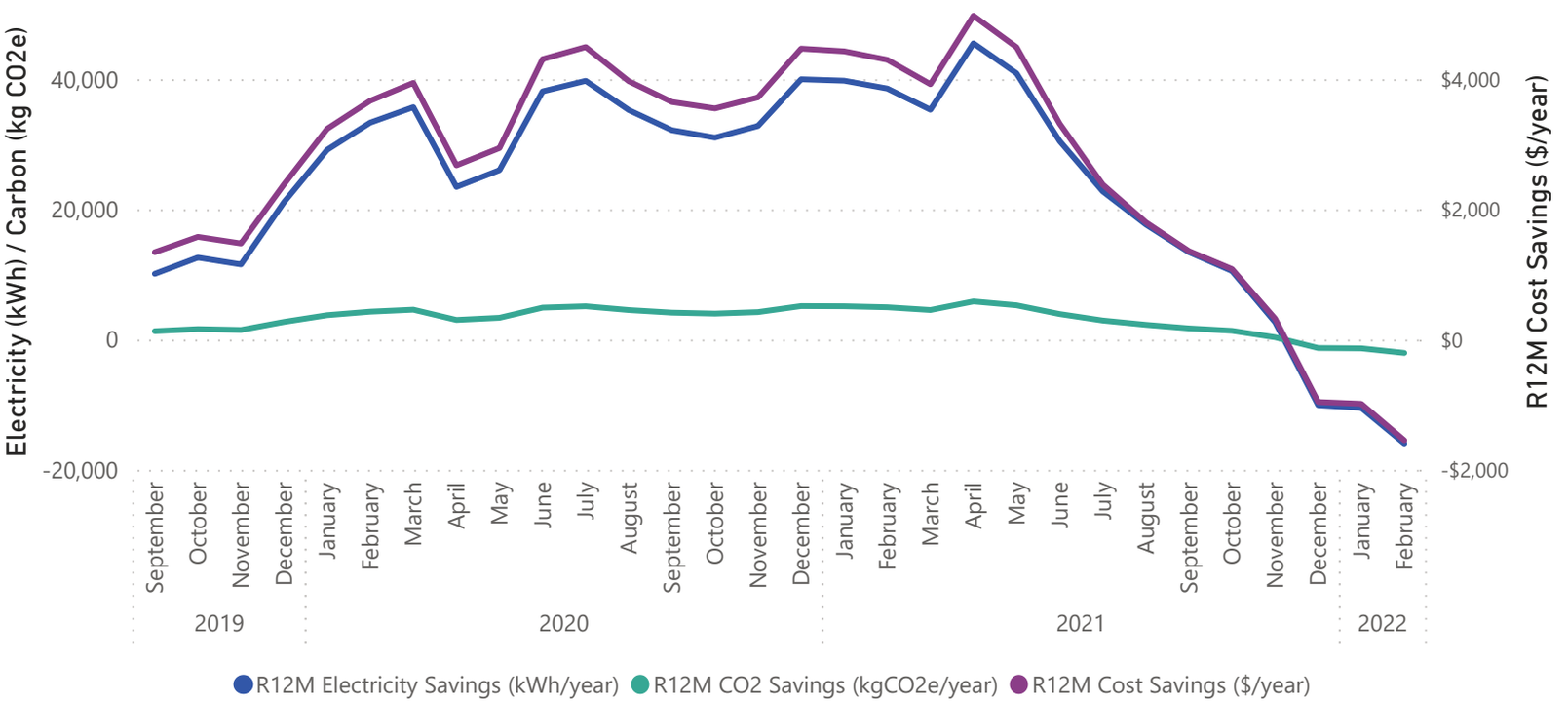
Whakatane District Council

Water Treatment Plant

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



Water Treatment Plant Rolling 12 Month Savings



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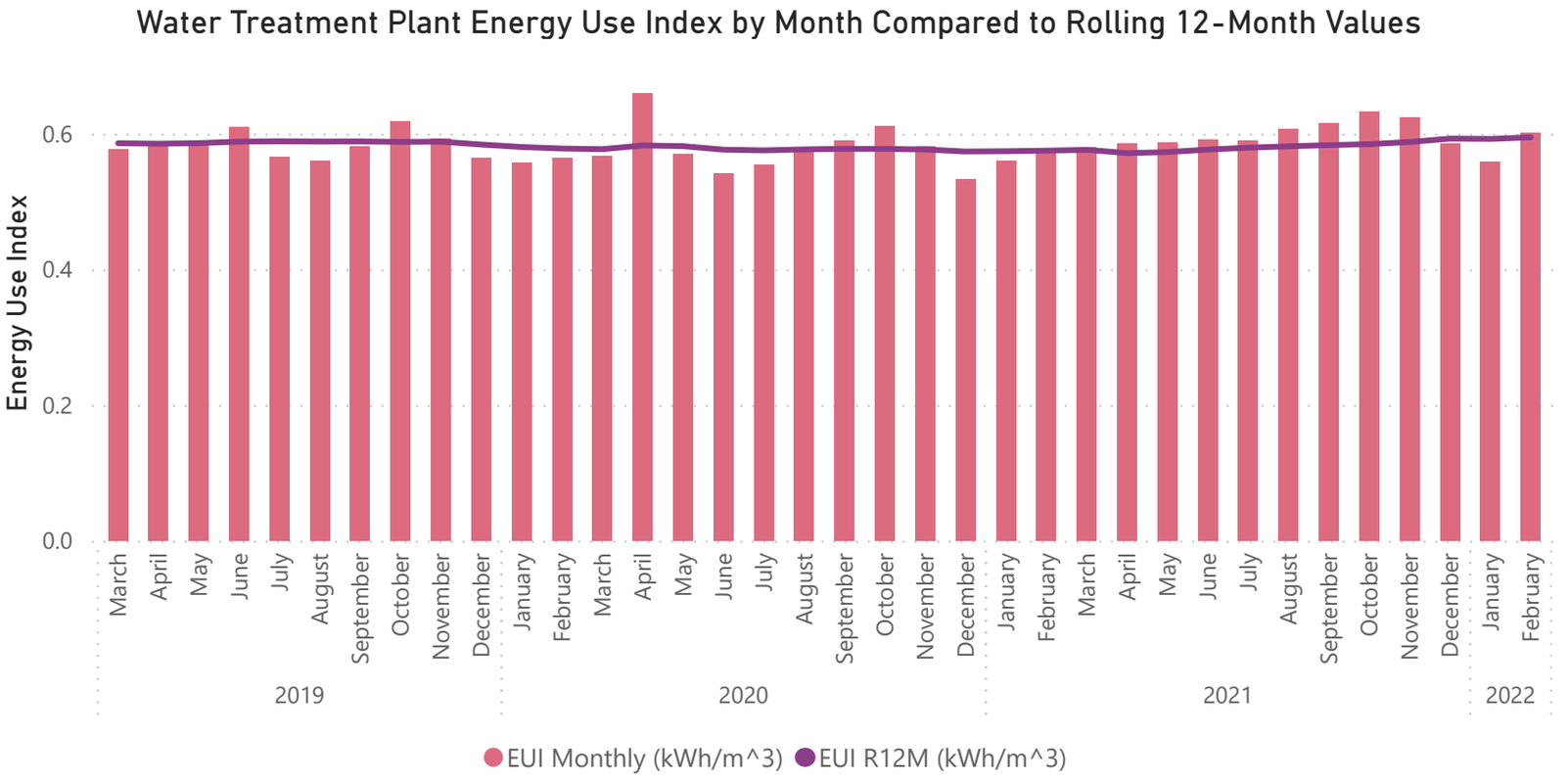
Whakatane District Council

Water Treatment Plant



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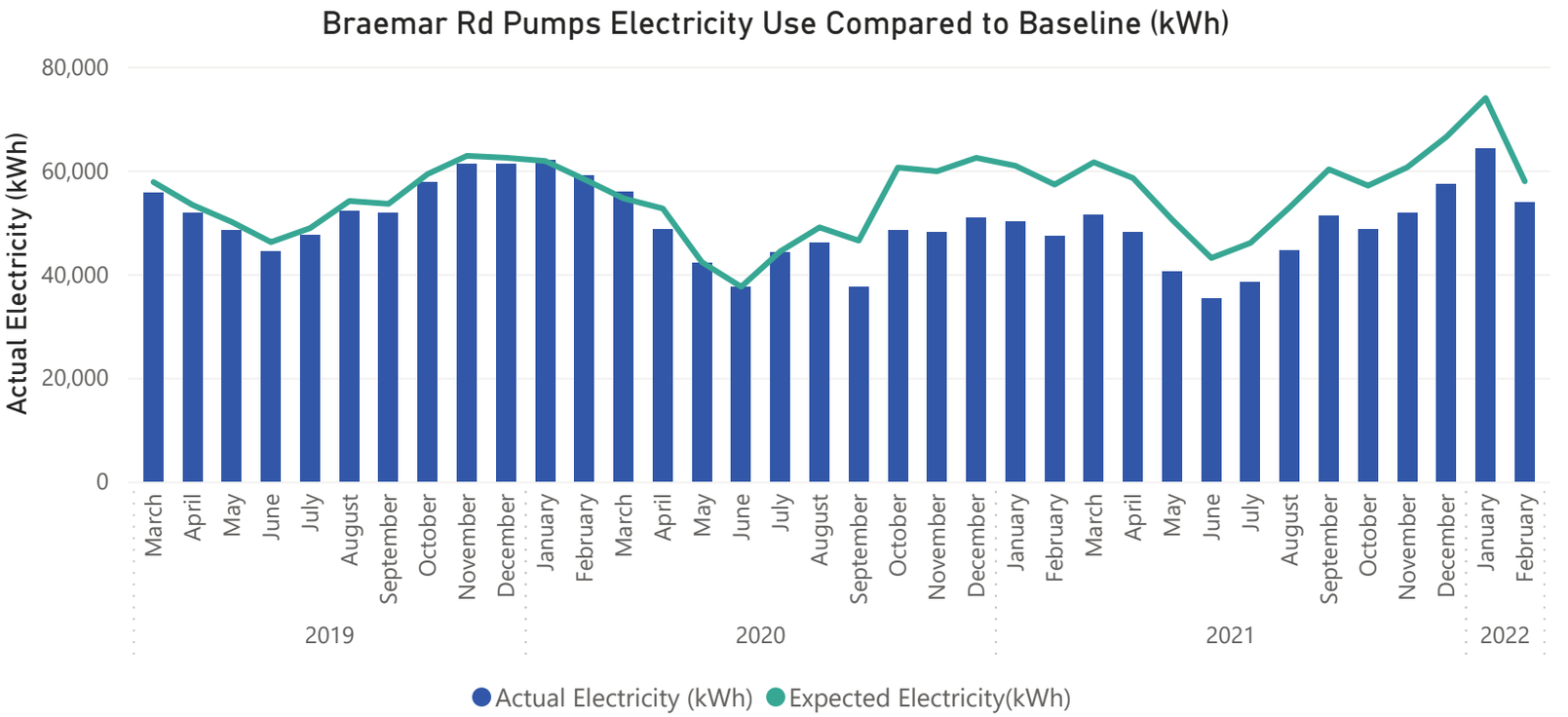
Whakatane District Council

Braemar Road Pump Station

$419 Monthly Energy Cost Savings	3,974 Elec. Savings (kWh/mo)	7% Elec. Savings (%)	102,999 R12M Electricity Savings (kWh/yr)	545 CO2e Savings (kg/mo)
$11,217 R12M Energy Cost Savings				13,692 R12M CO2e Savings (kg/yr)

Comments:
Continued savings from high efficiency pumps and motors, installed September 2020. However, the relative savings have decreased for February 2022. The EUI has increased by 9% over January 2022, 9% more energy is being used to pump the same amount of water.



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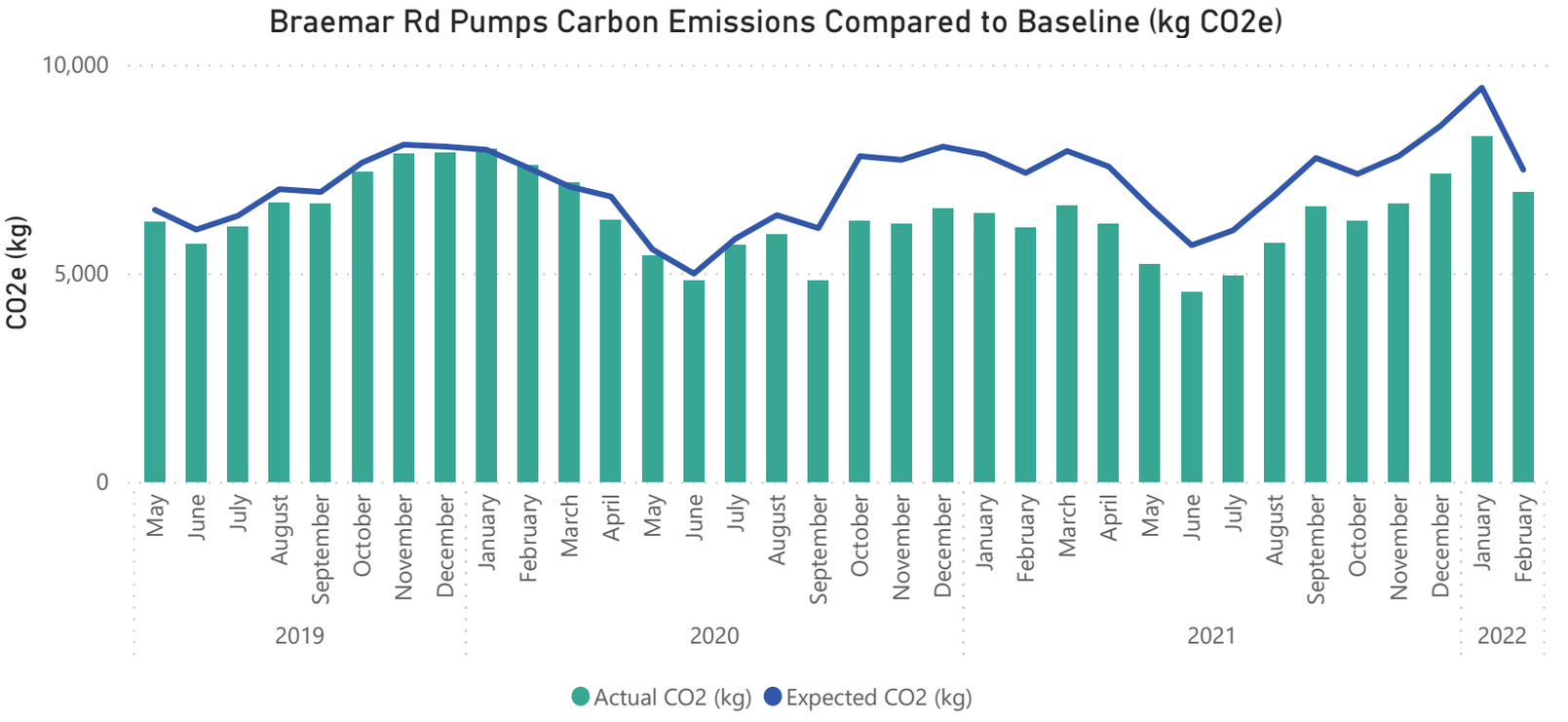
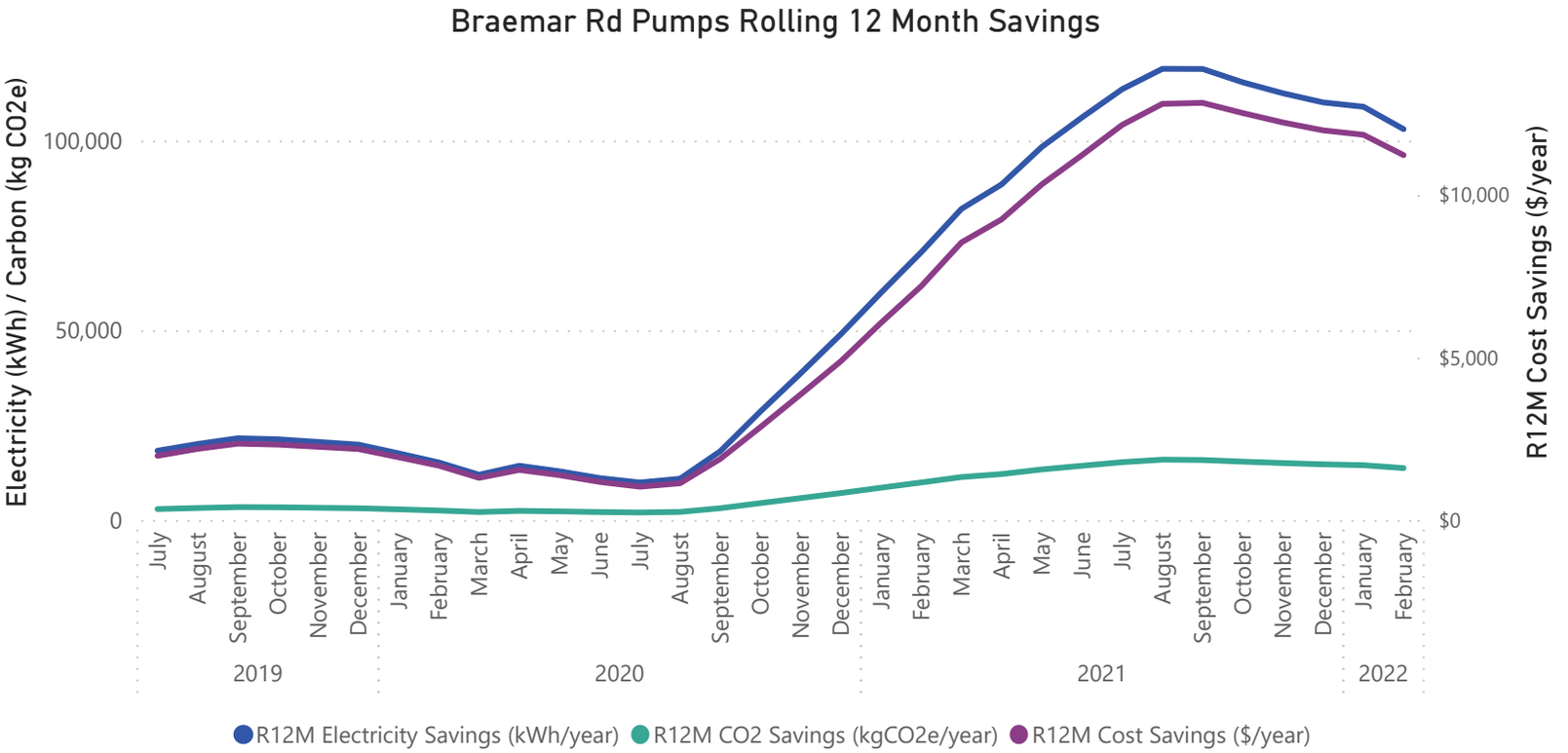
Whakatane District Council

Braemar Road Pump Station





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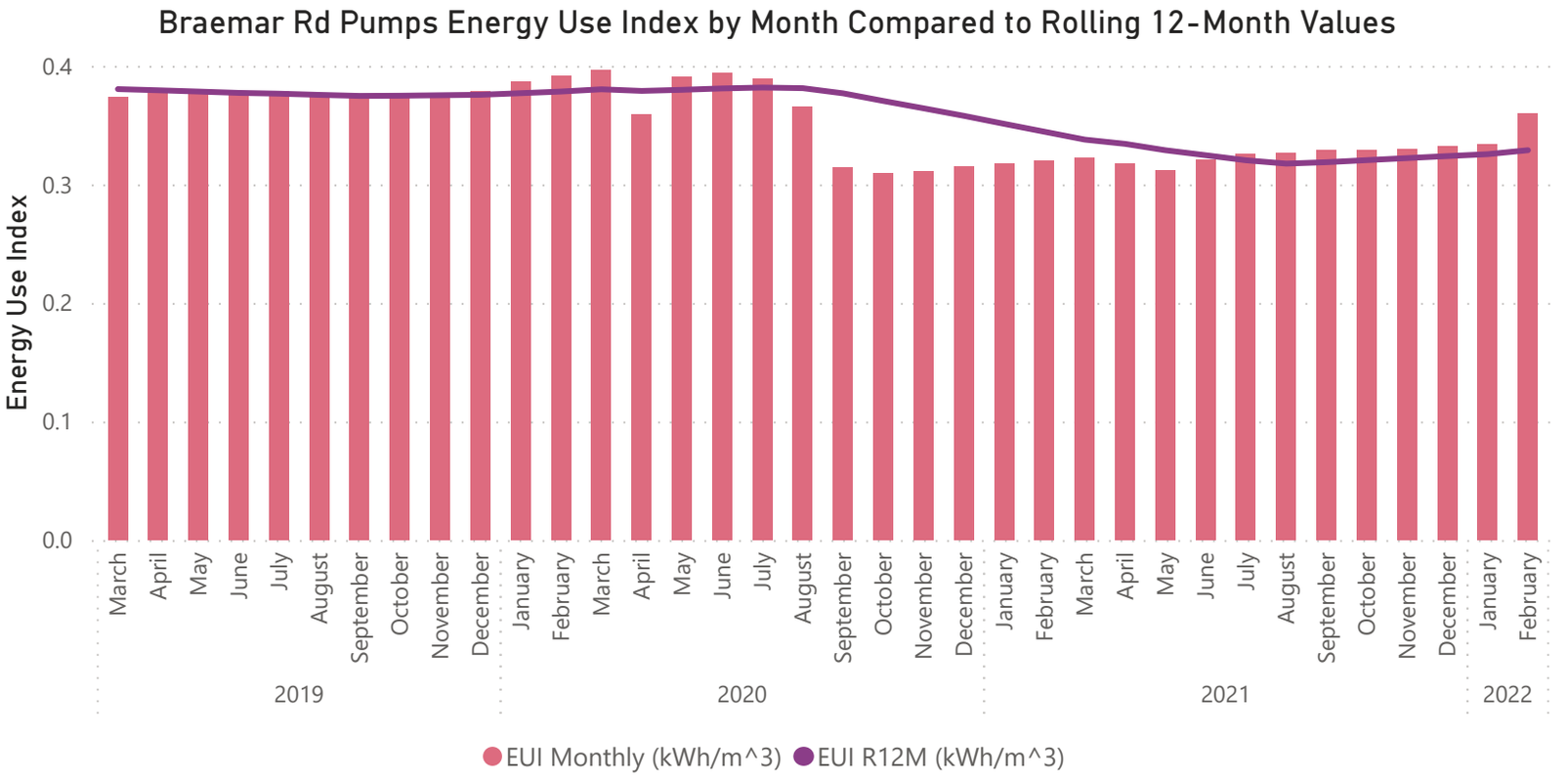
Whakatane District Council

Braemar Road Pump Station



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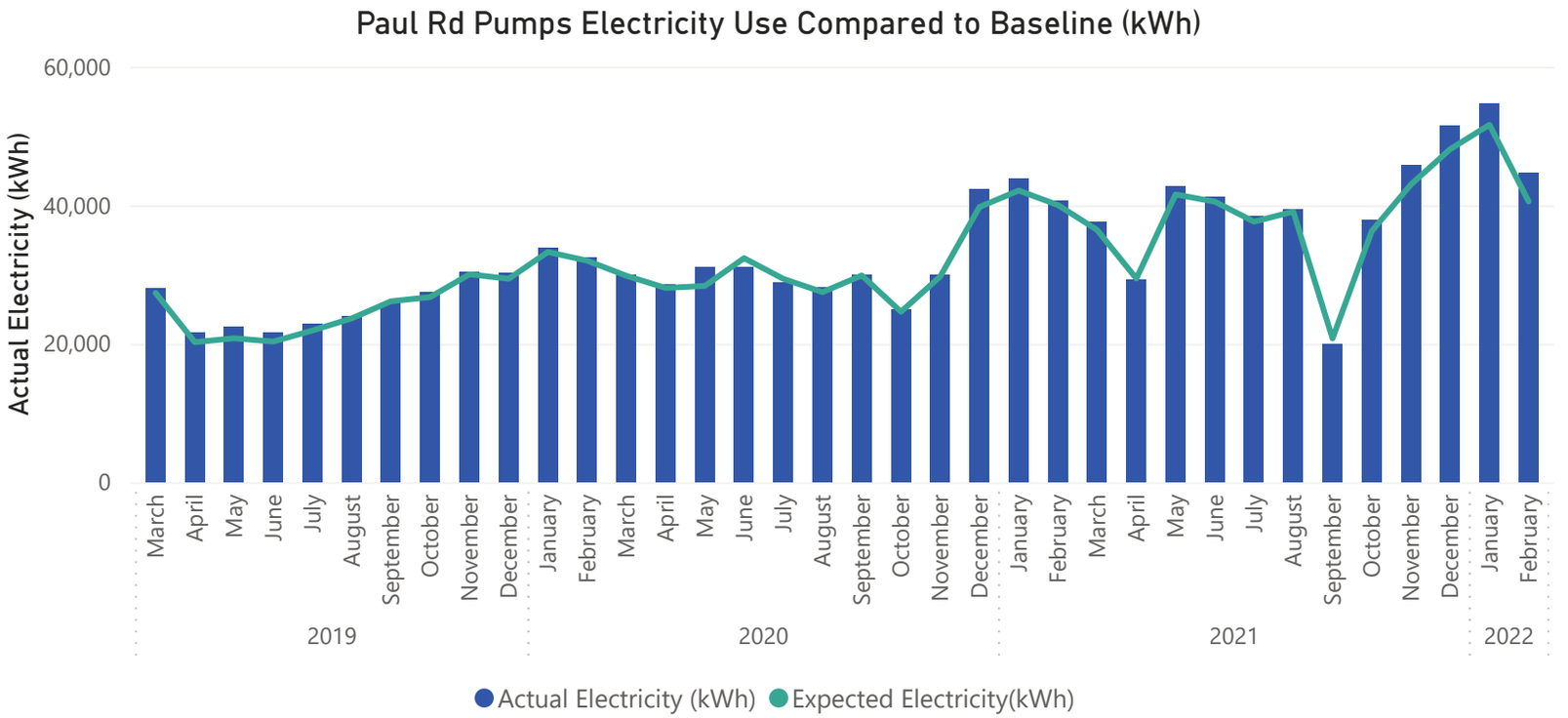
February 2022

Whakatane District Council

Paul Road Pump Station

-$433 Monthly Energy Cost Savings	-4,094 Elec. Savings (kWh/mo)	-10% Elec. Savings (%)	-18,304 R12M Electricity Savings (kWh/yr)	-526 CO2e Savings (kg/mo)
-$1,924 R12M Energy Cost Savings				-2,345 R12M CO2e Savings (kg/yr)

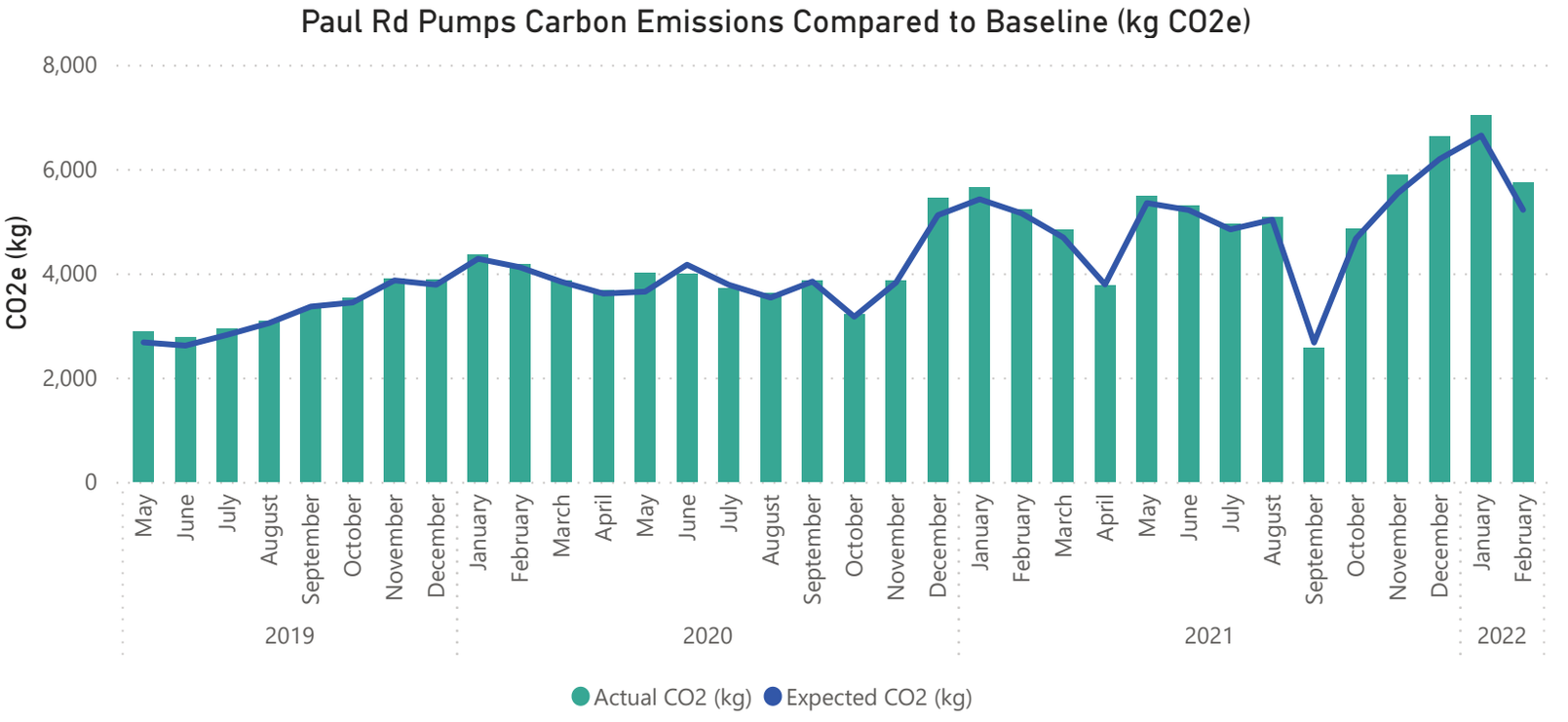
Comments:
Demand decreased relative to previous months, however the EUI has increased. A general trend can be observed that months of high demand typically use more electricity than expected. This may indicate that the pump is operating outside its optimum efficiency range.

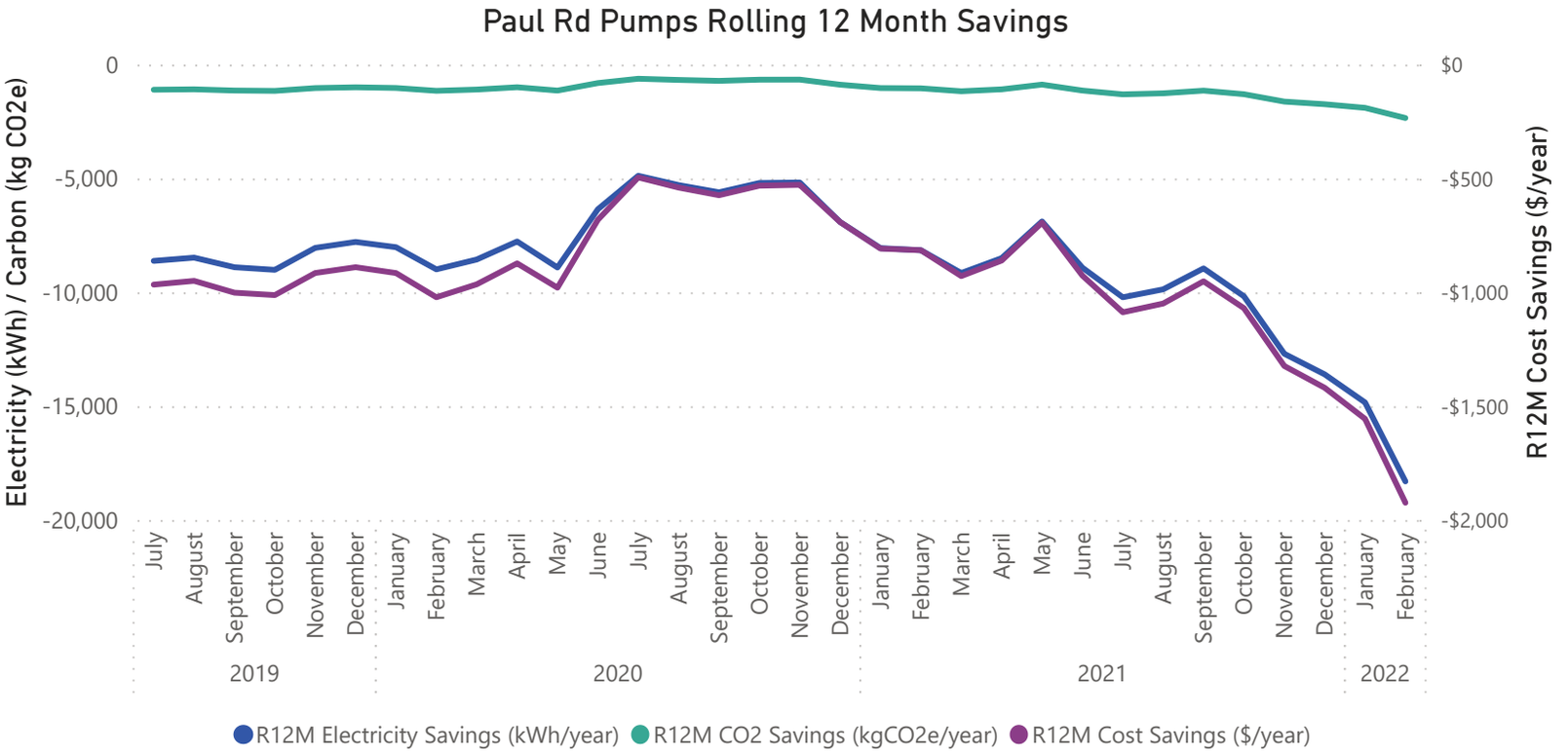


Note: New Zealand was in Covid-19 alert levels 3 and 4 from 23 March until 12 May, 2020. Energy use may have been impacted during this time

Whakatane District Council

Paul Road Pump Station





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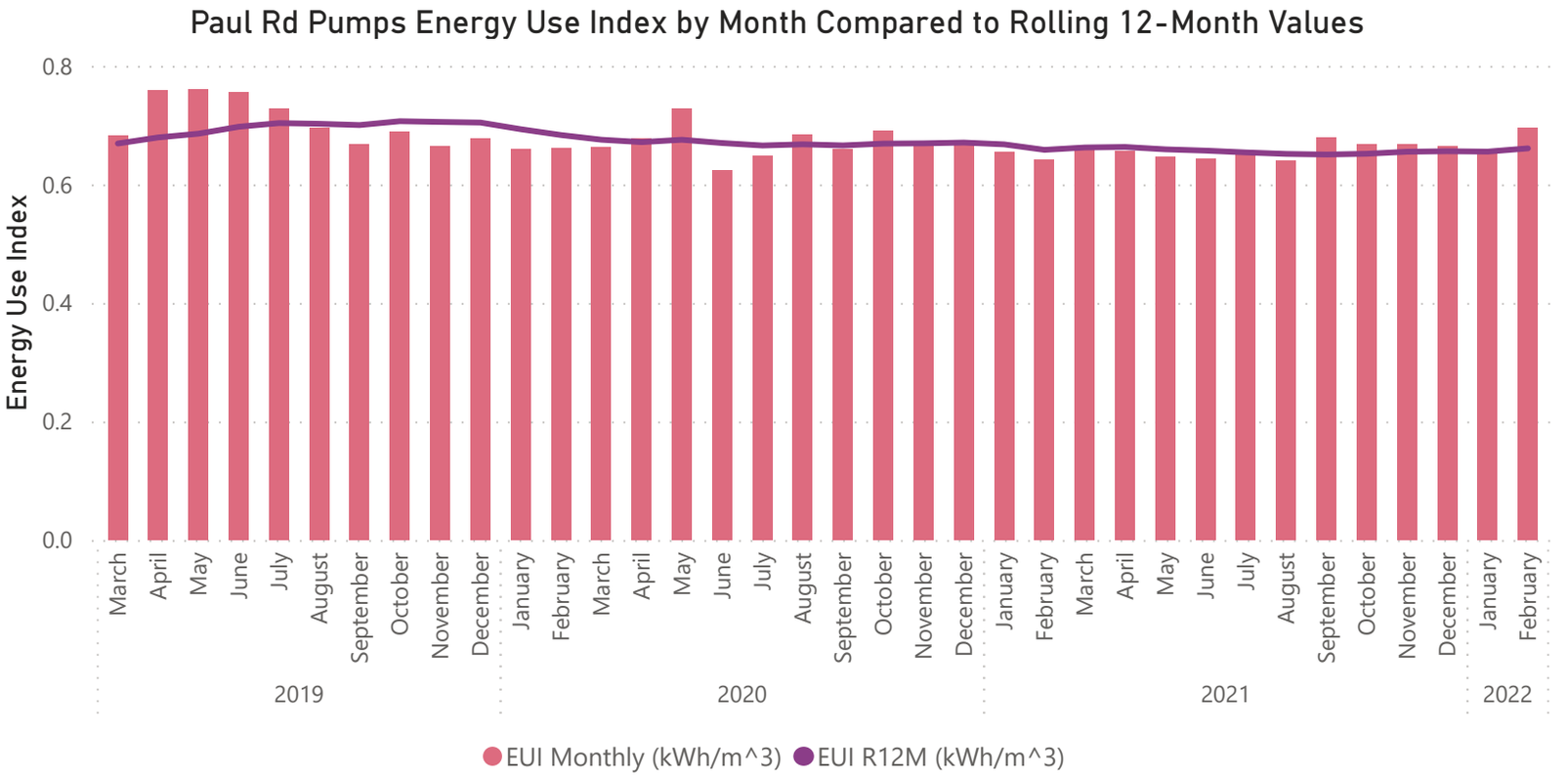
Whakatane District Council

Paul Road Pump Station



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February 2022

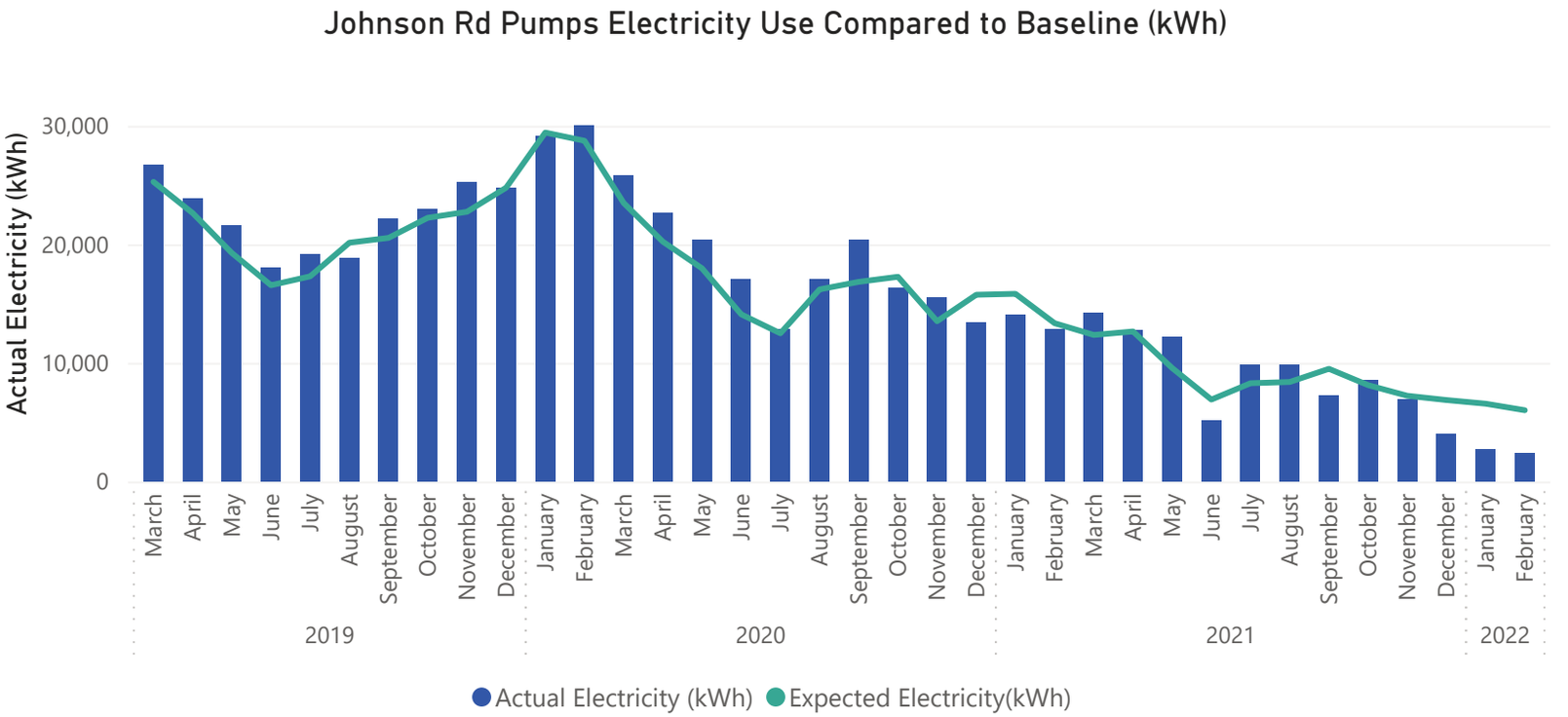
Whakatane District Council

Johnson Road Pump Station

$798 Monthly Energy Cost Savings	3,620 Elec. Savings (kWh/mo)	60% Elec. Savings (%)	6,426 R12M Electricity Savings (kWh/yr)	466 CO2e Savings (kg/mo)
$1,423 R12M Energy Cost Savings				830 R12M CO2e Savings (kg/yr)

Comments:

The pumps at Johnson Rd have been used less than previous years. The rolling 12-month EUI for Johnson Road Pump Station has increased over the past year as demand decreases. This is expected as the pump station has a non-zero baseload.



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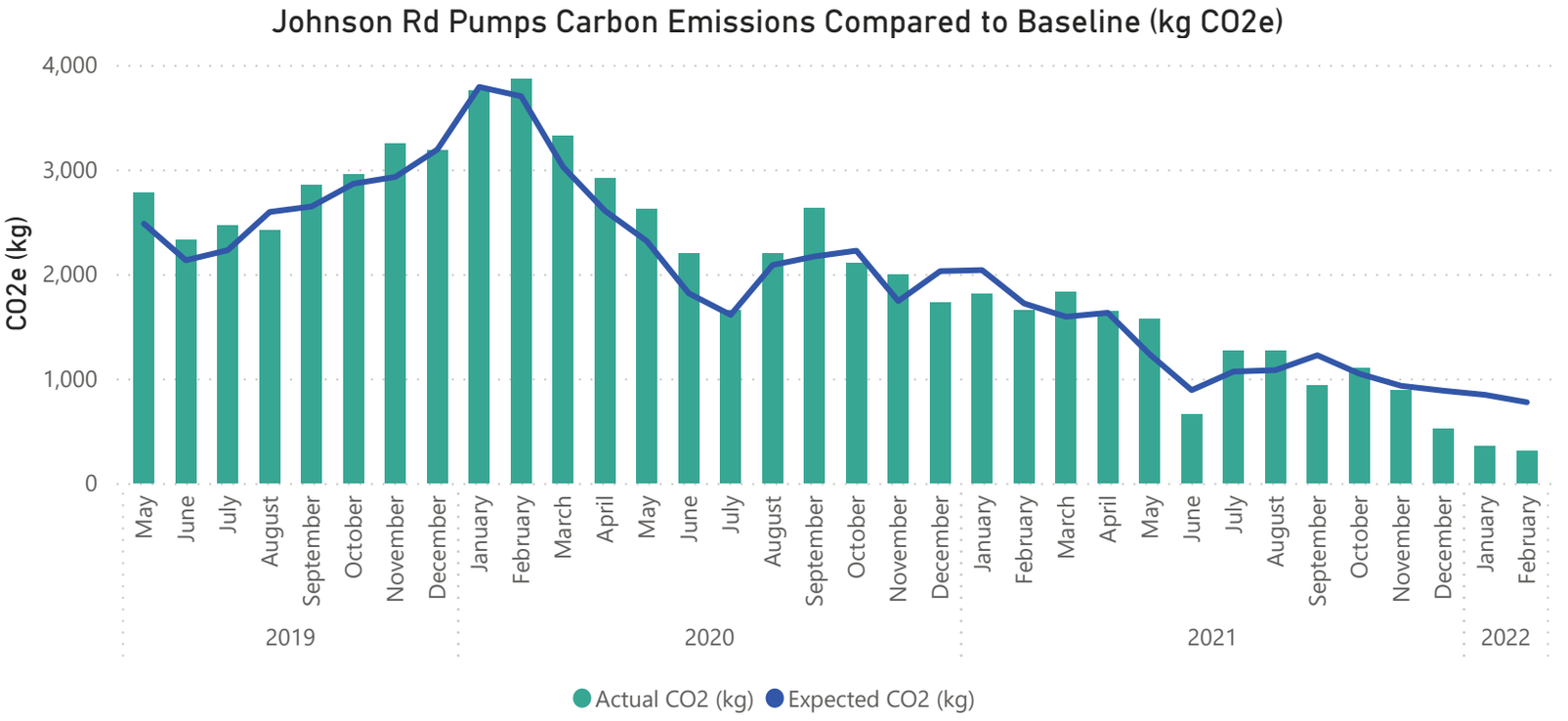
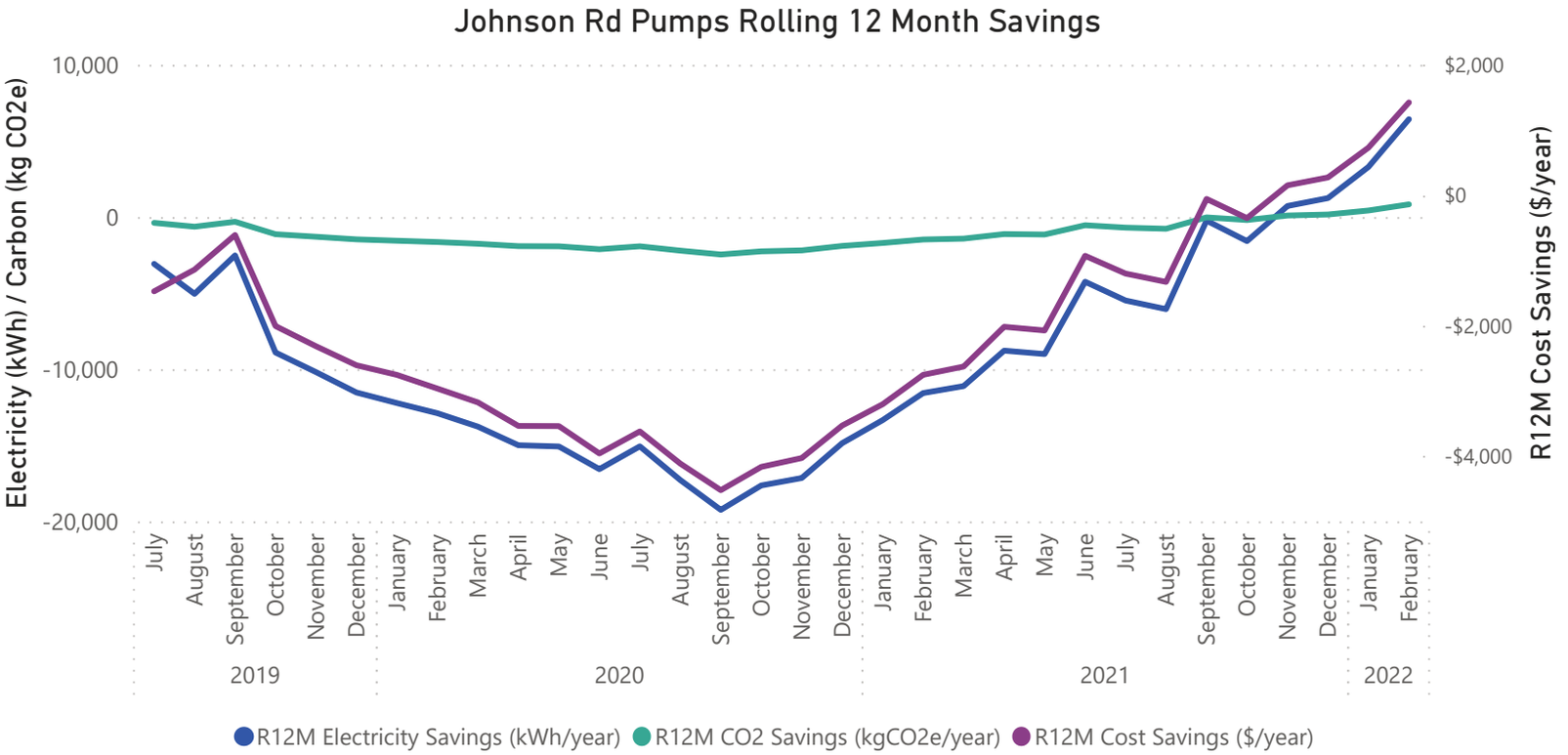
Whakatane District Council

Johnson Road Pump Station





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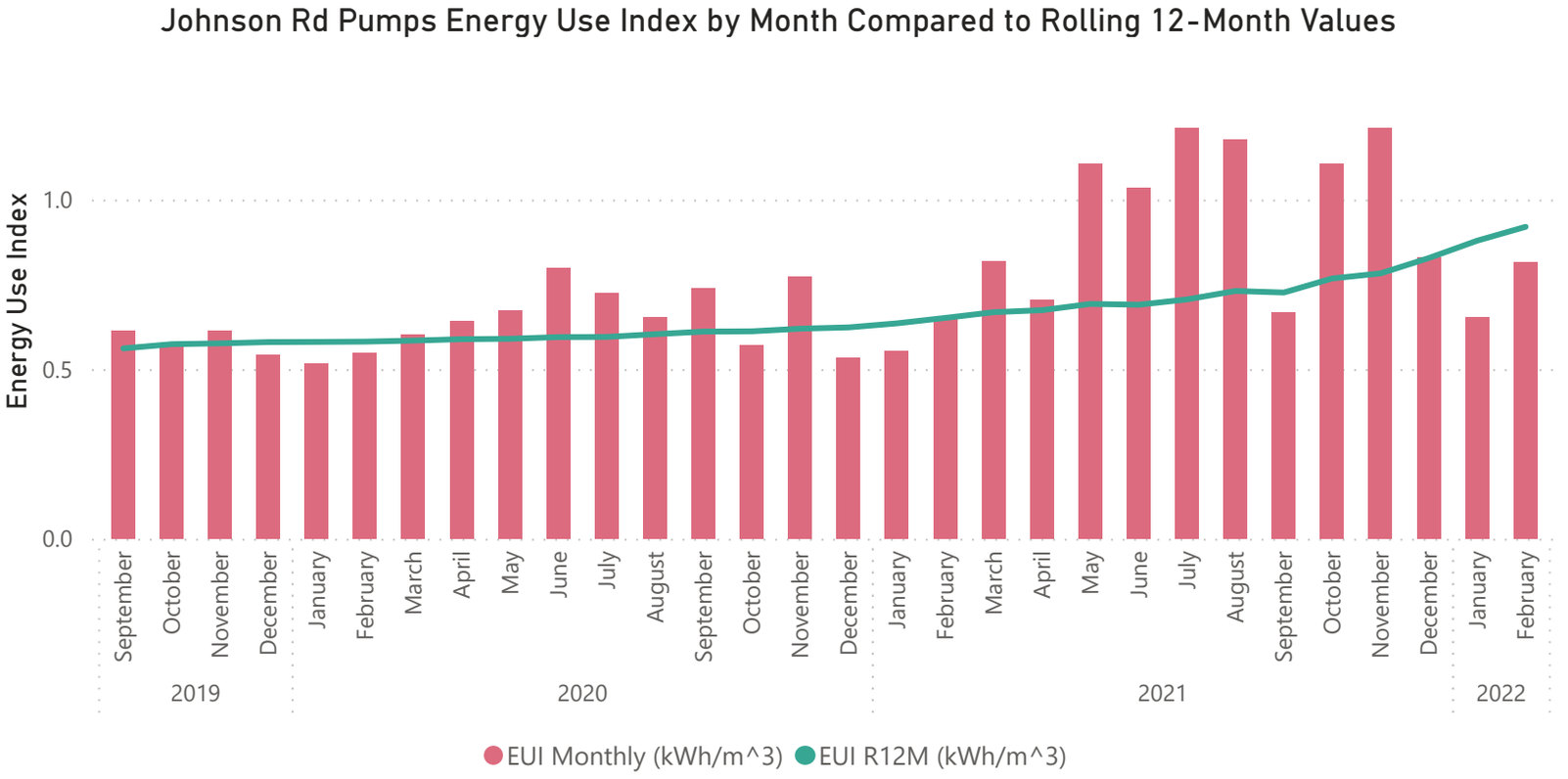
Whakatane District Council

Johnson Road Pump Station



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February 2022

Whakatane District Council

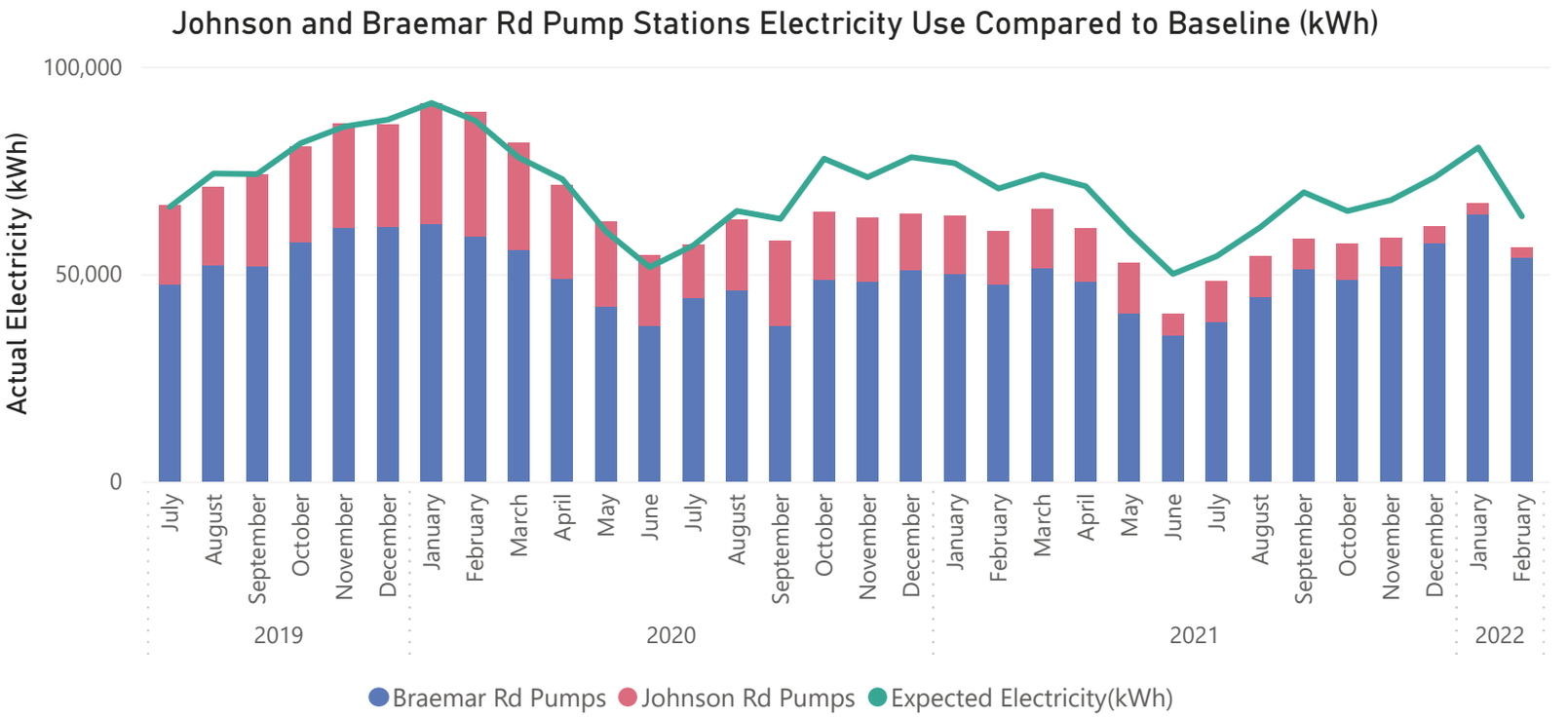
Johnson and Braemar Rd Pump Stations

$1,217 Monthly Energy Cost Savings	7,594 Elec. Savings (kWh/mo)	12% Elec. Savings (%)	109,425 R12M Electricity Savings (kWh/yr)	1,011 CO2e Savings (kg/mo)
$12,640 R12M Energy Cost Savings				14,523 R12M CO2e Savings (kg/yr)

Comments:

It is clear from the combined monitoring how the new, more efficient pumps (installed September 2020) at Braemar Road 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 than Johnson Rd.

Johnson Rd and Braemar Rd pump stations both achieved savings independently from one another. When viewed as a network of pumps, savings achieved over the past year are consistent: in recent months Johnson Rd has generated more savings and Braemar Rd less savings.



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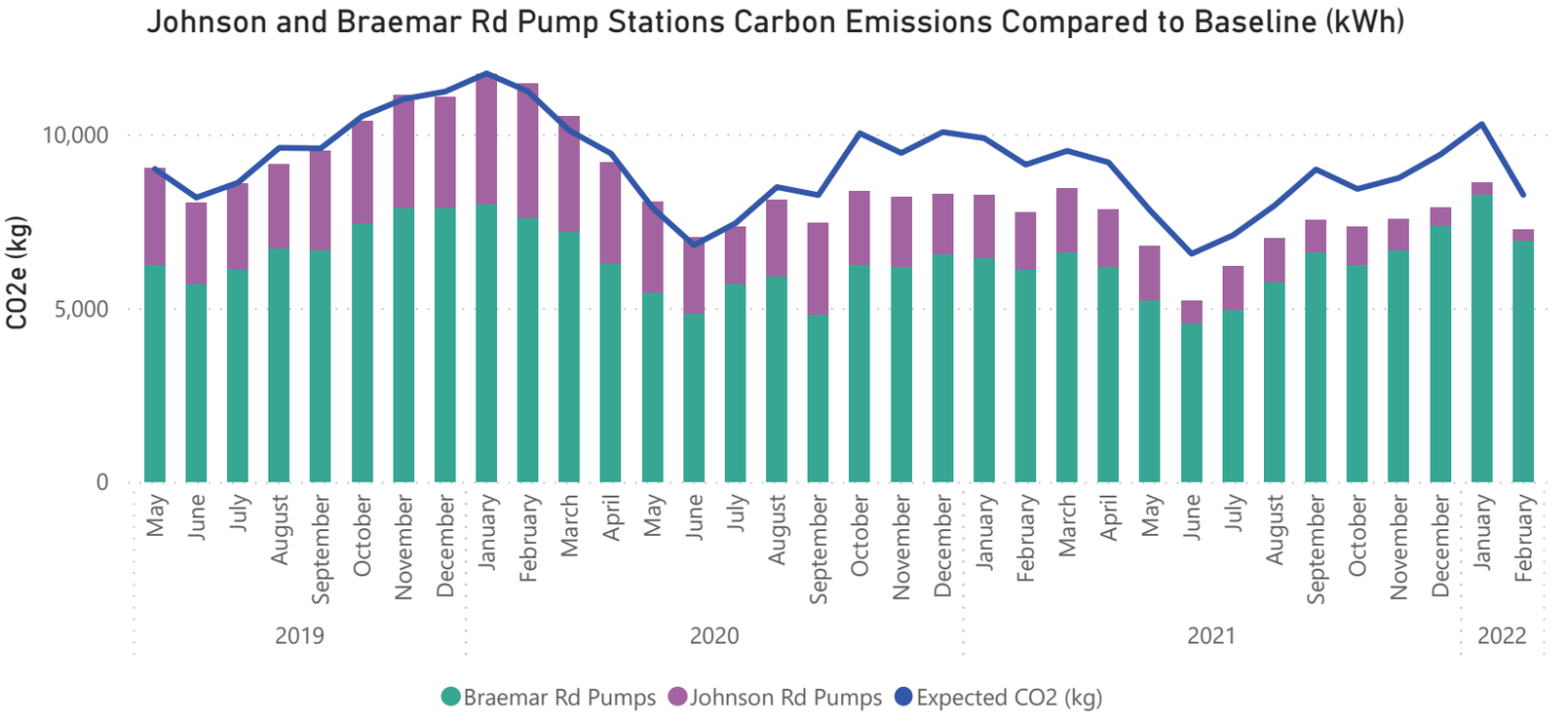
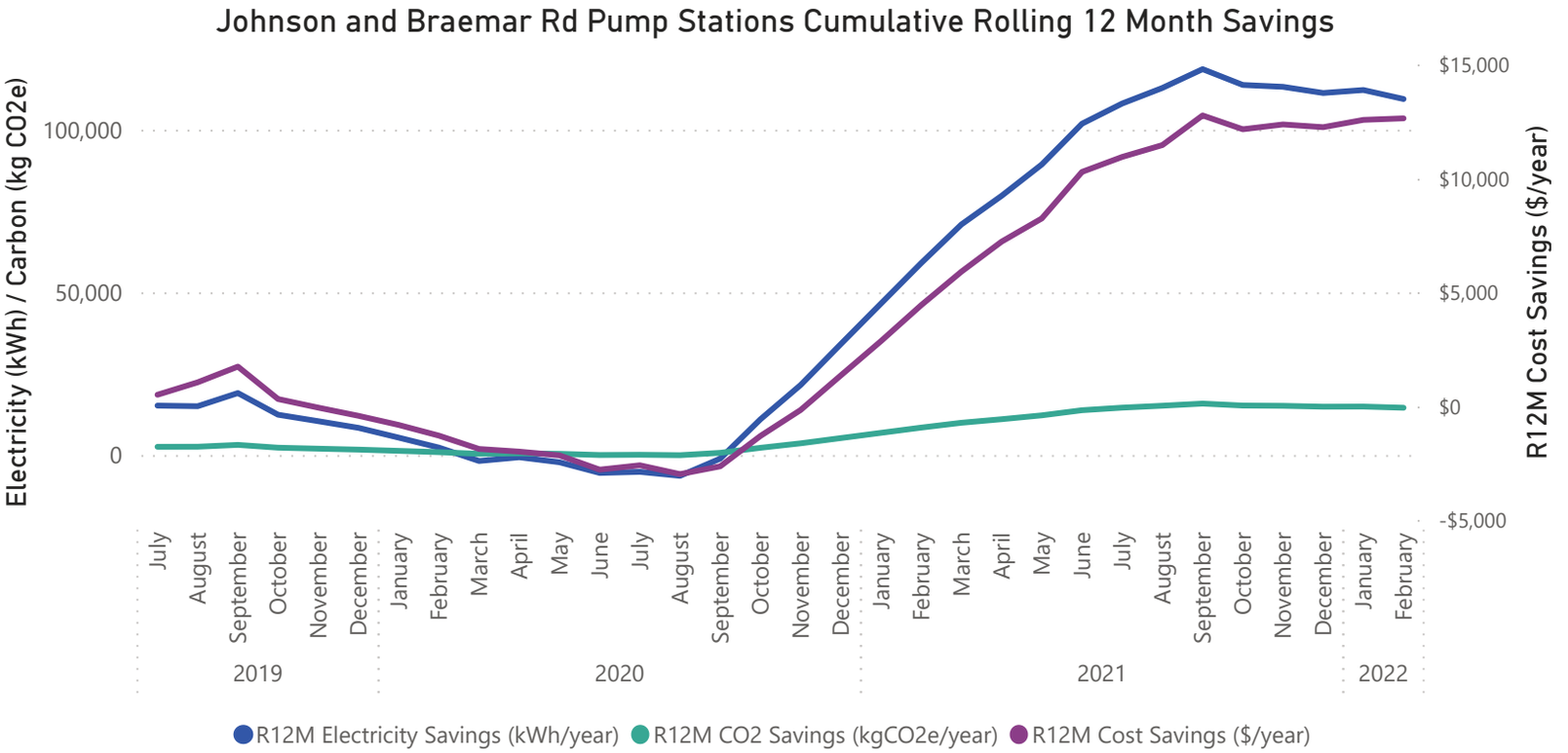
Whakatane District Council

Johnson and Braemar Rd Pump Stations





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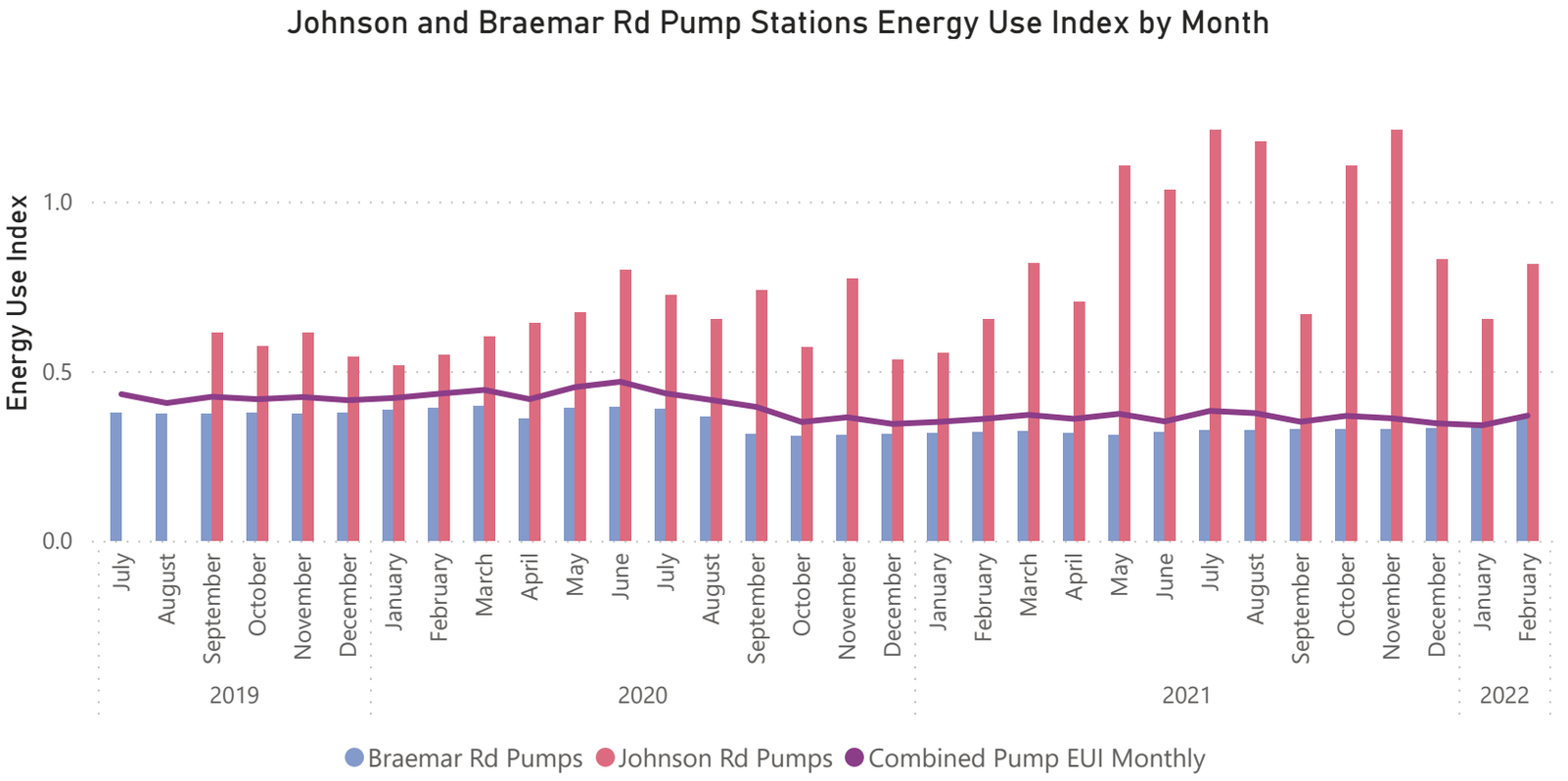
Whakatane District Council

Johnson and Braemar Rd Pump Stations



Note: New Zealand was in Covid-19 alert levels 3 and 4 from 23 March until 12 May, 2020. Energy use may have been impacted during this time

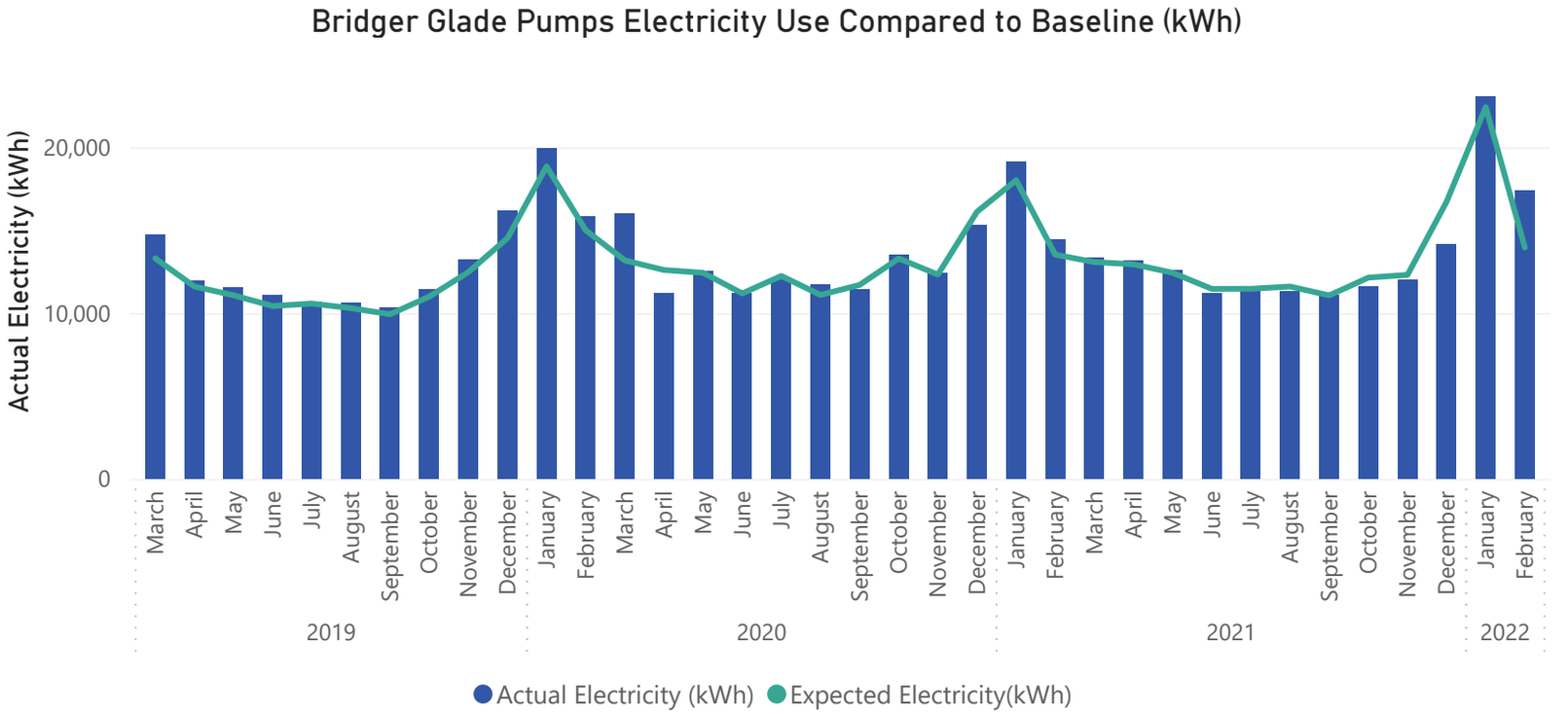
Whakatane District Council

Bridger Glade Pump Station

-$632	-3,441	-25%	-698	-443
Monthly Energy Cost Savings	Elec. Savings (kWh/mo)	Elec. Savings (%)	R12M Electricity Savings (kWh/yr)	CO2e Savings (kg/mo)
-$126				-90
R12M Energy Cost Savings				R12M CO2e Savings (kg/yr)

Comments:

February follows January 2022's trend with electricity use above expected. February 2022 was a month of high demand, months of high demand have typically used more electricity than expected. This may indicate that during periods of high demand the pump station is operating outside of its best efficiency point.



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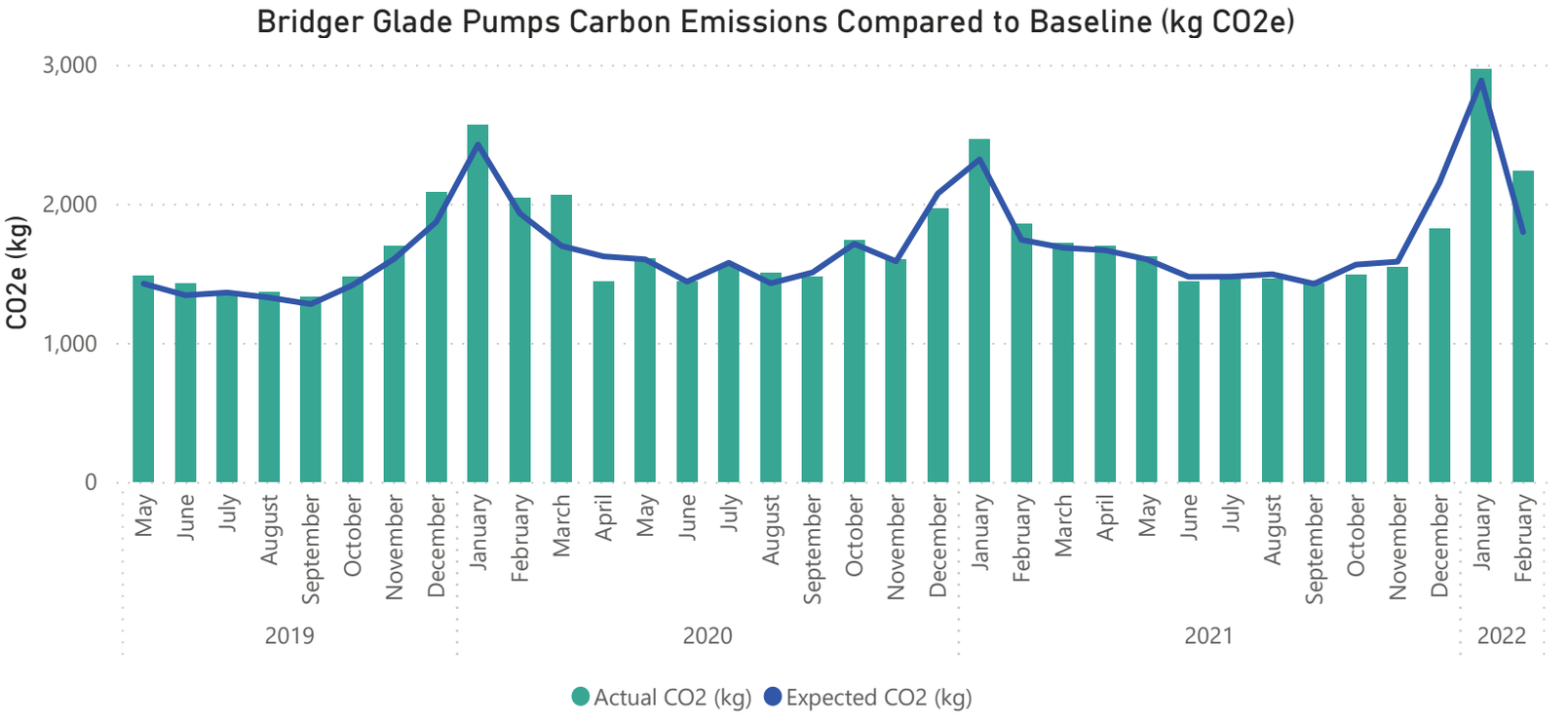
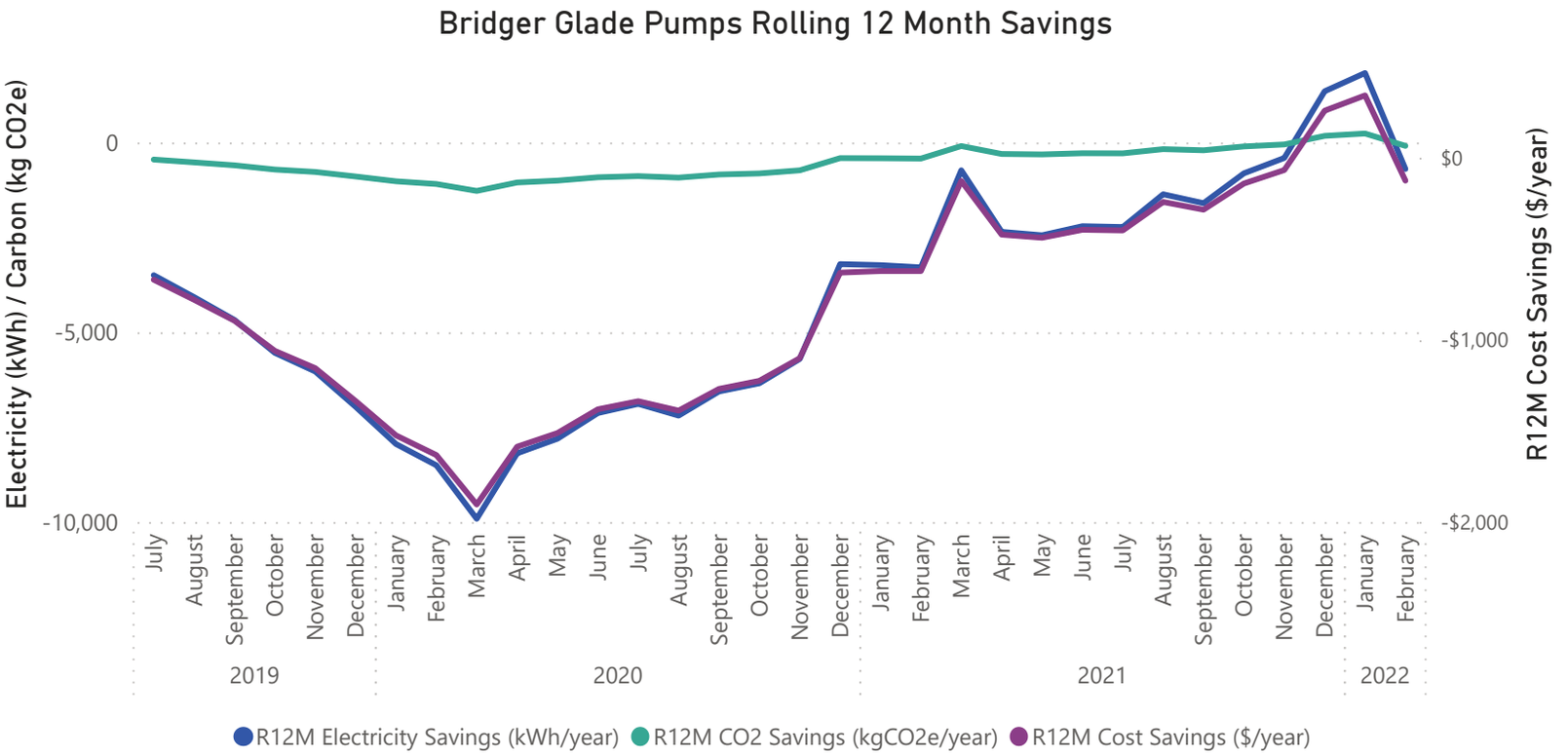
Whakatane District Council

Bridger Glade Pump Station





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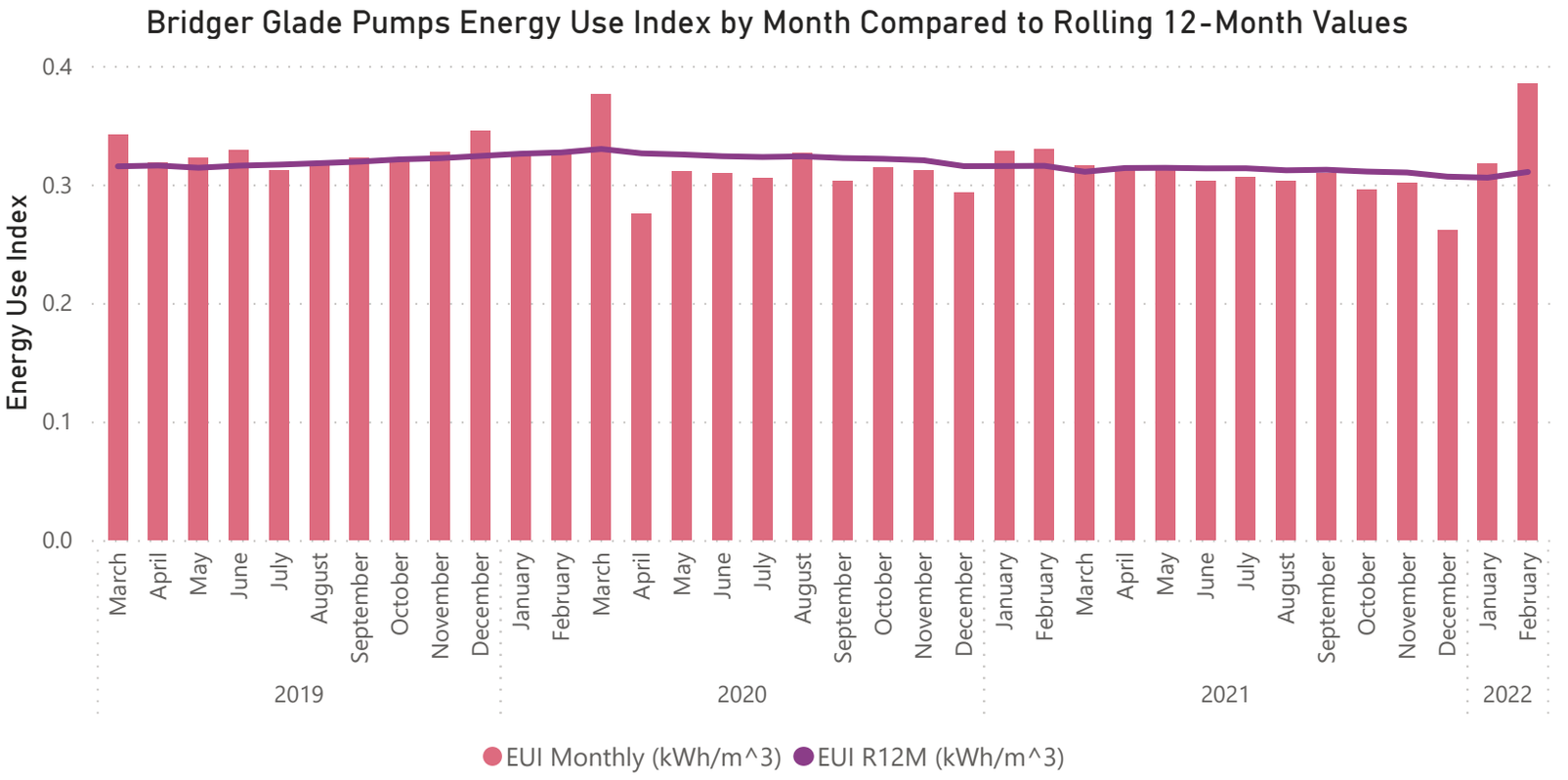
Whakatane District Council

Bridger Glade Pump Station



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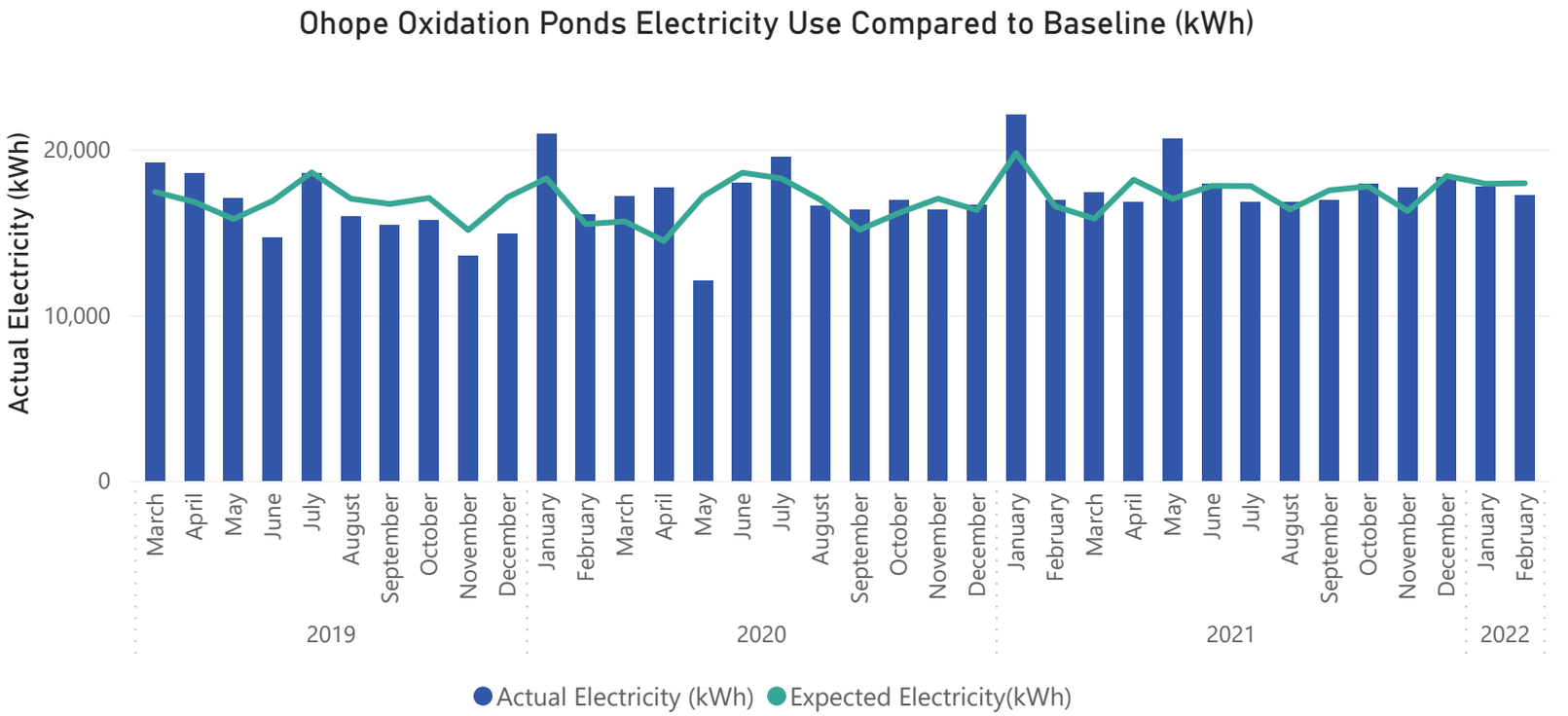
February 2022

Whakatane District Council

Ohope Oxidation Ponds

$128 Monthly Energy Cost Savings	715 Elec. Savings (kWh/mo)	4% Elec. Savings (%)	-3,510 R12M Electricity Savings (kWh/yr)	92 CO2e Savings (kg/mo)
-$629 R12M Energy Cost Savings				-452 R12M CO2e Savings (kg/yr)

Comments:
Ohope oxidation pond electricity use was less than baseline in February 2022.



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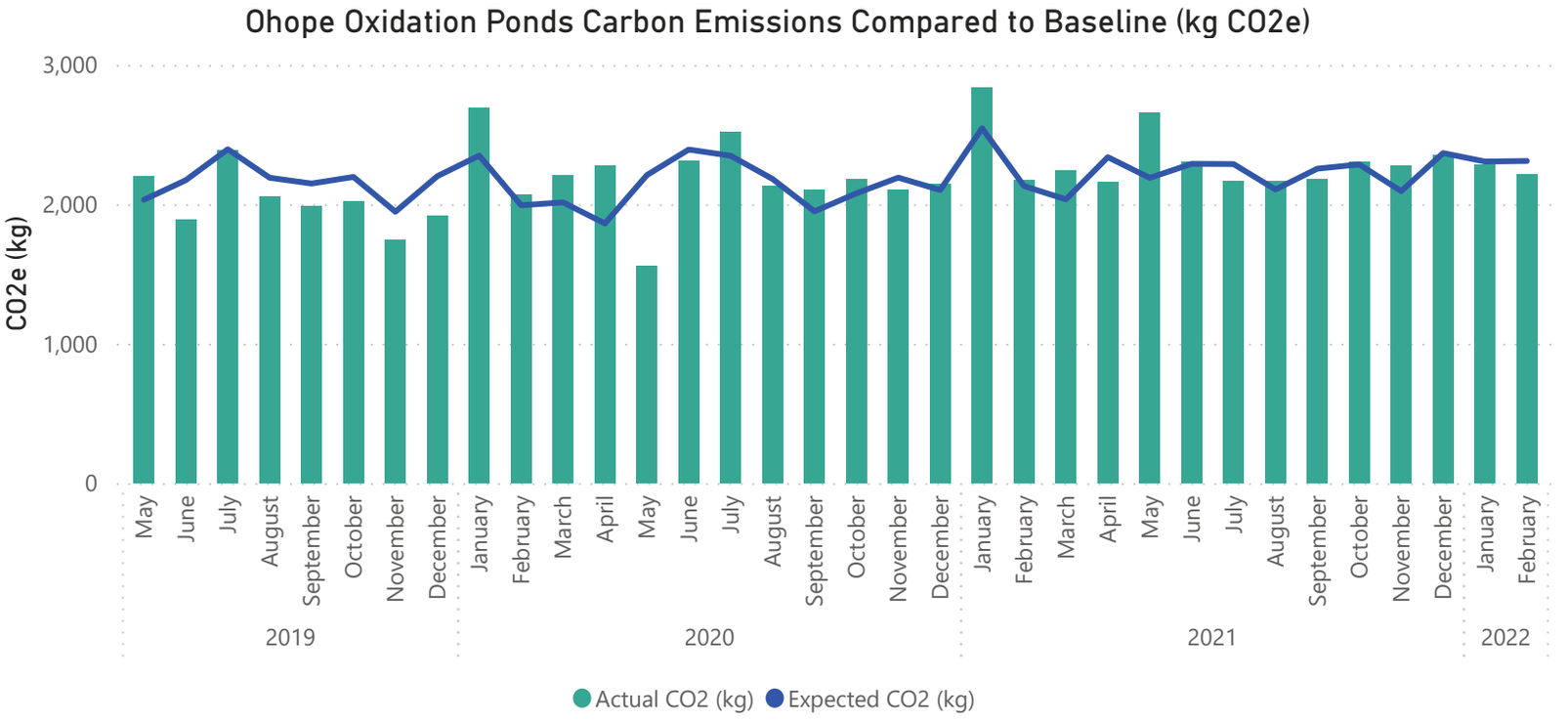
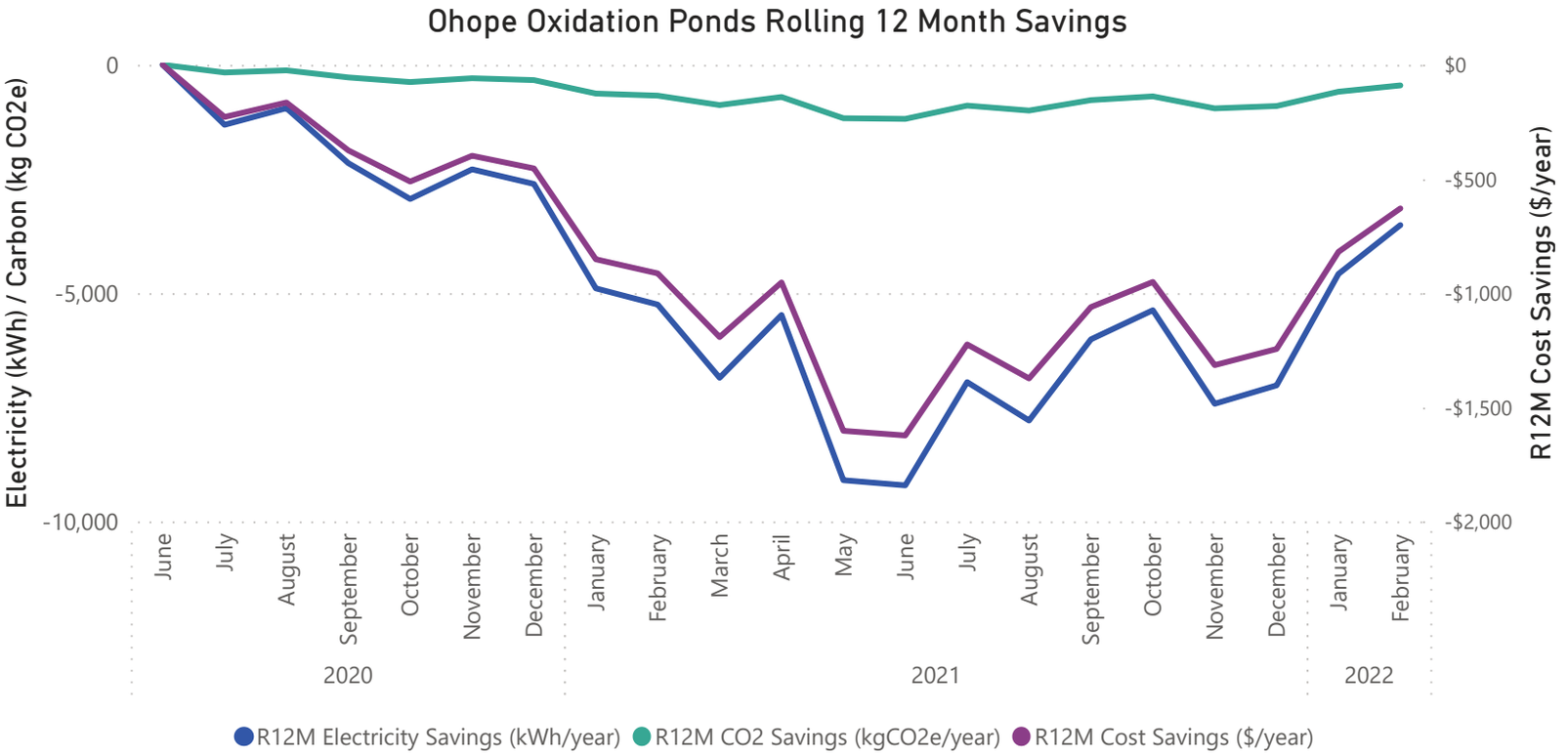
Whakatane District Council

Ohope Oxidation Ponds





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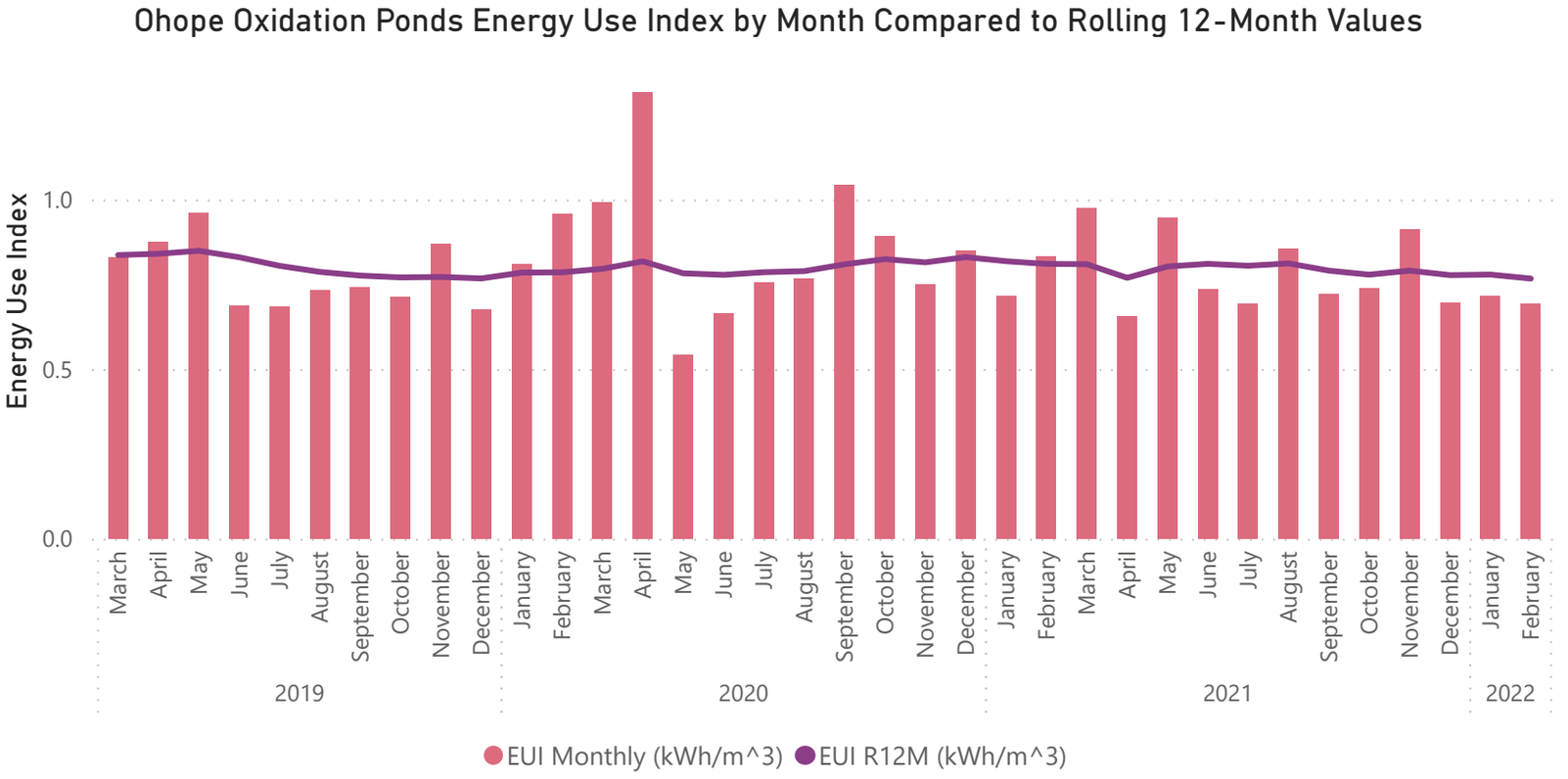
Whakatane District Council

Ohope Oxidation Ponds



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Whakatane District Council

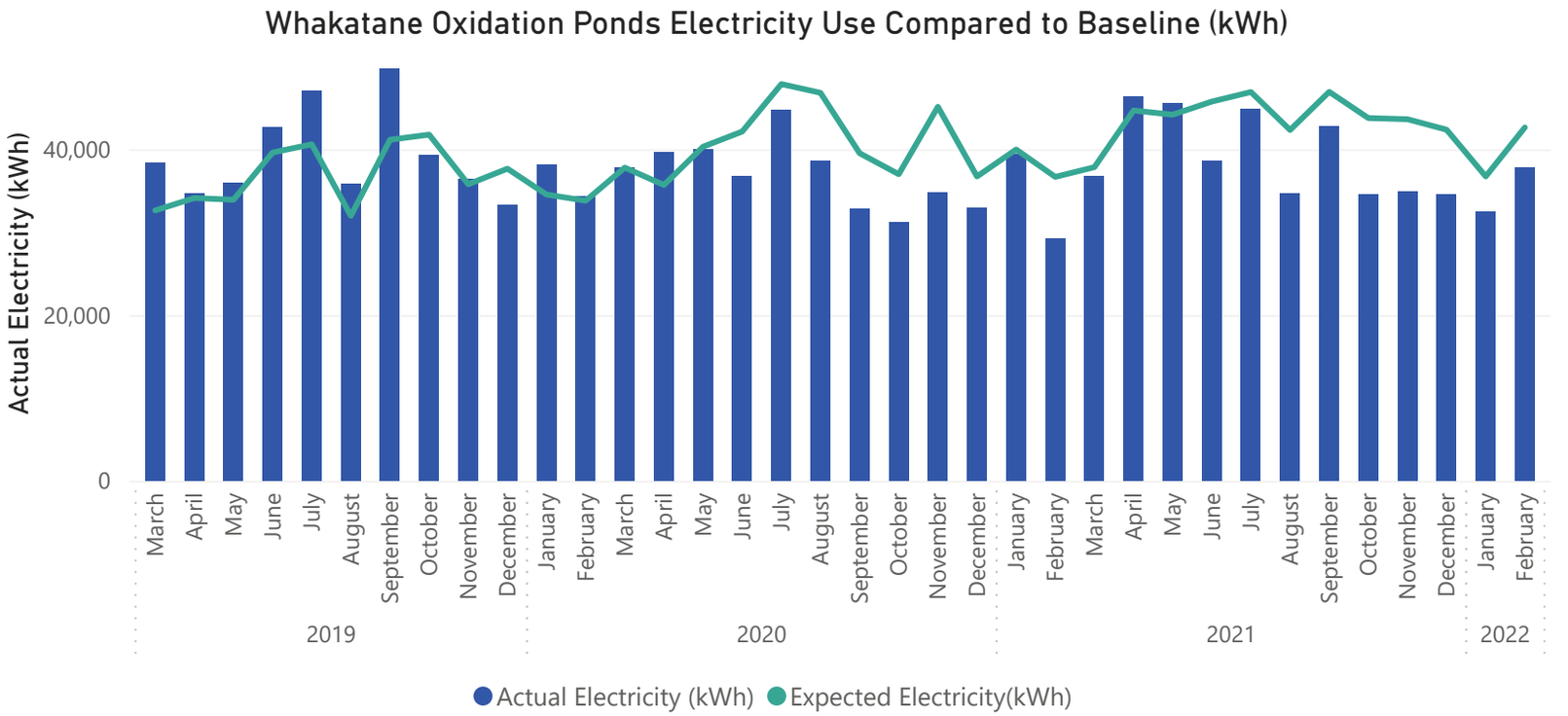
Whakatane Oxidation Ponds

$692	4,872	11%	53,775	627
Monthly Energy Cost Savings	Elec. Savings (kWh/mo)	Elec. Savings (%)	R12M Electricity Savings (kWh/yr)	CO2e Savings (kg/mo)
$7,579				6,921
R12M Energy Cost Savings				R12M CO2e Savings (kg/yr)

Comments:

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).

February 2022 is the ninth month in a row that electricity savings have been achieved. The rolling 12 month EUI has been decreasing, which is good.

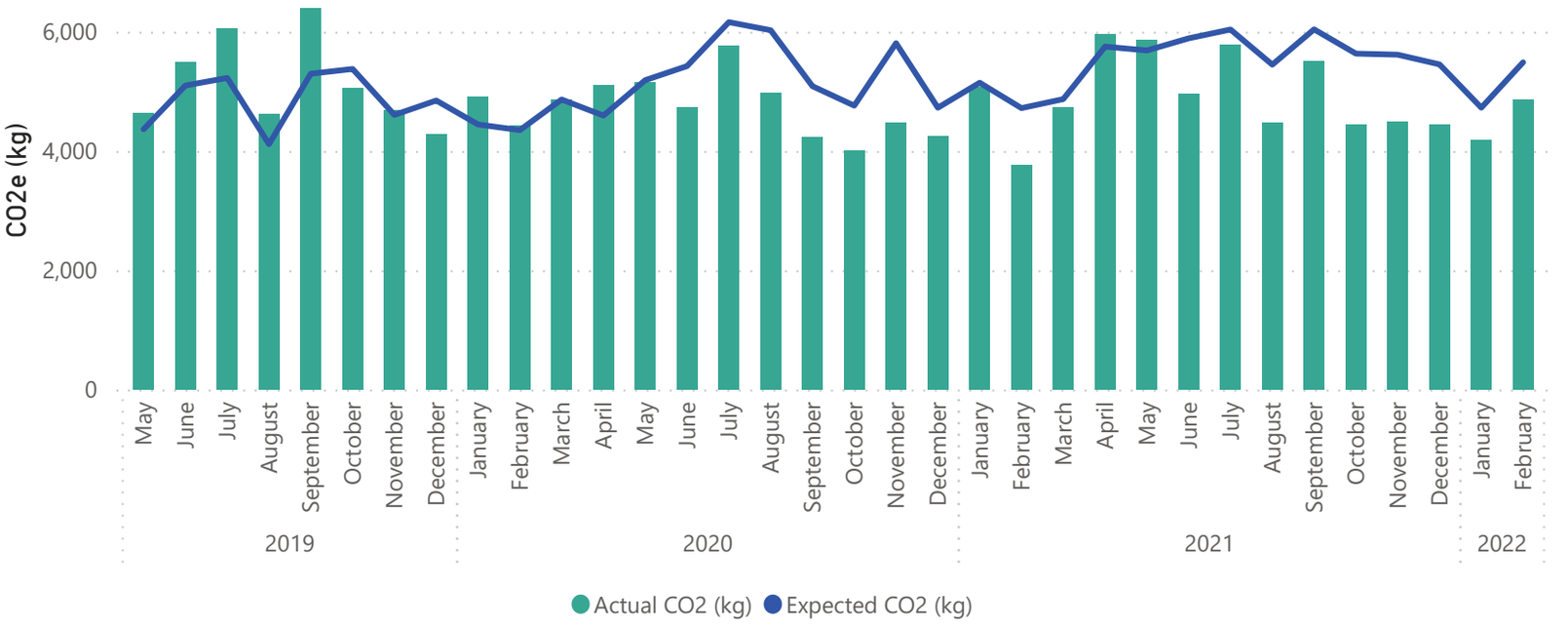


Note: New Zealand was in Covid-19 alert levels 3 and 4 from 23 March until 12 May, 2020. Energy use may have been impacted during this time

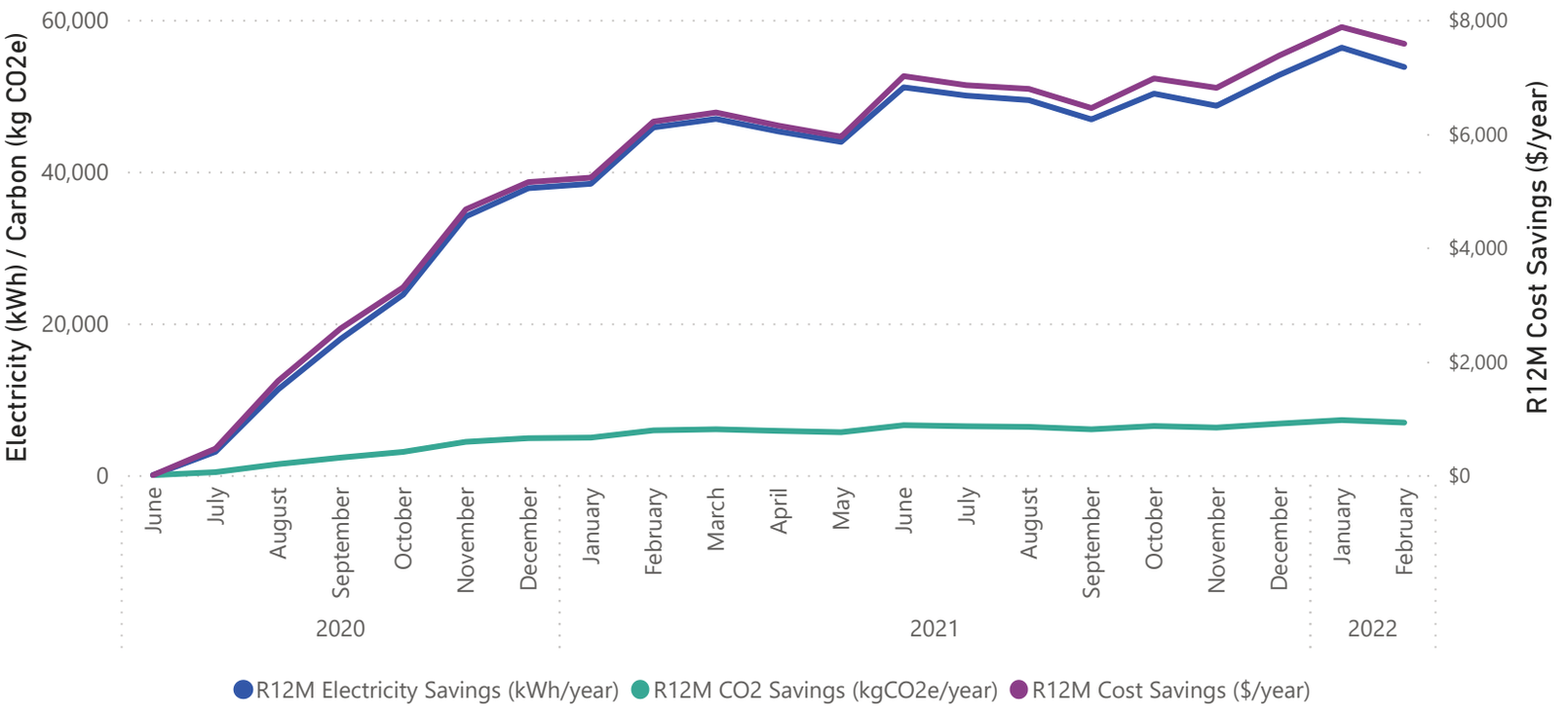
Whakatane District Council

Whakatane Oxidation Ponds

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



Whakatane Oxidation Ponds Rolling 12 Month Savings



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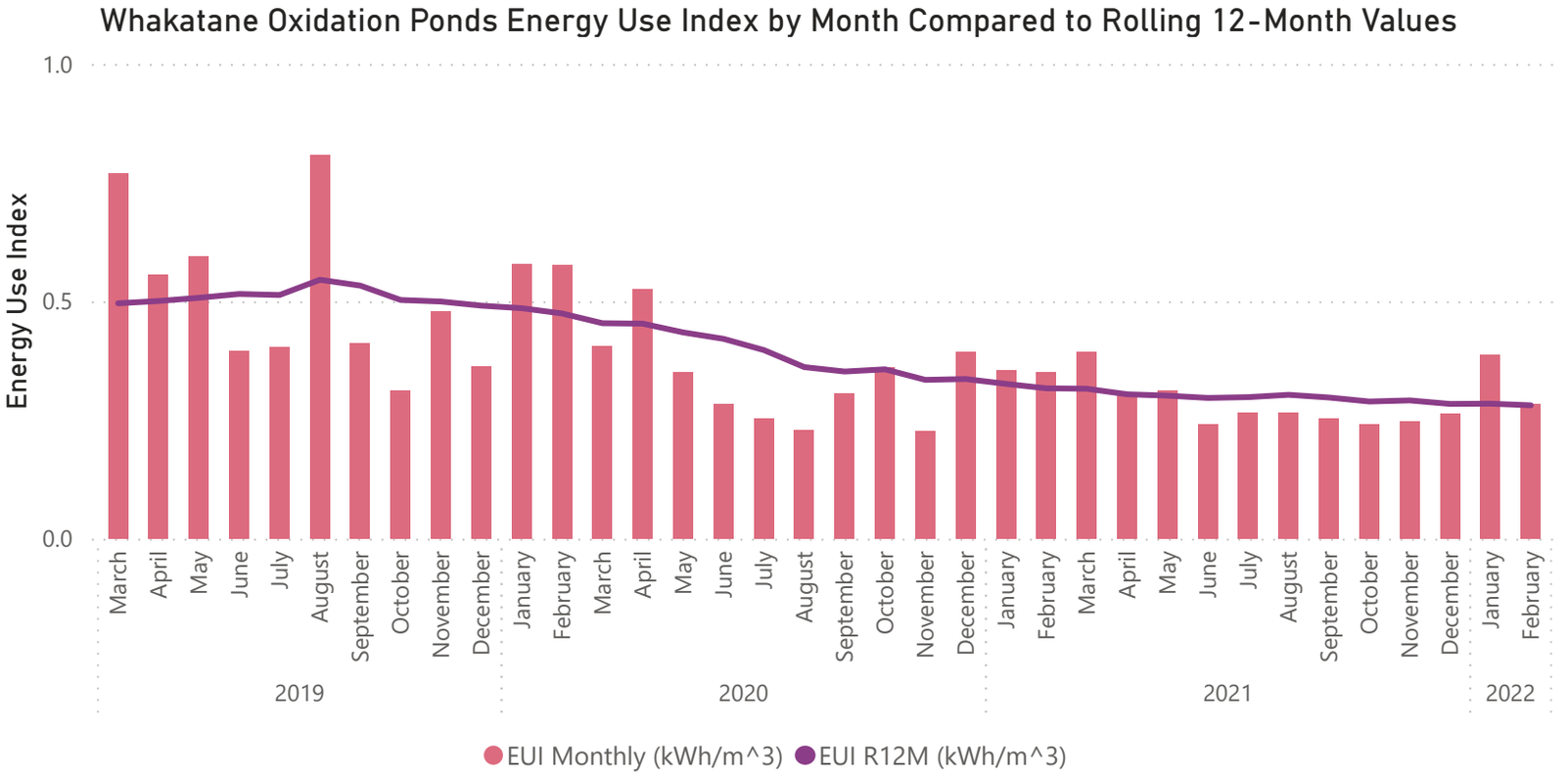
Whakatane District Council

Whakatane Oxidation Ponds



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February 2022

Whakatane District Council

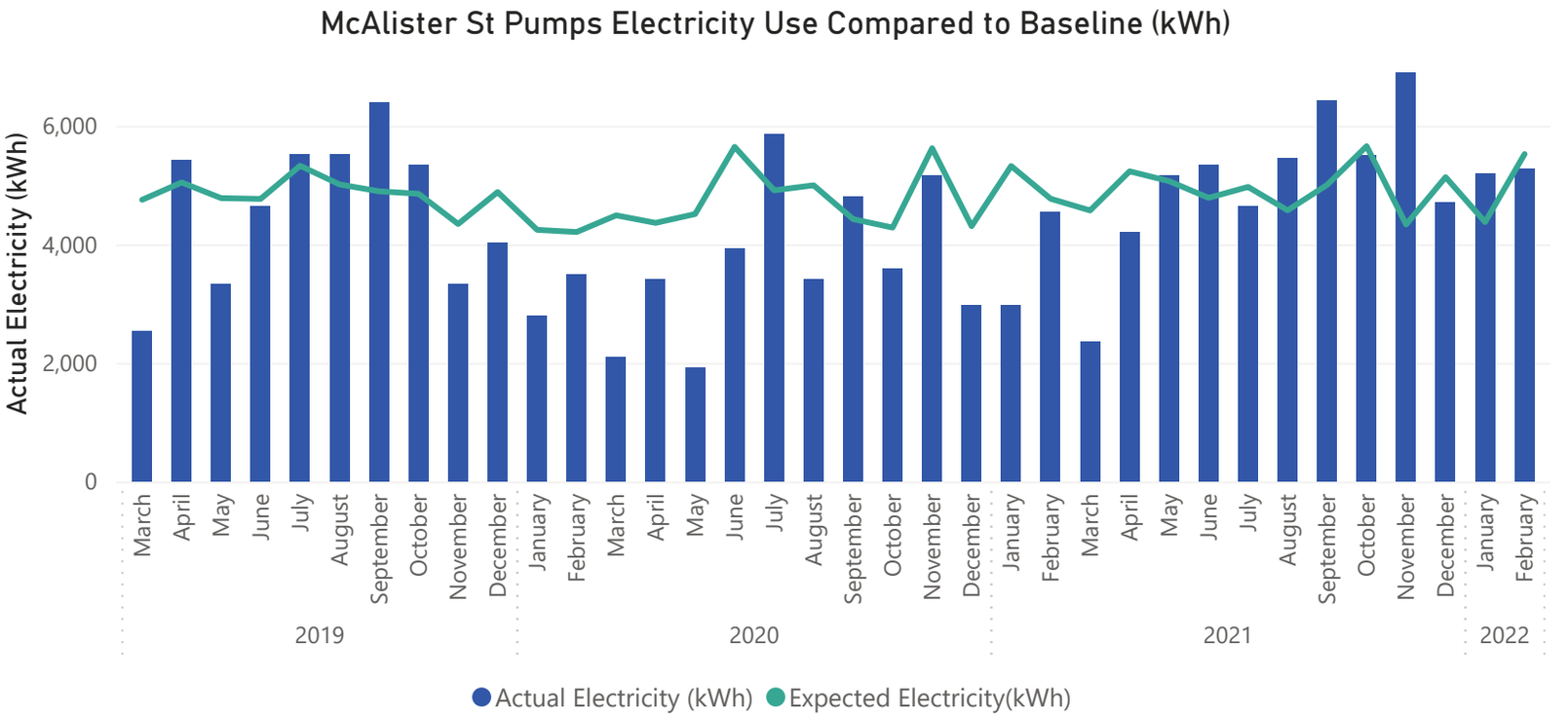
McAlister Street Pump Station

$258 Monthly Energy Cost Savings	243 Elec. Savings (kWh/mo)	4% Elec. Savings (%)	-1,948 R12M Electricity Savings (kWh/yr)	31 CO2e Savings (kg/mo)
$1,313 R12M Energy Cost Savings				-251 R12M CO2e Savings (kg/yr)

Comments:

A baseline was created for the pump station that adjusts for the amount of rainfall at the Kopeopeo weather station. February 2022 was a month of high rainfall, with 177mm that accumulated during the month. Electricity use in February was similar to January 2022, however only 36mm of rain fell during January.

Some error may be attributed to when the meter is read each month and if monthly rainfall aligns with meter readings. For instance, October 2021 was a month of high rainfall and most of the rainfall happened towards the end of the month. This usage was captured in November 2021's electricity invoice due to timing of meter readings. Manual electricity meter readings at the end of each month would help with the accuracy of monitoring reports.



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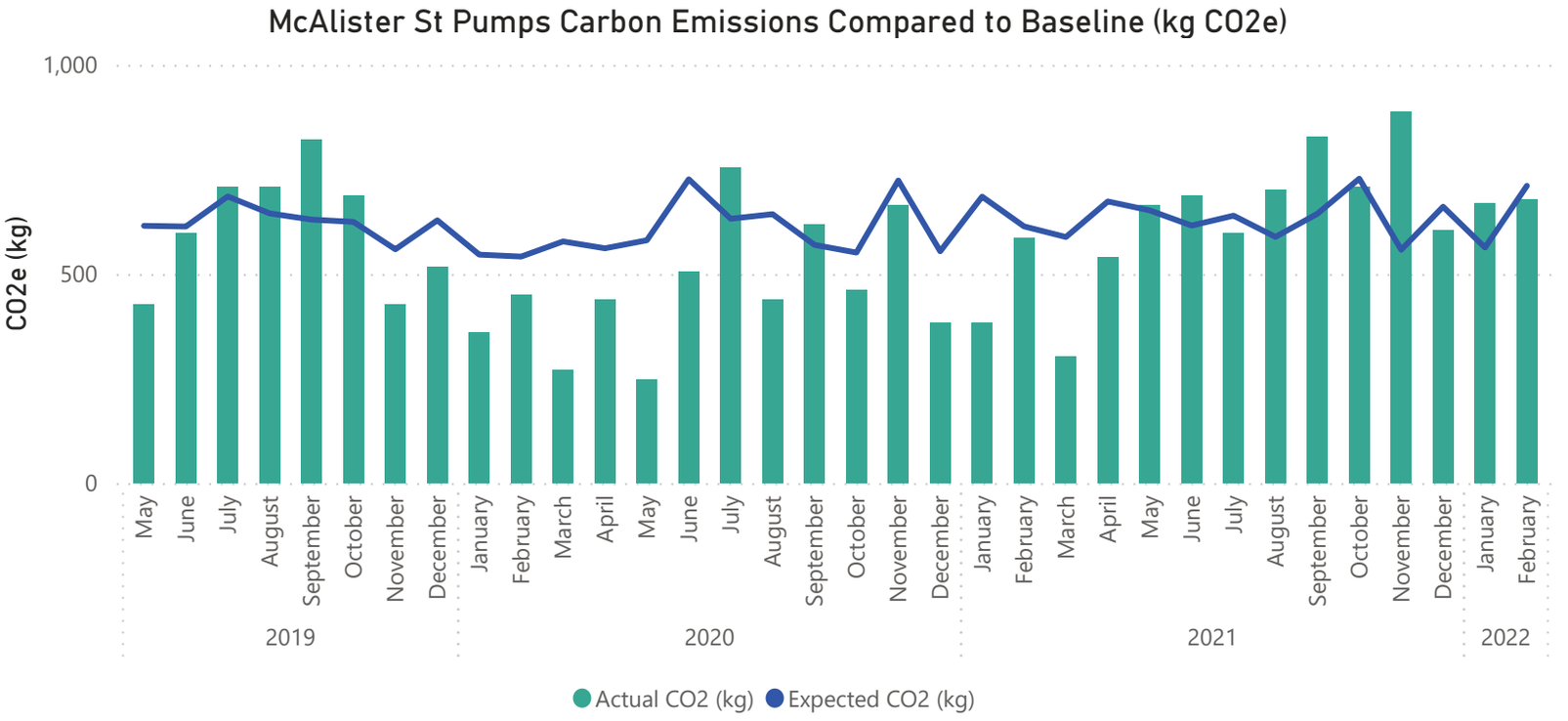
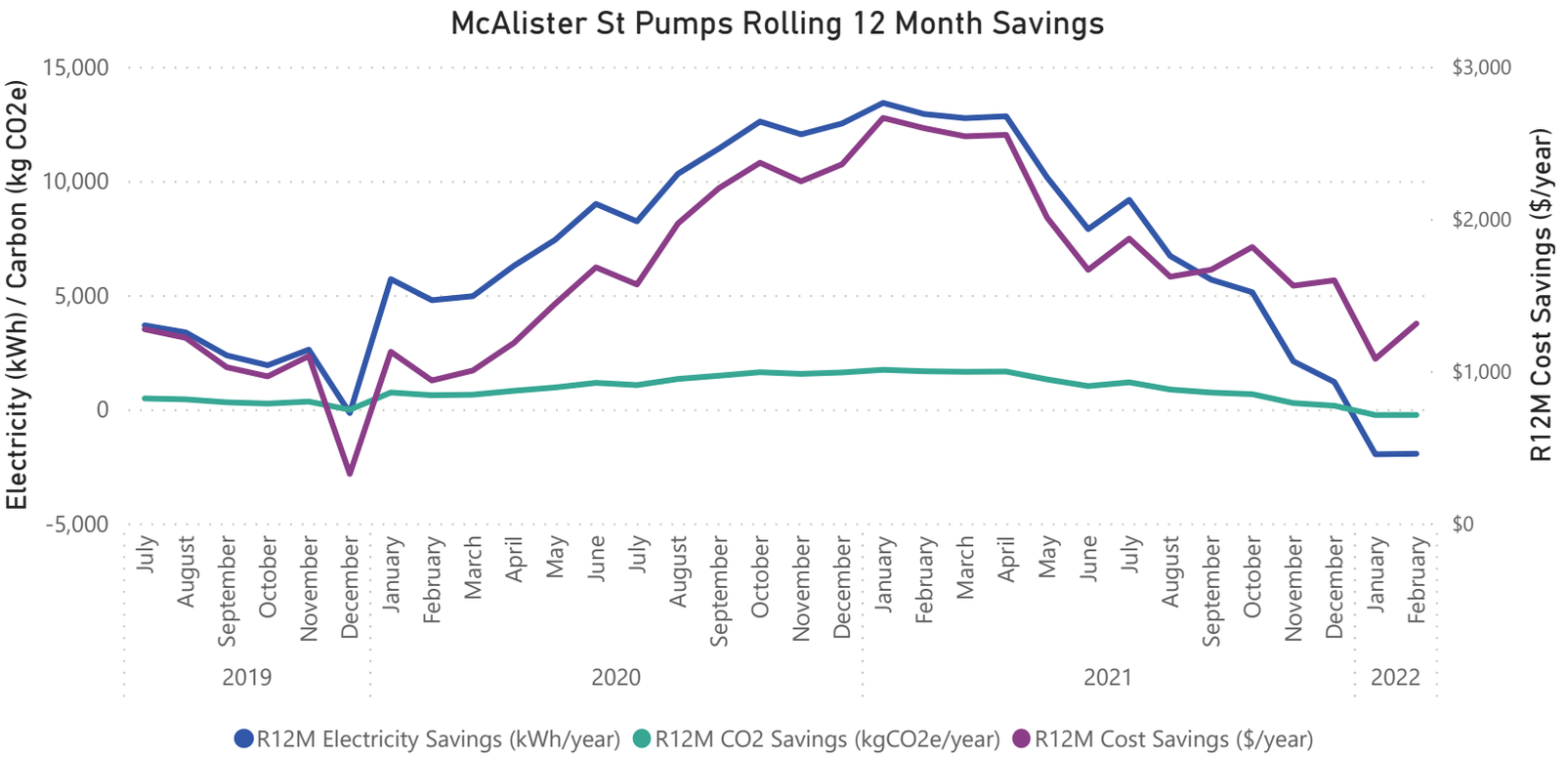
Whakatane District Council

McAlister Street Pump Station





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Whakatane District Council

Rose Gardens Pump Station

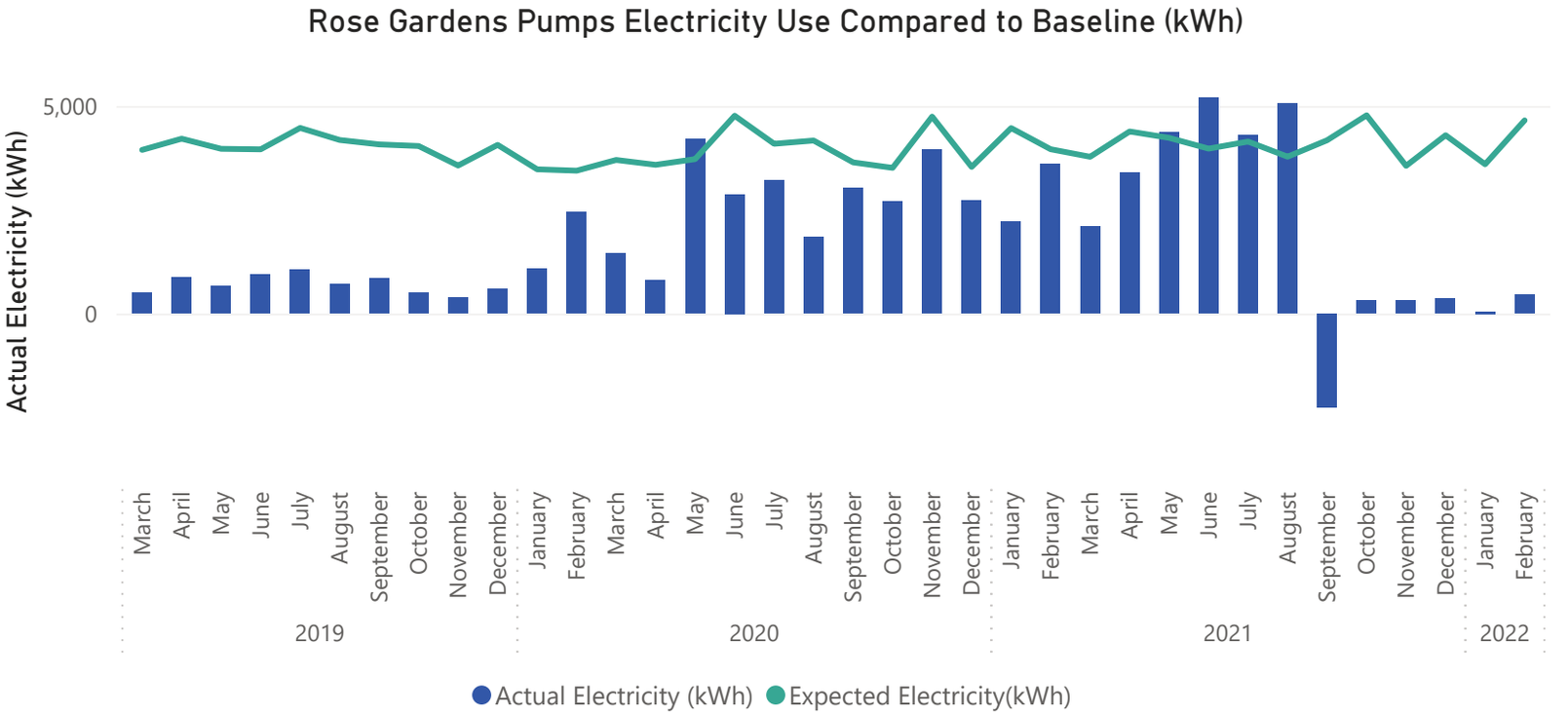
$3,769 Monthly Energy Cost Savings	4,208 Elec. Savings (kWh/mo)	90% Elec. Savings (%)	25,721 R12M Electricity Savings (kWh/yr)	542 CO2e Savings (kg/mo)
$5,190 R12M Energy Cost Savings				3,310 R12M CO2e Savings (kg/yr)

Comments:

A baseline was created for Rose Gardens Pump Station that adjusts for the amount of rainfall at the Kopeopeo weather station. The baseline period is September 2020 to August 2021.

Another excellent month for energy savings at the Rose Gardens Pump Station. February was a month of high rainfall, changing the control scheme of the pump station has had a dramatic effect in energy use. Approximately $3,800 has been saved since October 2021.

The Rose Gardens Pump Station is on a NHH account, some months' usage may be estimated by the retailer and captured by a subsequent meter reading. The meter reading for August was over-estimated by the retailer, September's usage is derived from an actual reading and August's estimated reading. Credit was issued for the over-estimation in August 2021. Manual meter readings can improve accuracy of electricity usage.



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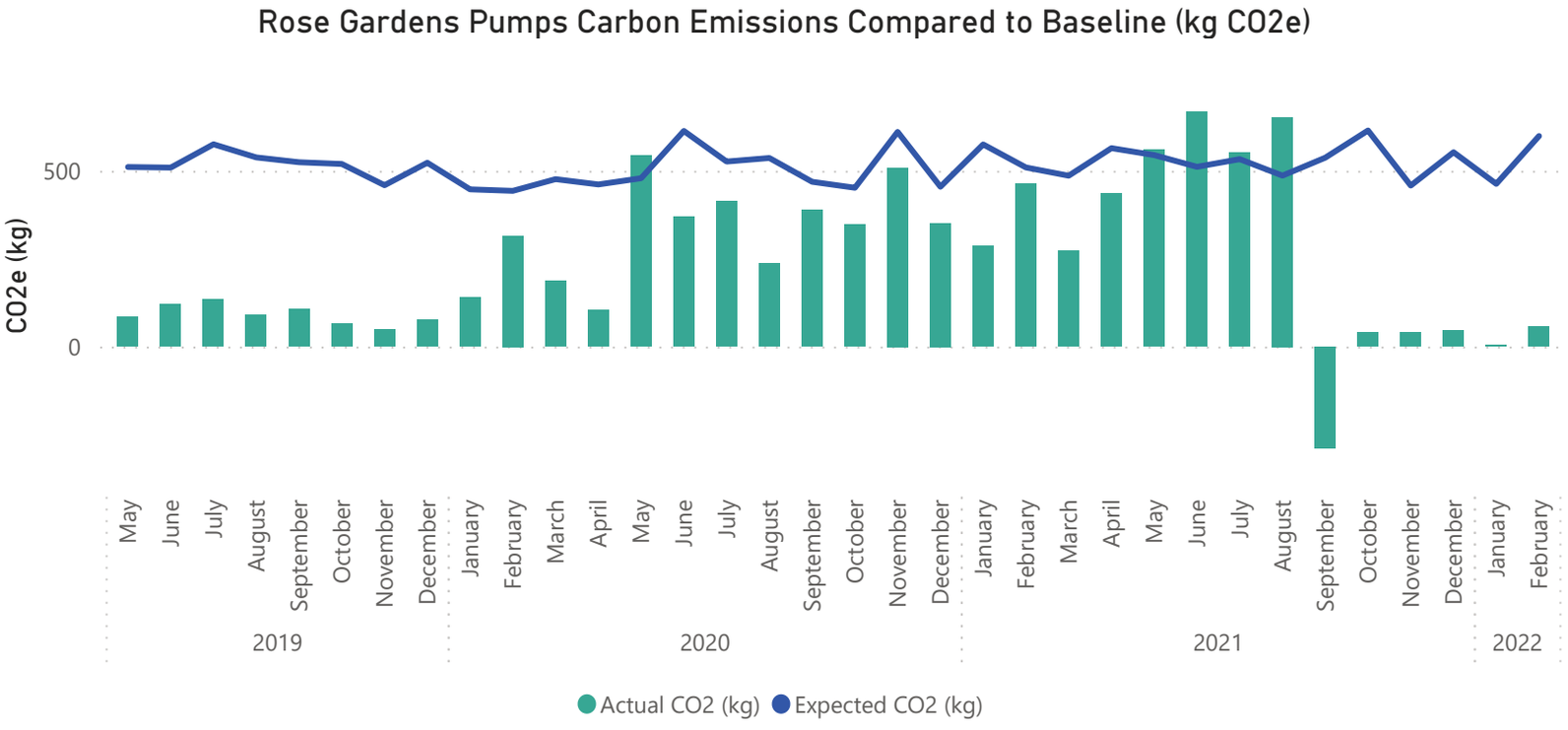
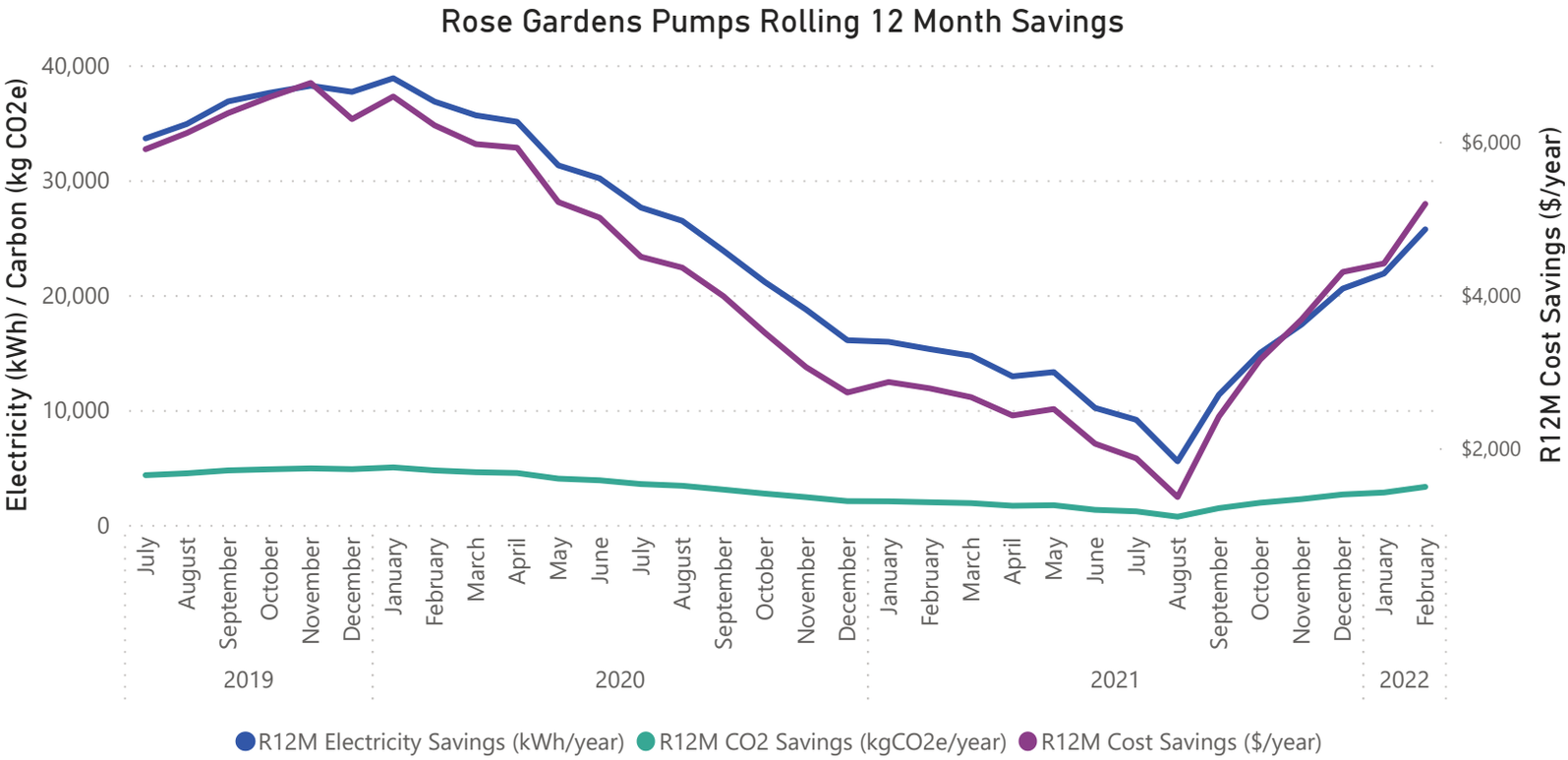
Whakatane District Council

Rose Gardens Pump Station





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