

What Goes Up

6th Edition

Victorian Water Corporations Greenhouse Gas Emissions 2023-24

Executive Summary

The Victorian water sector needs to act quickly and decisively if it is serious about meeting the emission reduction targets it has set for itself.

The updated SoO(ER), adopted in 2022, introduced new 2030 commitments and set a net zero by 2035 target for all water corporations.

The water industry is making progress towards its emissions reduction and renewable energy targets, but not fast enough.

Although the water industry's emissions have decreased over the last four years, it will need to make considerable reductions to meet and maintain its 2025 compliance obligations.

Water industry emissions have decreased for the fourth straight year in 2023-24, which is critical ahead of the target to hit 504,828 tCO₂-e by 1 July 2025. The industry must reduce its emissions by a further 28% by the next reporting period, their biggest annual decrease yet.

Some water corporations are on-track to meet their targets (and some already have). Many, however, still have considerable reductions to make. This is a serious task, especially considering the relatively slow rate of annual decrease to date.

The need to decrease emissions sits most heavily on Melbourne Water. The corporation needs to reduce its emissions by 50% to ensure the industry reaches the 2025 target.

Collectively, the other seventeen water corporations have reduced their emissions below the 2025 target, with seven water corporations reporting below their 2025 targets in 2023-24. When excluding Melbourne Water, most of the remaining water corporations require a reduction of less than 17% of their emissions to reach the 2024-25 targets.

Many of the water corporations need to increase their renewable energy usage to reach the 100% renewable electricity target from 1 July 2025. Twelve water corporations need to more than double their renewable electricity usage and nine of these corporations need to increase usage by at least fourfold.

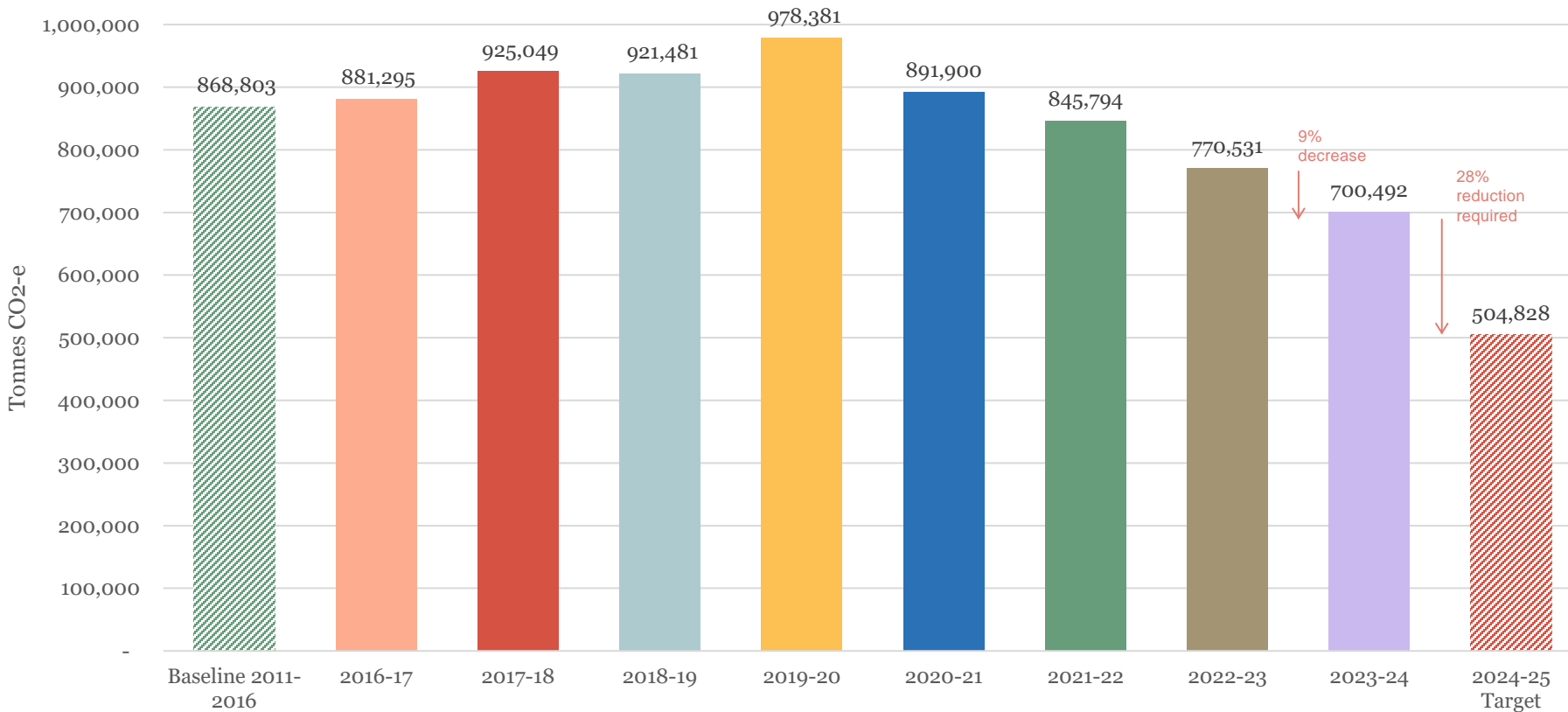
Water corporations are using a range of emission reduction and renewable energy initiatives, including behind the meter solar, power purchase agreements, battery storage, bioenergy, generating ACCUs, transitioning to an electric vehicle fleet and energy efficiency improvements.

The water corporations set their own 2024-25 emission targets and therefore the targets vary in ambition. This, combined with the fact that each water corporation has a unique operating context, means the emission reduction targets in the SoO(ER) are not equally challenging across the industry. Those water corporations that have set less ambitious 2025 targets will need to accelerate their emission reduction efforts.

Results: 2023-24

Victorian Water Industry Emissions

Emissions: All 18 Water Corporations. Source: Annual Reports 2016-17 to 2023-24



In 2023-24, Victorian water industry emissions declined, continuing the sector-wide emission reduction since the industry’s emissions peaked in 2019-20.

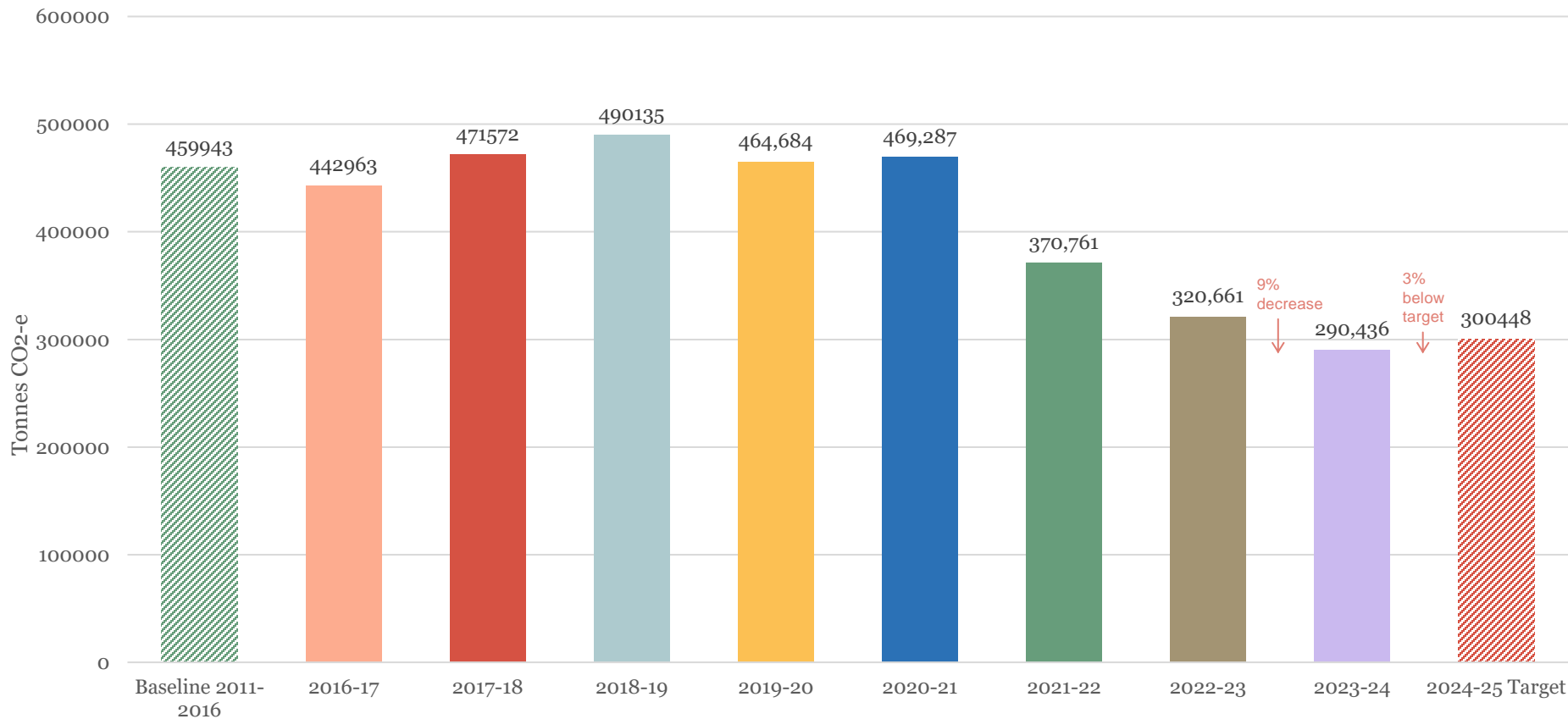
The industry’s emissions have decreased by 70,039 tCO₂-e (or 9%) in 2023-24 compared to 2022-23. The net decrease from the 2011-16 baseline to 2023-24 levels is 19%.

Collectively, the corporations need to reduce their emissions by 195,664 tCO₂-e (or 28%) by 1 July 2025 to reach the water industry annual emissions target.

Results: 2023-24

Victorian Water Industry Emissions (cont.)

Emissions: 17 Water Corporations (excluding Melbourne Water)



Melbourne Water contributes more emissions than all other corporations combined each year.

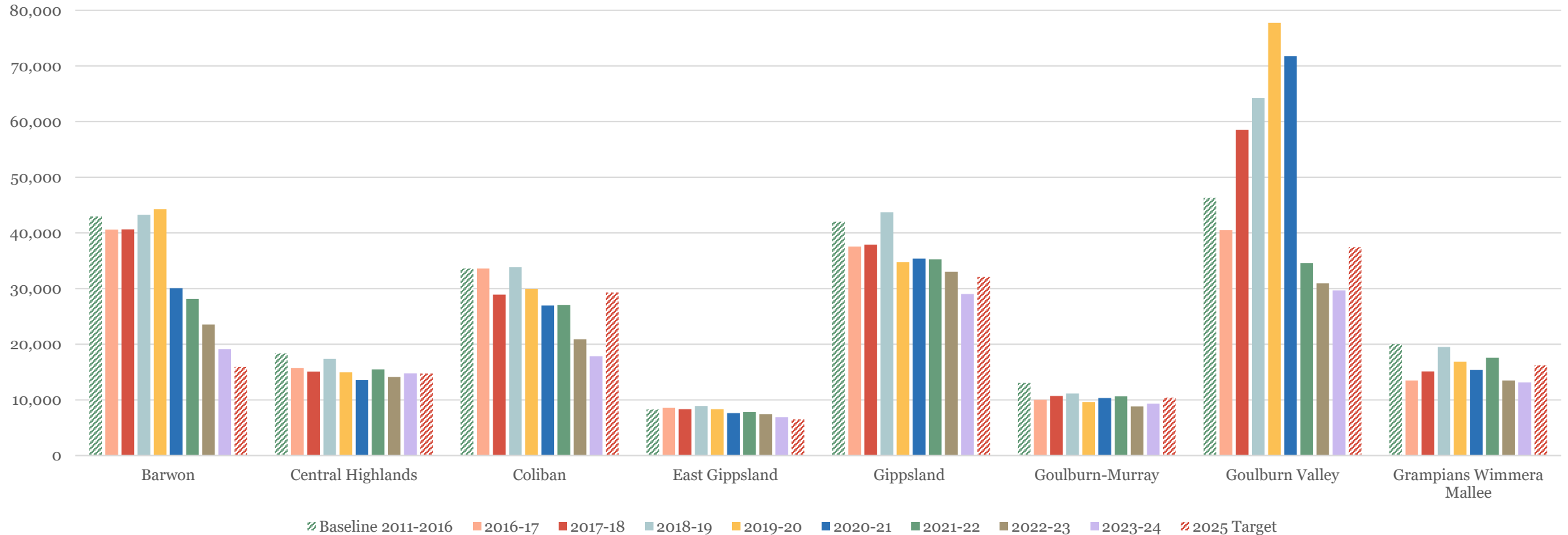
When Melbourne Water’s emissions are removed, the emissions from the rest of the industry decreased by 30,225.4 tCO₂-e in the last financial year. At a total of 290,436 tCO₂-e, the total emissions are below the collective 2025 target (excluding Melbourne Water).

Seven water corporations have already reduced their emissions below their 2025 targets. Four water corporations reported increased emissions in 2023-24 compared to 2022-23.

Results: 2023-24

Victorian Water Industry Emissions (cont.)

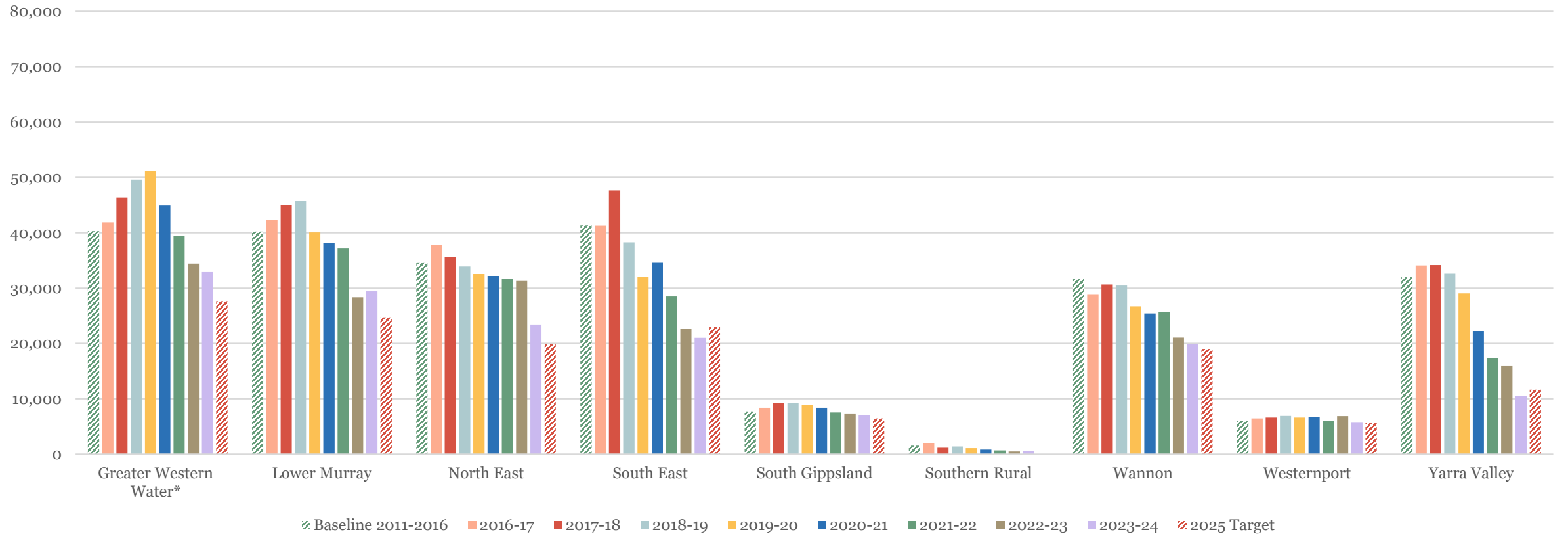
Emissions: 17 Water Corporations
(excluding Melbourne Water)



Results: 2023-24

Victorian Water Industry Emissions (cont.)

Emissions: 17 Water Corporations
(excluding Melbourne Water)

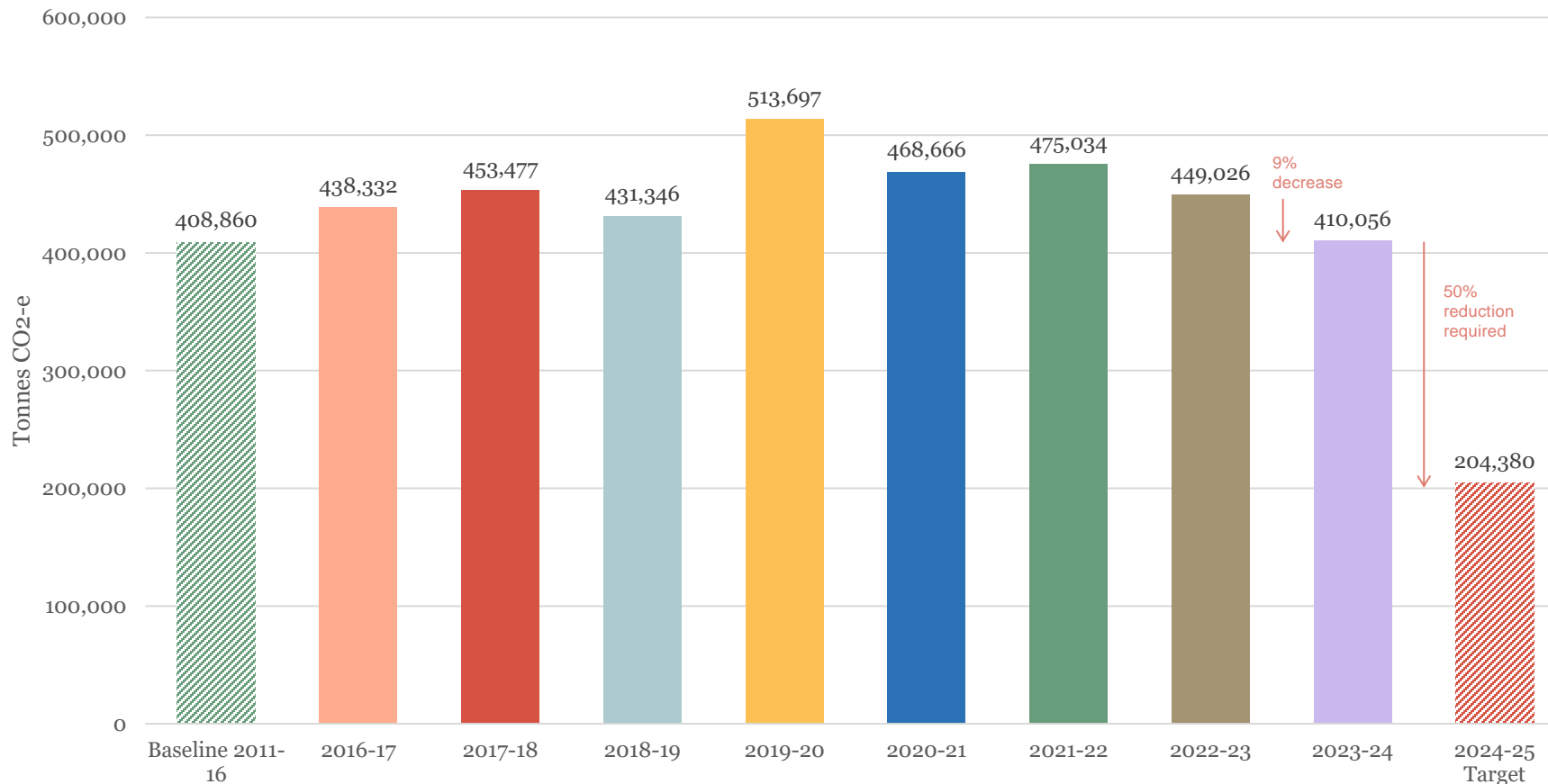


*pre-merger totals from City West and Western have been combined

Results: 2023-24

Victorian Water Industry Emissions (cont.)

Emissions: Melbourne Water



In 2023-24, Melbourne Water reduced its emissions to 410,056 tCO₂-e, a reduction of 9% from the previous reporting period. Melbourne Water needs to reduce its emissions by 50% to meet their 2025 target.

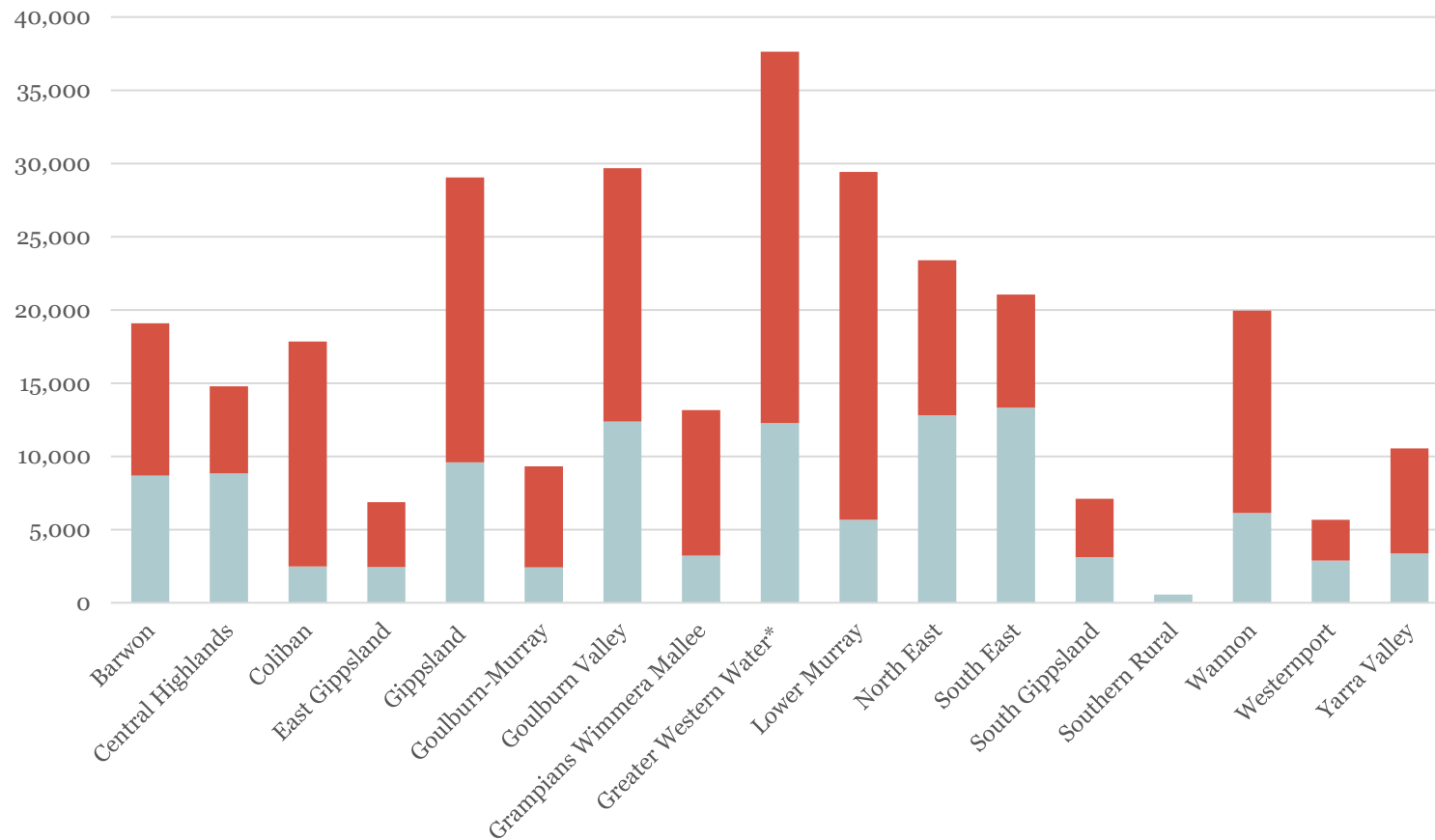
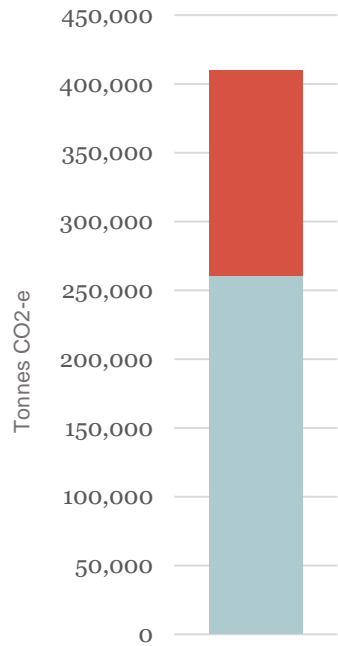
Similar to previous years, this is the biggest proportionate reduction required by any of the water corporations. Melbourne Water plans to reach the 1 July 2025 target by retiring Large-scale Generation Certificates (LGCs), using offsets from 2024, continuing behind-the-meter renewable energy and biogas to bioenergy initiatives.

Results: 2023-24

Scope 1 and 2 Emissions

Melbourne Water

17 Water Corporations



■ Scope 1 ■ Scope 2

Melbourne Water reported higher scope 1 emissions (260,826 tCO₂-e) than scope 2 (149,230 tCO₂-e). Scope 1 emissions remained at a similar level to 2022-23, whereas scope 2 emissions have decreased by 20%.

The total scope 1 emissions across all water corporations increased by 2,730 tCO₂-e in 2023-24 from 2022-23, whereas scope 2 emissions have been reduced by 67,852 tCO₂-e. Eight water corporations reported increased scope 1 emissions in 2023-24.

North East Water reported higher rates of scope 1 emission than scope 2 emissions for the first time. This is due to reduced scope 2 emissions.

Analysis

Emissions

In 2023-24, the collective industry emissions were the lowest reported to date, continuing the trend of reduced emissions since 2020-21.

Fourteen water corporations have reduced emissions from 2022-23, which is an increase from the six water corporations which reduced their emissions last year.

With seven water corporations reporting below their 2025 targets, the industry is making progress to ensure compliance. Many of the water corporations are reducing their emissions using behind-the-meter renewable energy generation, transitioning to an EV fleet, biogas co-generation projects and energy efficiency improvements. Corporations also reported that the reduction in the grid emissions factor contributed to reduced scope 2 emissions.

Yarra Valley Water has reported the greatest decrease in emissions from 2022-23 at 34%. North East Water reduced its emissions by 25%, and an additional four water corporations reduced their emissions by over 10%.

The four water corporations which increased emissions from 2022-23 reported this was in part due to impacts from 2022 flooding, including:

- Increased organic load requiring sewerage treatment
- Increased energy requirements to maintain water quality
- Pumping rates increased from normal levels following high rainfalls in 2022
- Increased fleet travel to respond to flood events (as well as other core business functions).

To reach the 2025 target and progress to net zero in 2035, water corporations are planning to use a variety of initiatives. This includes:

- Carbon sequestration and offset projects, including planting on their own land and partnering with other corporations to generate and purchase Australian Carbon Credit Units (**ACCUs**).
- Behind-the-meter renewable energy
- Transitioning to an EV fleet
- Large scale renewable projects, such as waste to energy, biogas co-generation, biosolids to biochar, solar, wind and battery projects, Power Purchasing Agreements and green hydrogen
- Improving energy efficiency
- Retiring LGCs.

Highlights

Scope 3 Emissions

This year twelve water corporations mentioned scope 3 emissions in their annual reports, while six water corporations commenced reporting commercial air travel, waste disposal and other scope 3 emissions. Three water corporations are investigating data collection sources to calculate and reduce scope 3 emissions over the next few years.

This consideration of scope 3 emissions, which is not currently required under the SoO(ER), points to water corporations reviewing their broader emissions impact.

Yarra Valley Water has launched a carbon in construction tool to estimate scope 3 emissions from capital projects. They also reported that 78% of their direct scope 3 emissions are attributed to Melbourne Water's operations.

Melbourne Water Nitrous Oxide Reporting

Melbourne Water has operated a nitrous oxide program for two years to contribute to the development of new standards to improve the accuracy of measuring emissions in sewerage treatment facilities.

Melbourne Water has found actual emissions from the monitoring program were three times higher than nitrous oxide emissions reported under the NGERS framework. This variation is expected to be due to scientific developments since the reporting calculations were set under the NGERS by the Clean Energy Regulator.

If Melbourne Water's reporting contributes to new standards this may require increased emission reduction for water corporations with higher scope 1 emissions.

North East Water Hydrogen Circular Economy Project

North East Water is collaborating with the Australian Gas Infrastructure Group (AGIG) to explore circular economy opportunities for waste oxygen from hydrogen production to be used to reduce nitrous oxide in wastewater treatment plants.

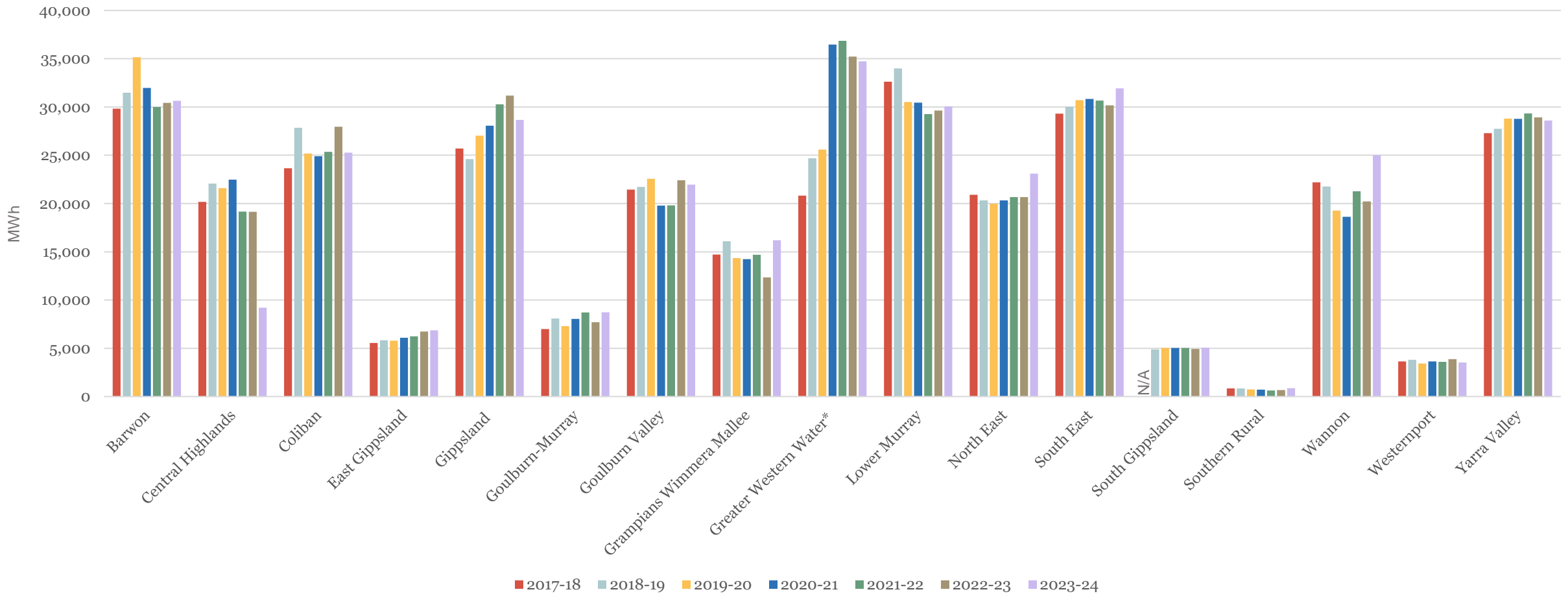
AGIG is building a hydrogen generation facility at the West Wodonga wastewater treatment site. North East Water is exploring:

- Recycled water for hydrogen production
- Waste oxygen for disinfection and improved aerobic treatment
- Waste head transfer for energy reduction.

Electricity Usage Trends

Electricity Usage: 17 Water Corporations

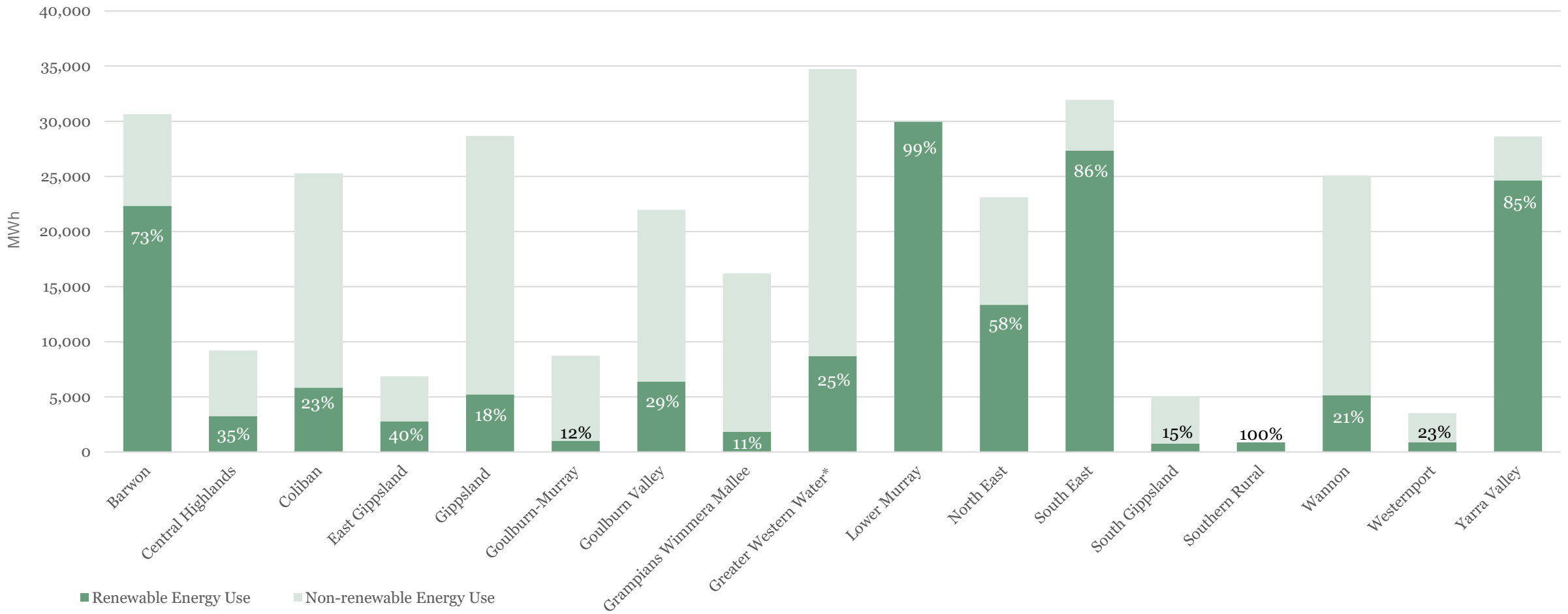
(excluding Melbourne Water)



*pre-merger totals from City West and Western have been combined (only Western Water until 2019-20 as City West electricity usage data was unavailable until 2020-21).

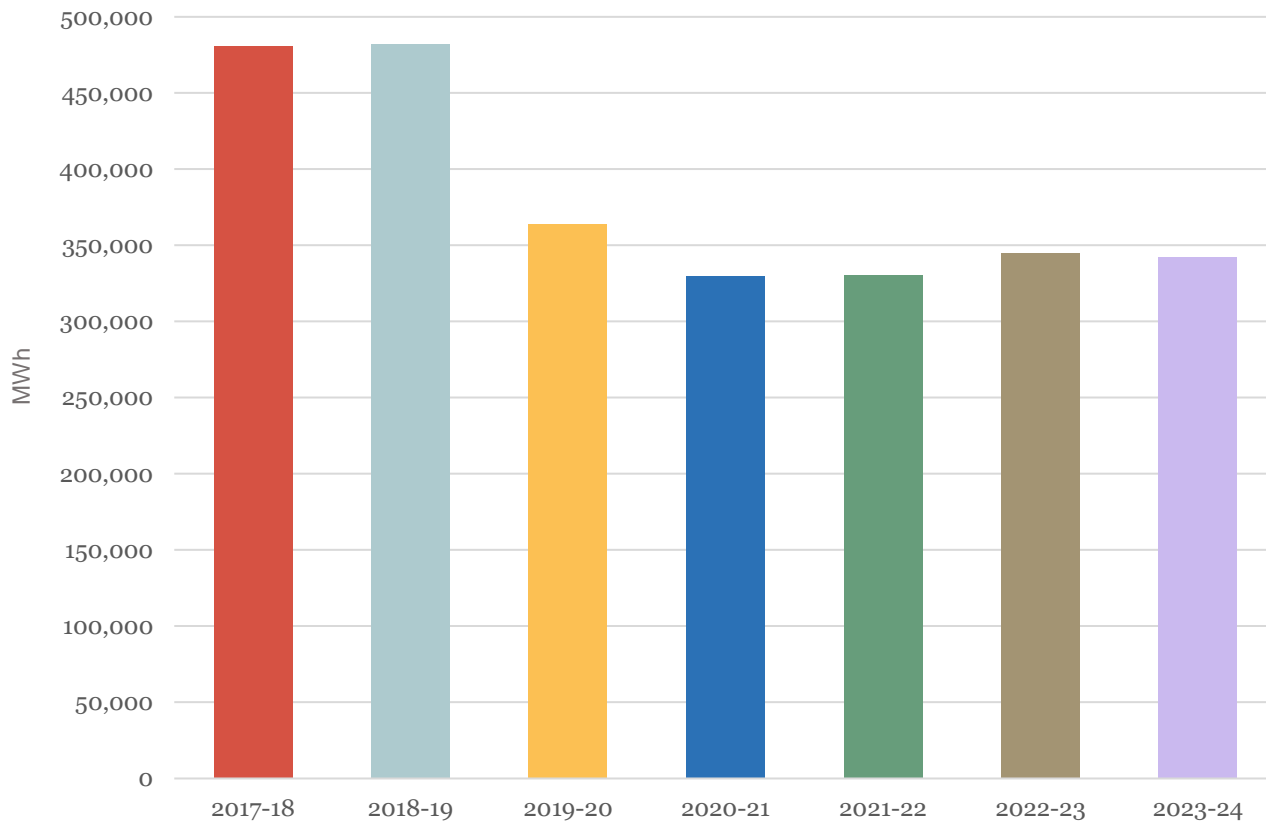
2023-24 Renewable Energy Usage

17 Water Corporations (excluding Melbourne Water)

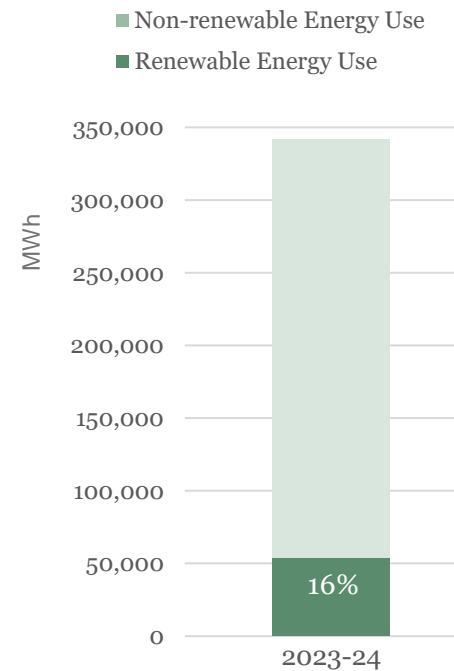


Electricity Usage Trends

Electricity Usage: Melbourne Water



Renewable energy usage 2023-24



Melbourne Water contributes about half of the Victorian water corporations' combined electricity usage. Melbourne Water's electricity usage has fluctuated under 250,000 MWh since 2020-21.

In 2023-24, approximately 16% of Melbourne Water's electricity was sourced from renewable energy.

Analysis

Electricity

The water industry’s electricity usage has remained steady between 2022-23 and 2023-24, with a reduction of 1% in 2023-24. The proportion of this electricity sourced from renewable energy has increased from 24% to 32%.

Under the SoO(ER), all water corporations are required to source 100% of their electricity from renewable sources by 2025. Water corporations will require a substantial increase in renewable energy to meet this target.

Ten water corporations reported an increase in electricity use in 2023-24 compared to 2022-23. GWMWater had the greatest increase of 31%, closely followed by Southern Rural Water with an increase of 26% and Wannon Water with 24%.

Central Highlands Water reduced its electricity use by 52% in 2023-24, and increased the percentage sourced from renewable energy from 7% to 35%.

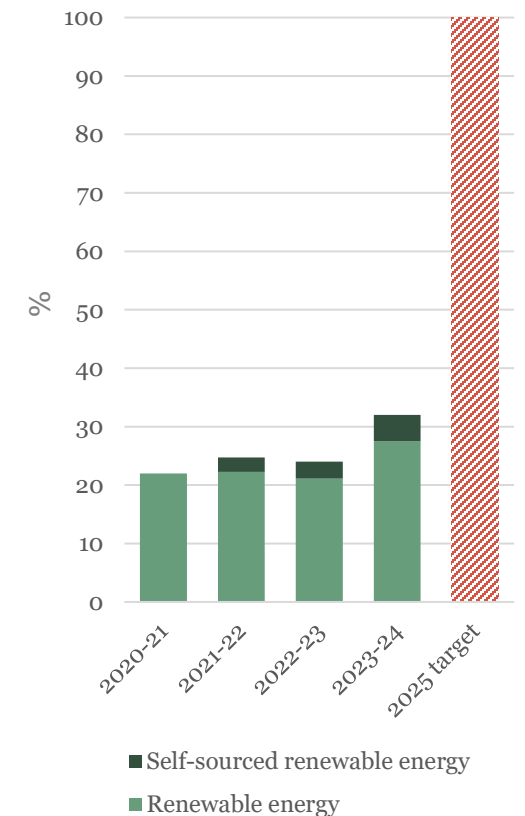
Southern Rural Water used 100% renewable electricity for the second year, and Lower Murray Water reported 99.7% renewable energy, a substantial increase from 3.3% in 2022-23. This was from grid-sourced renewable electricity.

Yarra Valley Water reported 68% of renewable energy was self-sourced or corporation-led, the highest proportion of the water corporations. South East Water self-sourced 61% and Barwon Water self-sourced 57% renewable energy.

GWMWater, Melbourne Water, South Gippsland Water and Westernport Water reported a decrease in the proportion of renewable energy used in 2023-24. Reasons for this included a greater increase in total electricity consumption compared to behind-the-meter (BTM) renewable generation, and issues with BTM systems producing less energy than anticipated.

Water corporations which used a greater amount of renewable energy used onsite solar and hydroelectric generation, biogas co-generation facilities, power purchase agreements and the voluntary surrender of LGCs.

Percentage of Renewable Energy Used (18 water corporations)



Comment

As the 100% renewable energy by 2025 target will be reducing scope 2 emissions to zero by 1 July 2025, the focus for water corporations will be keeping scope 2 emissions at net zero.

Water corporations will experience challenges reducing emissions whilst facing the impacts of climate change. In 2023-24, the water corporations that reported an increase in emissions from 2022-23 attributed it largely to the impact of the 2022 flooding events.

As floods, droughts and bushfires are expected to increase, water corporations will be required to respond with increased water pumping, sewerage treatment and call outs to respond to events.

The retirement of LGCs and ACCUs will become increasingly important for water corporations to reach and maintain emissions targets.

From January 2025, many large businesses will be required to undertake mandatory climate-related financial disclosures under the *Treasury Laws Amendment (Financial Market Infrastructure and Other Measures) Bill 2024* (Cth). The Clean Energy Regulator is expecting an increase in voluntary cancellations of LGCs and increased demand.

Reforms to the Safeguard Mechanism has contributed to increased demand and increased ACCU spot prices in late 2024.

In March 2024, the Victorian Government legislated emission reduction and renewable energy targets. This includes increasing the renewable energy target for 2030 to 65%, the addition of a 95% renewable electricity target by 2035, and bringing forward net zero emissions to 2045, instead of 2050.

This year some water corporations have commenced reporting on scope 3 emissions. Currently there is no obligation under the SoO(ER) to track or reduce scope 3 emissions. This action on scope 3 emissions points to potential future direction for the industry's emission reduction efforts and changes to the obligations under the SoO(ER).

With Melbourne Water anticipating purchasing and retiring market-sourced offsets and VicWater progressing its carbon sequestration purchasing project, carbon offset integrity will be back in the spotlight in 2025.

About Proud Mary Consulting

Creating Public Value.

Proud Mary Consulting creates public value with clients through advising on policy, strategy, governance and public administration in relation to water, climate change, sustainability and energy.

Michael Wheelahan Principal Consultant

Michael brings extensive experience in developing policy, strategy and effective governance. He is known for his ability to shape and work within complex policy, regulatory, and institutional frameworks and to navigate government. Michael is sought out for his ability to contextualise complex policy issues and articulate strategies to a wide range of audiences.

Ella Rose Steven Consultant

Ella Rose's focus includes climate change adaptation and mitigation, water resource management, renewable energy, and product stewardship. She uses her research, analysis, and drafting skills to support public and private sector clients.

Jon Anstey Principal Consultant

Jon consults to boards and teams on strategy, law, finance and governance, across energy, climate, resources and health. Jon has more than twenty years of experience as an executive, leader and lawyer in over twenty countries, including ten years with Shell and the United Nations (UN) in Europe and Asia. As a lawyer, he has over ten years in energy, climate, water, resources, finance, infrastructure and health law.

Naomi Kelsey Consultant

Naomi is passionate about addressing climate change, social equity and sustainable resource management challenges. With expertise in research and policy analysis, she has delivered projects for the Australian governments and environmental organisations.