



Advanced carbon environmental solutions

INVESTOR PRESENTATION
May 2022

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- Carbonxt produces patented Activated Carbons used to treat toxic pollutants from air and liquid phase applications.
- US-based manufacturing plants historically produce non-brominated Activated Carbon products for customers operating coal-fired power stations, cement plants, and other industrial processes.
- Strong customer interest to expand into water protection due to EPA regulatory change, significantly expanding addressable market.
- Industry leading R&D capability enables Carbonxt to be a solutions-based company, developing customised products for specific industrial needs
- New joint venture in Kentucky to expand production and product range.



COMPANY SUMMARY

Share Price (\$) ¹	\$0.098
Shares on Issue (m)	275.30
Market Cap. (\$m)	\$26.98
Cash (\$m) ²	\$6.17
Debt (\$m) ²	\$5.39
Enterprise Value (\$m) ¹	\$26.20
Options/Warrants (m)	36.54

1. As at 26 May 2023
2. As at 31 Dec 2022



SHARE REGISTER

L A Andrews	5.45%
Total top 20 shareholders	42.78%



BOARD OF DIRECTORS

Name	Position	Shares (m)
Matthew Driscoll ¹	Chairman	2.08
Warren Murphy ²	MD	1.38
David Mazyck ³	Director	0.43

1. Matthew Driscoll holds 2,250,000 options exercisable at \$0.30 (1m) and \$0.45 (1.25m).
2. Warren Murphy holds 6,000,000 options exercisable at \$0.30 (3m) and \$0.45 (3m).
3. David Mazyck holds 5,250,000 options exercisable at \$0.30 (2.25m) and \$0.45 (3m).



PRICE CHART

Daily Volume Millions



1

Legally binding Joint Venture Agreement (NewCarbon) now in place with US partner Kentucky Carbon Processing, LLC (KCP) to establish a new state-of-the-art activated carbon plant located in eastern Kentucky, USA (CG1 share builds to 50%). Manufacturing commencing 1H24.

2

Increases CG1's current total production capacity to 21,000 tons with a further expansion anticipated thereafter. CG1 emerges with a diversified manufacturing portfolio in North America with plants located in Kentucky, Minnesota and Georgia.

3

Attractive pricing of activated carbon products: CG1 currently securing on average above US\$4,000/ton for Activated Carbon Pellets.

4

Executed funding for the new plant to cover working capital, costs to completion and contingency.

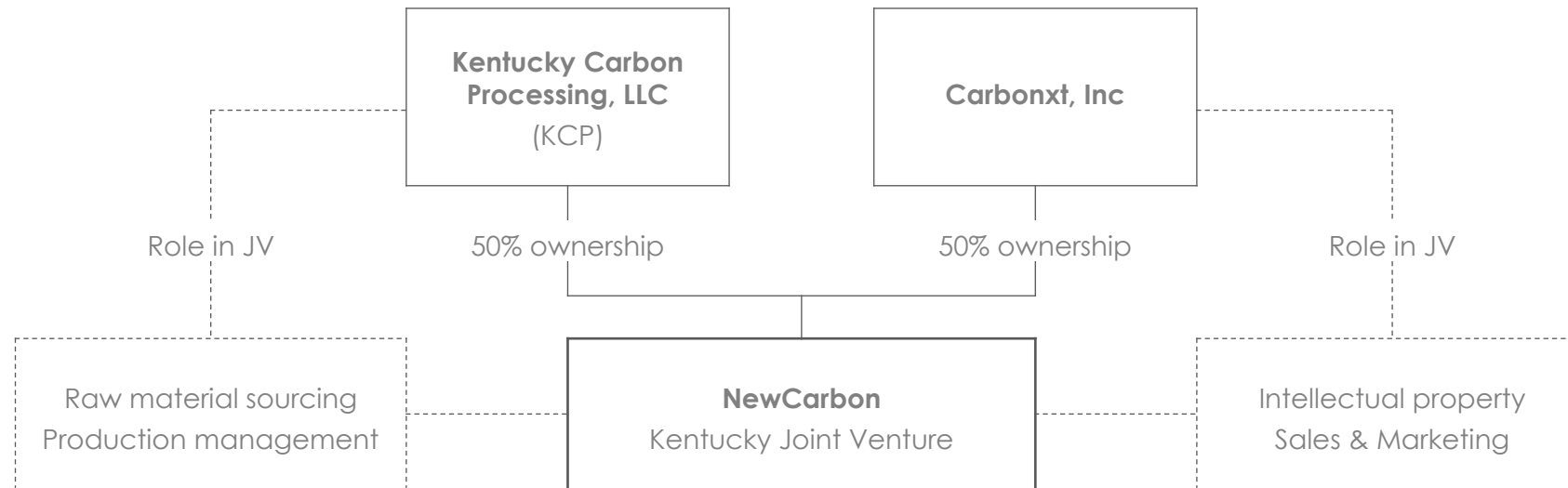
5

Additional capacity from Kentucky facility allows CG1 to expand customer base to new industries with an emphasis on water & wastewater benefiting from EPA regulatory change.

6

PFAS opportunity. The US EPA's Clean Water Act aims is to reduce PFAS pollution in the environment. The Bipartisan Infrastructure Law provides for US\$10 billion in funding to address the costs to water companies of complying with the new regulations.

- The joint venture at the existing Inez Power facility (“Inez”) via Kentucky Carbon Processing, LLC - was first announced in July 2022, but a subsequent decision to transition Inez’s existing operational facilities into an Activated Carbon Plant, as opposed to building a new facility, required a reworked agreement and build programme.
- The Agreement is now complete and funding has been secured, with drawdown expected in the next few days.
- The joint venture, called NewCarbon Processing, LLC (“NewCarbon”), facilitates entry into the lucrative liquid-phase market, with the very low ash content of KCP’s coal enabling the production of premium products. Gross margins are estimated at c.50%.
- The revised build programme will cost less to complete and is simpler. Management expects manufacturing and sales to commence in 2Q2024 to coincide with finalisation of the new PFAS legislation, with the EPA anticipating issuing final regulations in 4Q2023.
- Joint venture ownership and roles:



Improved commercial terms for Kentucky JV



- The Company has raised A\$18.0m through debt and equity, to fund a significant expansion of its manufacturing capacity and improve access to raw materials.
- Under the revised build plan, Carbonxt and its partner KCP have agreed to retro fit an existing power plant on site to produce activated carbon.
- Carbonxt will contribute US\$10m to NewCarbon staged over the next two years (subject to completion milestones), while KCP will contribute the relevant Inez Power assets (kiln, turbine, buildings etc) to deliver an initial 10,000+ tons activated carbon plant, with KCP responsible for the delivery of an operational production facility.
- Joint venture parties believe the new facility can be expanded to over 20,000 tons for modest incremental capex.
- Transitioning the existing Inez Power facility to an activated carbon plant will have lower development risk, lower cost, higher capacity and allow for a better scheduling of payments for Carbonxt, with 45% of the cost paid once the manufacturing plant is operational and generating cashflows.

	ORIGINAL PROPOSAL	IMPROVED TERMS	IMPACT
Stake in JV	50%	50%	Unchanged
Location	Kentucky	Kentucky	Unchanged
Development	New Build collocated	Retro-fit of existing Waste-to-energy facility	Improved
Target initial production	9,000 tons p/a	10,000 tons p/a	+1,000 tons
First production	Jul-23	1Q 2024	Delayed
Cost to CG1 (ex Contingency)	US\$13.5m	US\$10.0m	US\$3.5m lower
Payment timing	Over 12 months of development	US\$5.0m upfront (US\$0.5m already paid)	Improves CG1 cash position
Payment timing		US\$0.5m on project completion	
Payment timing		US\$1.125m average across each of the 4 Qtrs. post operation	

Conversion of existing waste-to-energy plant

- The Inez waste to energy plant is already a significant and operational facility.
- Conversion of the existing facility, rather than building from new, will reduce both costs and construction risks.
- Uses existing plant including a kiln, turbine and extensive physical infrastructure

Project Timeline

2Q2023	Placement	Complete
2Q2023	Revision of JV Build plan	Complete
Mar-23	Various long lead items ordered	Complete
Mar-23	Initial US\$0.5m paid	Complete
Apr-23	Site work begins	Initiated
May-23	JV Agreement	Complete
May-23	Loan Documentation	Complete
May-23	Establishment of JV and team	Initiated
2023	Sales & Marketing	Initiated
1Q2024	Build Commissioning	
2Q2024	Manufacturing launch	



External



Turbine/Generator



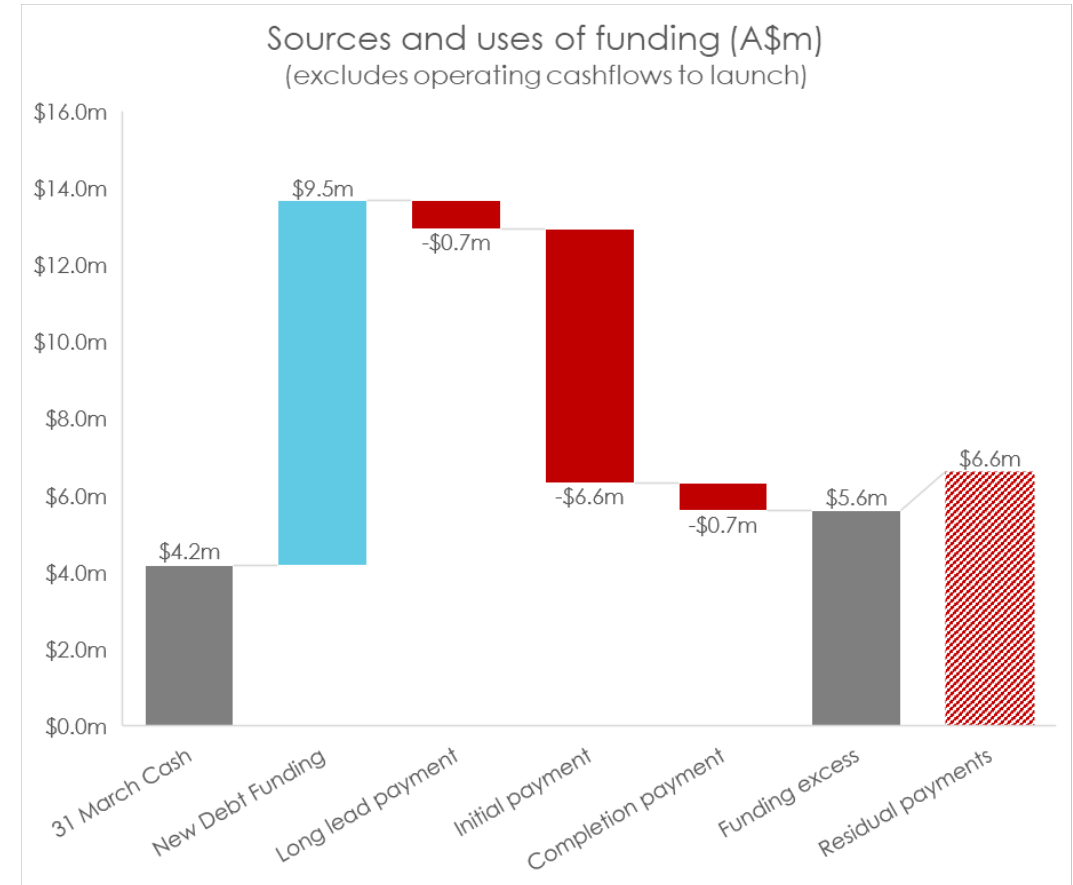
Kiln



Ash hoppers

Future Cashflow Movements

- Following a successful placement and SPP, plus additional debt facilities of \$9.5m the company is well capitalised to fund the cost of the new facility.
- Carbonxt will fund US\$5.0m immediately to NewCarbon, including a US\$0.5m payment already made to secure long-lead time items.
- A further US \$0.5m is due to NewCarbon on successful commissioning.
- Carbonxt has A\$5.6m in excess capital, excluding any positive or negative operating cashflow over the rest of 2023.
- Once the facility is operational, Carbonxt will make four further quarterly instalments (average of US\$1.125m per quarter) making Carbonxt's total contribution to the project US\$10m.
- Management expects these Residual Payments (in aggregate A\$6.6m) to be funded from Carbonxt share of the cashflows from the new manufacturing plant.



What is Activated Carbon?

- Activated Carbon is used to filter contaminants from water and air. It is processed (activated) to have small, low-volume pores that increase the surface area available for adsorption.
- Due to its high degree of microporosity, one gram of activated carbon has a surface area in excess of 1,000 m².
- Activated carbon is usually derived from carbon sources such as coconut husks and coal. Typical industrial uses include:
 - Trapping mercury emissions from coal-fired power stations
 - Groundwater remediation and drinking water filtration.
 - Filters in air and gas purification to remove oil vapours, odour, and other hydrocarbons emissions.
 - Filtering of PFAS (see later)
- The number of industrial uses cases for Activated Carbon is expanding rapidly.
- Activated Carbon for large scale industrial uses comes in three forms each with specific properties: powdered; pellets and granular.
- There is considerable intellectual property in making Activated Carbon to address individual use cases and this is reflected in pricing, which for large scale use ranges from \$2,000 per tonne for lower quality products to \$6,000 per tonne for specialised high quality products.

Current Product:
Powdered



Current Product:
Pellet



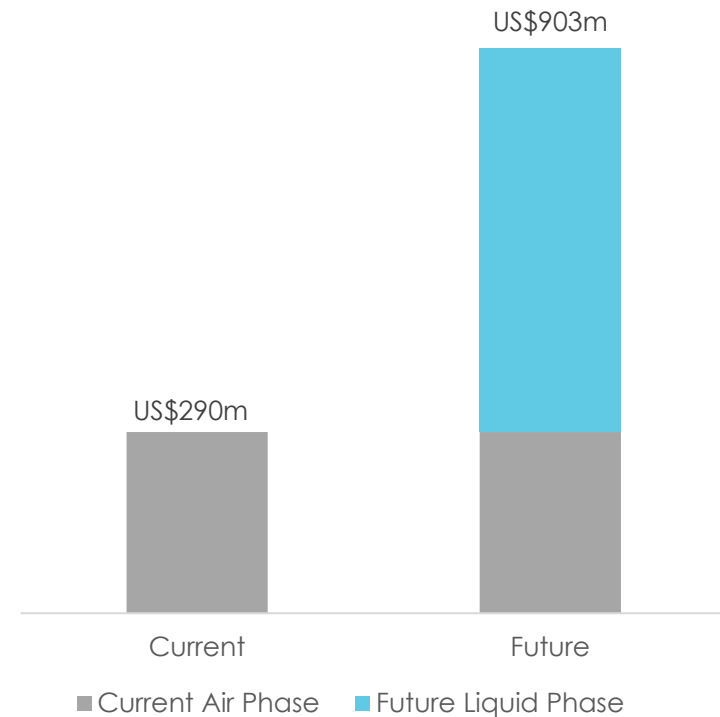
New Product:
Granular



Carbonxt is well positioned

- Carbonxt currently manufactures activated carbon in two forms: Powdered and Pellets.
- Based on the current areas of specialisation Carbonxt has an addressable US market of US\$290m, with approximately 5% market share.
- The new Kentucky facility will significantly expand the Company's addressable market, with a primary focus on water treatment. This is driven by recent regulatory change, with the Environmental Protection Agency's (EPA) increasing regulation of per- and polyfluoroalkyl substances ("PFAS") - see later slide.
- NewCarbon is expected to significantly improve the Company's gross margin on incremental volumes.
- PFAS, or "forever chemicals," are a set of human-made chemicals that can cause cancer and other severe health problems.
- Adsorption by Activated Carbon remains the most effective way of removing these chemicals.
- The Company is currently receiving several enquirers a week from water companies looking for a solution to become compliant with the regulations.

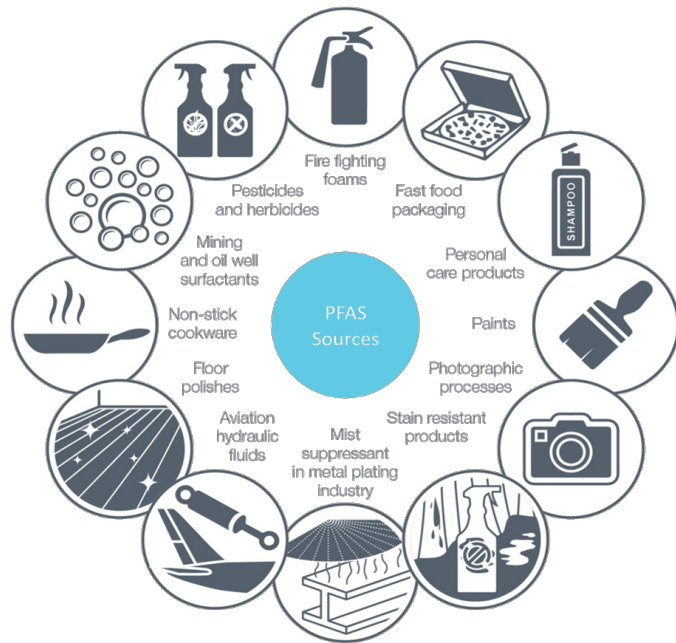
Carbonxt's Product Addressable Market



Source: <https://www.freedoniagroup.com/freedonia-focus>

What are PFAS?

- Per- and Polyfluoroalkyl Substances ("PFAS") are widely used, long lasting chemicals, components of which break down very slowly over time.
- PFAS are found in soil, water, air, fish, and humans across the globe.
- Scientific studies have shown that exposure to some PFAS may be linked to harmful health effects, including cancer, thyroid disease, birth defects and high blood pressure.



Impending Regulatory Change - EPA

- The EPA to establish National Primary Drinking Water Regulations for PFAS.
- These new regulation will be finalised in 2023, with enforcement to begin 2024-2028.
- Carbonxt is working to have a range of products to address the likely significant increase in the demand by the time these regulation come into force.
- Minimum Reporting Thresholds will move from 'parts per million' to 'parts per trillion'. Most companies operating in the water industry will be required to upgrade their filtration techniques.
- The Biden administration will use the EPA's Clean Water Act permitting & regulatory programs to reduce PFAS pollution in the environment.
- The US Government will provide US\$10 billion in funding under the Bipartisan Infrastructure Law to support operators' costs to comply with the improved standards.
- Further information: *Release from 14 March 2023*

<https://www.epa.gov/newsreleases/biden-harris-administration-proposes-first-ever-national-standard-protect-communities>

The Kentucky JV delivers three key outcomes

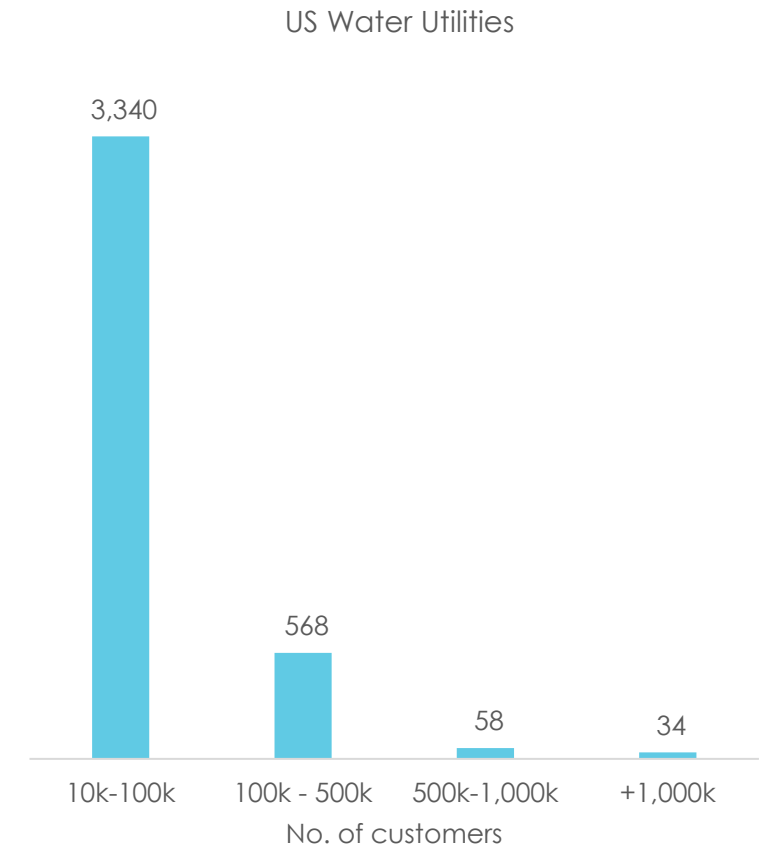
- Increased production capacity, with a likelihood to expand this further in the future.
- Control over input costs, significantly improving gross margins.
- High quality raw materials, facilitating entry into liquid-phase market AC's (water treatment).

Granular Activated Carbon

- Granular Activated Carbon ("GAC") is most commonly used by water utilities to treat PFAS. The US GAC market is dominated by Calgon Carbon.
- Activated Carbon Pellets will be the primary focus, as they deliver less pressure drop in the treatment process, ultimately decreasing the electricity cost for water utilities.

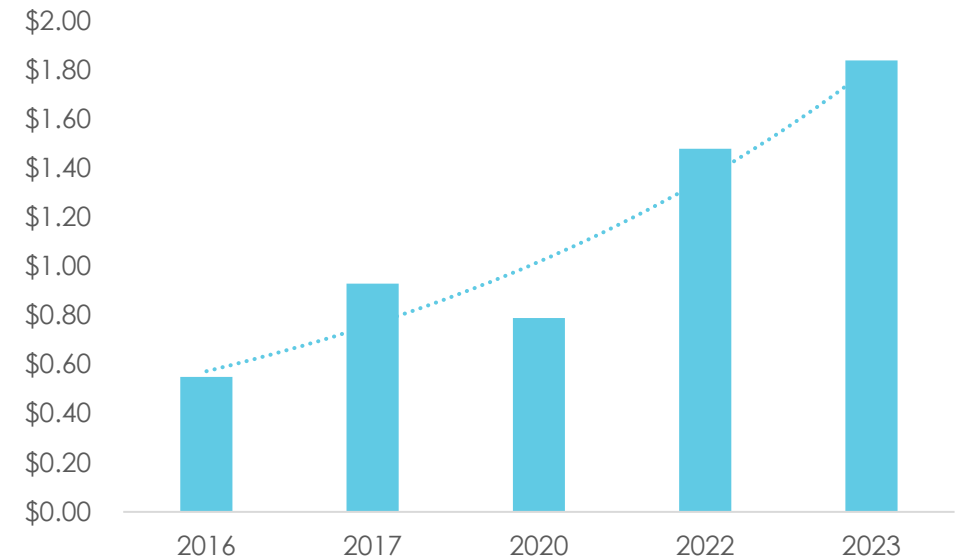
Water utilities opportunity

- There are 50,000 water utilities in the US, but most are very small community organisations.
- There are 4,000 water utilities servicing 10,000 of more customers.
- Water utilities currently account for approximately 50% of GAC market with annual expenditure of over US\$300m. (Source: Persistence Market Research).
- The impending legislation will increase the use of activated carbon filtration to ensure the stricter regulatory standards are met.

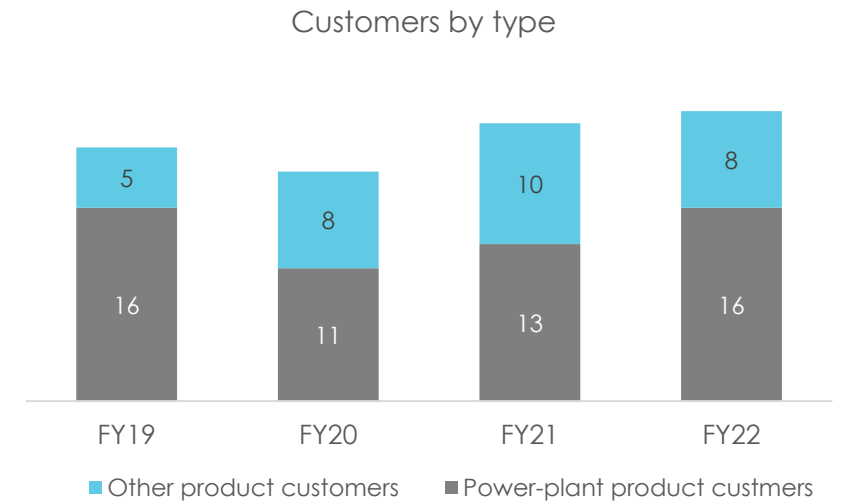


- Industry demand for Powered and Pellet products remains strong and prices have increased significantly over the past 12 months.
- An example of the pricing trends (c/lb) for a Florida based water utility is illustrated in the adjacent chart. This is indicative only of trends.
- Granular contract prices are trending higher due to the expected increase in demand driven by new EPA regulation.
- A study released by the American Water Works Association on 7 March 2023 found that the estimated national costs for water systems to install treatment systems to remove PFOA and PFOS to levels required by the EPA proposal would exceed \$3.8b annually.
- Public announcements from other activated carbon groups in respect of price increases include:
 - Calgon announced price increases of 15% -40% in Dec 2022 (see formal press release: <https://www.calgoncarbon.com/12122piqdfgf/>)
 - Similarly, ADES had earlier announced price increases of 15%-20% (see formal press release <https://www.advancedemissionssolutions.com/News/press-release-details/2022/Advanced-Emissions-Solutions-Will-Increase-Prices-on-all-Activated-Carbon-Products-and-Front-End-Coal-Additives/default.aspx>)

Example: Florida Utility - PAC Winning Bid Over Time



- The recent improvements to our existing manufacturing facilities should see the Company show improvement on 1H23 gross margins (1H23: 28%).
- Strong revenue and earnings growth is expected as NewCarbon opens and grows expands capacity.
- Over the rest of calendar 2023 the Company will be focused on the development of the new Kentucky manufacturing facility and will provide updates to shareholders as build milestones are achieved.
- The Company has produced sample products of high specification which have been well received by end customers. Management is in dialogue with various water utilities to purchase capacity from the new facility. Is not clear if Carbonxt can convert this customer interest into prepaid contracts ahead of the build completion but there is a focused effort to achieve this outcome.
- While customers continue to grow as per the adjacent chart, water utilities are expected to form a larger part of the customer mix going forward.
- The opening of the Kentucky facility will provide the ability to increase the number of non-power sector customers significantly. The reinvigoration of our industrial pellet market sales should complement the entry into the water markets.





INDEPENDENT CHAIRMAN

Matthew Driscoll

Matthew has significant experience across several industries, including online technologies, financial services, fintech, property and resources. He has more than 30 years' experience in capital markets and the financial services industry and is an accomplished company director in roles across listed and private companies.



MANAGING DIRECTOR

Warren Murphy

Warren was Co-Head of the Australian Infrastructure & Project Finance Group and Head of Energy at Babcock & Brown. Warren led the development of Babcock & Brown's energy sector capability in Australia and New Zealand, including the founding of Infigen Energy. He was also a director of the ASX listed Alinta Limited and Sydney Gas Limited, and development of over 2,000MW of Greenfields power stations and the acquisition of over 3,000MW of generation.



EXECUTIVE DIRECTOR

Dr. David Mazyck

David is a world-leading expert on activated carbon (AC) and its applications including mercury capture. He has developed AC products for the major multinationals.

Dr. Mazyck is the former Chairman of the Activated Carbon Standards Committee for the American Waterworks Association and is currently a Trustee for the AWWA Water Science and Research Division.



SENIOR EXECUTIVE

Dr. Regina Rodriguez

Regina has a Ph.D. from the University of Florida, where she received the prestigious National Science Foundation Graduate Student Fellowship.

Dr. Rodriguez currently sits as the Chairperson of the Activated Carbon Standards Committee for the American Waterworks Association.

Dr. Rodriguez holds 9 patents. Her leadership has resulted in one-of-a-kind sorbents and systems for power stations and water treatment.

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