



ASX RELEASE

21 May 2024

Investor Presentation

Carbonxt Group Limited (ASX:CG1) (the **Company** or **Carbonxt**) provides the attached Investor Presentation

This announcement has been authorised for release to ASX by the Board of Directors of Carbonxt Group Limited.

ENDS

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Advanced Activated Carbon Products & Emerging
Contaminants Solutions Providers

MAY 2024



Company Snapshot



- Carbonxt products remove toxic pollutants from a range of industrial, water and air environments.
- The products are unique engineered activated carbons with first of a kind manufacturing operations.
- Three US-based production facilities, with the third facility being commissioned over the coming months.
- Industry leading R&D capability.
- Environmental regulations driving strong customer demand.
- New joint venture with Kentucky Carbon Processing, LLC ("KCP") to expand production and product range.
- Recent EPA regulatory change underpins impending water market entry, significantly expanding addressable market.

Board & Senior Management

Matthew Driscoll	Independent Chairman
Dr. David Mazyck	Director & CTO
Warren Murphy	Managing Director
Dr. Imtiaz Kathawalla	Independent Director
Nicholas Andrews	Independent Director
Dr. Regina Rodriguez	CEO, Carbonxt Inc

Share Price (\$)

\$0.07

Shares on Issue (m)

324.22

Options/Warrants (m)

82.25

Market Cap. (\$m)

\$22.70

Cash (\$m)

\$1.90

Debt (\$m)

\$15.00

Enterprise Value (\$m)

\$35.80

Activated Carbon: Overview



- Activated Carbon is a porous carbon-based material that removes contaminants from vapours and liquids through surface adhesion, a process known as adsorption.
- Activated Carbon is usually derived from carbon sources such as wood chips and coal.
- Typical industrial uses include:
 - Trapping mercury emissions from coal-fired power stations.
 - Groundwater remediation and drinking water filtration for disinfection by-products.
 - Air and gas purification to remove oil vapours, odour, and other hydrocarbon emissions.
- Driven by environmental awareness and regulatory change, industrial demand for Activated Carbon is expanding rapidly.
- Activated Carbon for large scale industrial use comes in three forms:
 - Powdered
 - Pellets
 - Granular
- Carbonxt will produce all three variants in 2025, significantly enhancing the Company's addressable market.
- Activated Carbon pricing ranges from the \$2,000 - \$6000 per ton, subject to range of factors. These include the intellectual property used in developing the product, input costs, and the degree of specialisation in formulating a solution.

Powdered Activated Carbon



Pelletized Activated Carbon



Granular Activated Carbon

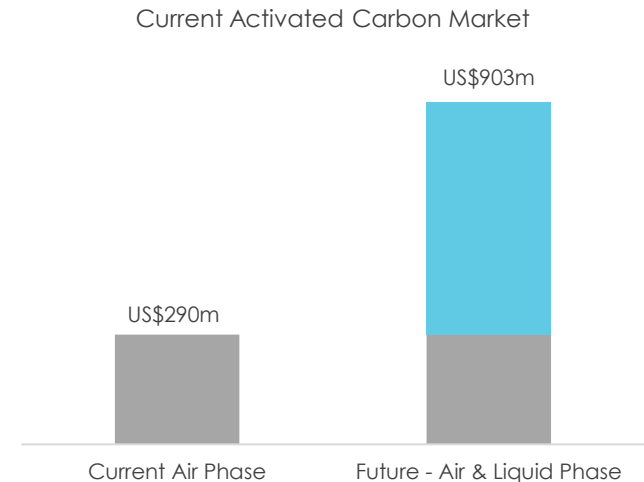


Addressable Market

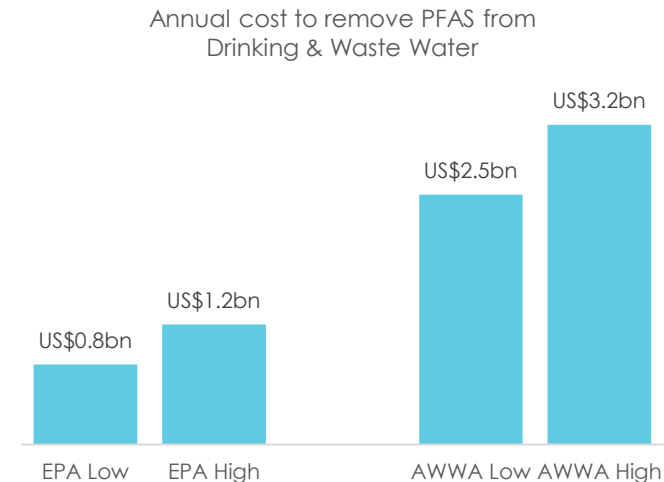


Carbonxt is well positioned

- Based on the current areas of specialisation (Air Phase) Carbonxt has an addressable US market of US\$290m, with an approximate 4% market share.
- The new Kentucky facility will allow the Company to address the much larger opportunity in water-treatment (Liquid Phase).
- The Environmental Protection Agency (EPA) has increased regulation of per- and polyfluoroalkyl substances ("PFAS").
- PFAS, or "forever chemicals," are a set of human-made chemicals that can cause cancer and other severe health problems.
- Granular activated carbon is the most commonly used type of PFAS treatment and is one of three technologies recommended by the EPA.
- The new regulation would indicate a substantial increase in the size of the addressable market, and utilities have five years in which to comply.
- The EPA estimates that it could cost between US\$772 million to US\$1.2 billion per year for water utilities to comply with its new rules.
- The American Water Works Association/Black & Veatch believes that the cost will be considerably higher.



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



Source: American Water Works Assoc./Black and Veatch

PFAS - Forever Chemicals



Per- and Polyfluoroalkyl Substances ("PFAS") have been 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.

PFAS has received significant media attention recently based on the its implied human health effects.

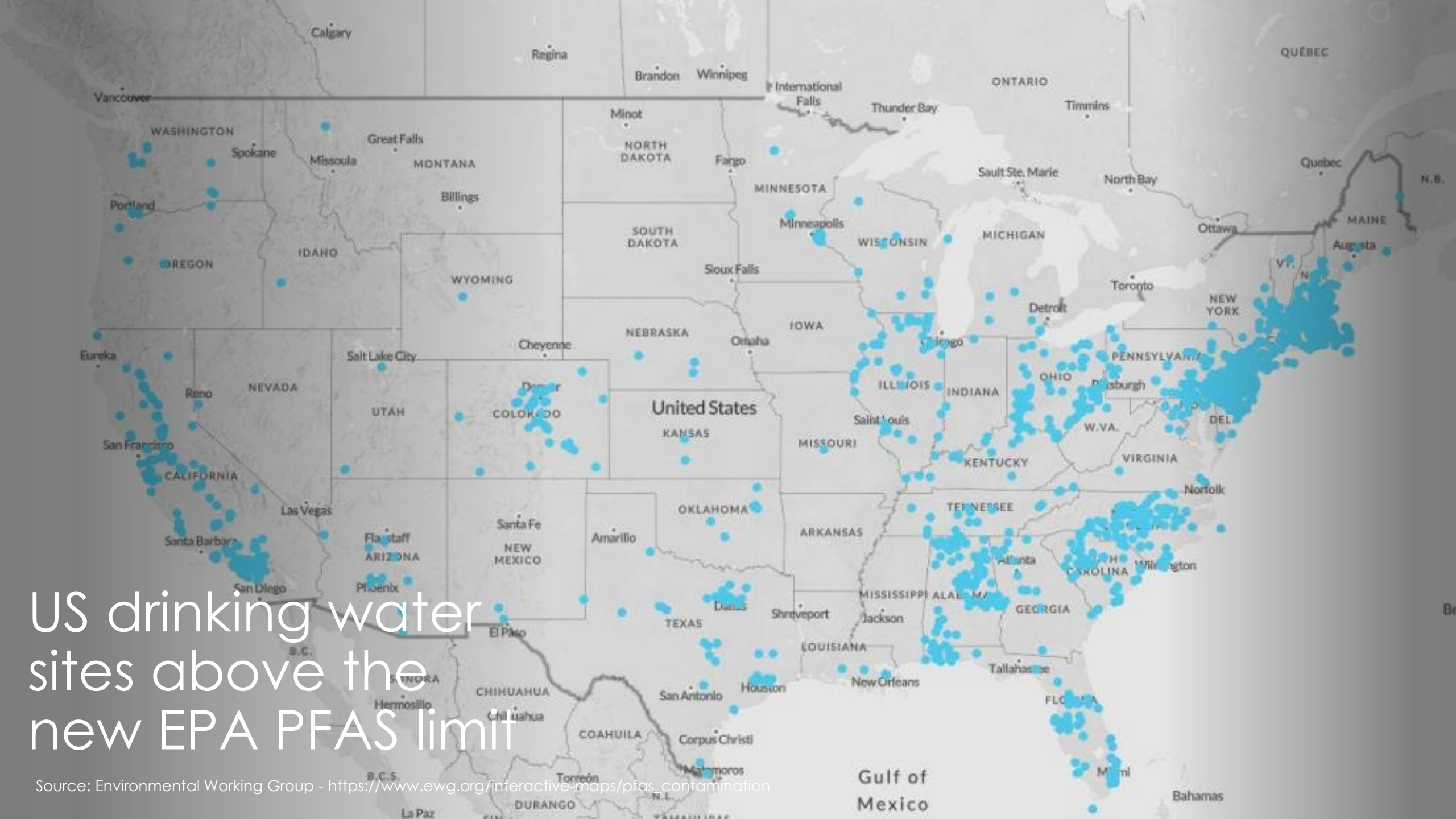
The EPA has identified activated carbon as one of the best available technologies for the removal of PFAS.



Federal Regulatory Change – US EPA

- The EPA has established National Primary Drinking Water Regulations for PFAS as of April 2024. PFAS compliance expected by 2029.
- PFAS will have an MCL of 4.0 ppt (also expressed as ng/L) and a Hazard Index of 1.0 for PFNA, PFHxS, PFBS, and HFPO-DA.
- Beyond the federal EPA rules, several states already have implemented PFAS regulations including Massachusetts, New Hampshire, New Jersey, New York, Vermont, Wisconsin, Pennsylvania.
- The PFAS remediation market includes: manufacturing and industrial facilities, municipal and drinking water systems, military and defense operations, and environmental consulting firms
- Engineered product from Inez Power AC proven to be competitive against industry standard products for PFOA removal in drinking water.

Link: [How the EPA'S PFAS ruling on US drinking water could elevate ASX junior Carbonxt](#)



US drinking water sites above the new EPA PFAS limit

Source: Environmental Working Group - <https://www.ewg.org/interactive-maps/pfas-contamination>



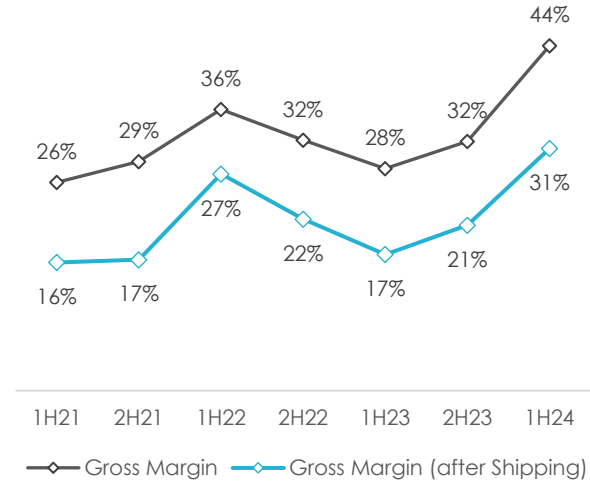
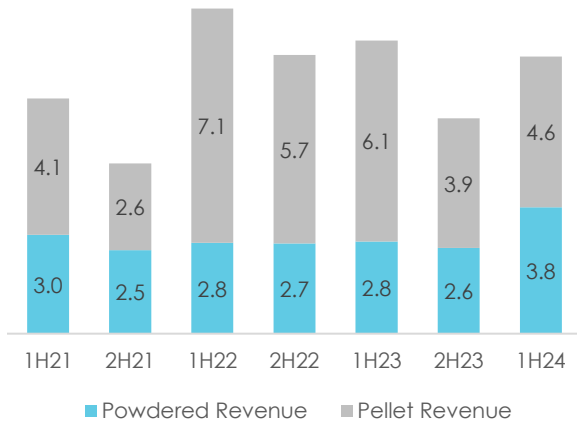
Black Birch, Georgia
Powdered Activated Carbon Plant

Existing operations



Carbonxt currently operates two facilities

- The Company has a Powdered Activated Carbon facility at Black Birch (Georgia), and a Pellet Activated Carbon facility at Arden Hills (Minnesota).
- The current facilities have provided relatively consistent revenue, but progress has been hampered over recent years due to supply chain disruption and lower than historical demand from our largest customer – Wisconsin Power.
- Despite increased cost inflation, the Company has been successful in passing these on (with a lag) and improving efficiencies to enhance margins.
- Gross margins have trended higher recently but are still below target due to lower than optimal utilisation at both the facilities.



Existing Operations: Financial Performance & Outlook



Existing Operation Outlook

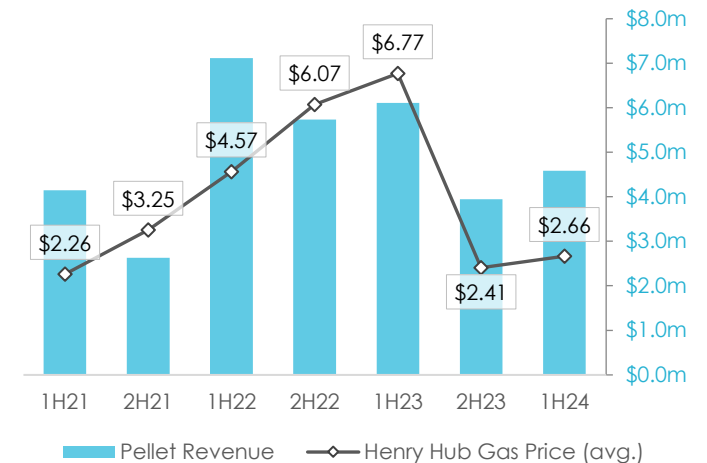
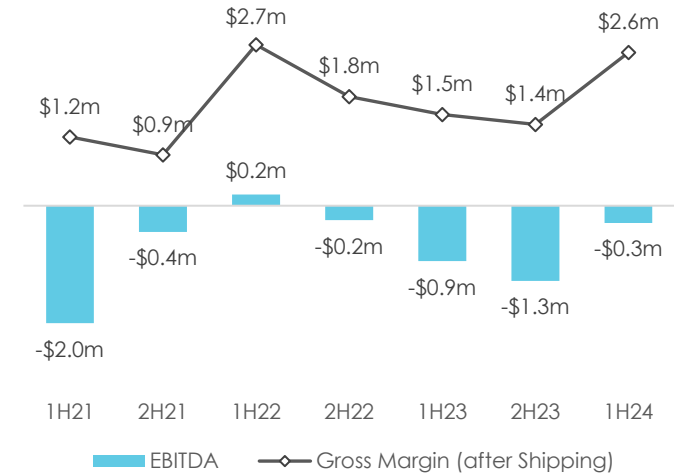
- Based on current margins the current two facilities require only a modest increase in revenue to lift Carbonxt's group EBITDA into positive territory including corporate overheads.
- The Company is optimistic that this will be achieved from existing facilities but is a highly confident of reaching meaningful profitability at the group level once there is an earnings contribution from the new Kentucky facility.

Black Birch (Powdered AC)

- Revenue in the last 12 months was a record A\$6.5m (+16% pcp)
- The Company is assessing options to expand the capacity of Black Birch to align with significant customer demand.
- The expansion into new markets is proving successful with recent short listing for two large bids.

Arden Hills (Pelletized AC)

- Revenue in the last 12 months was A\$8.5m (-28% pcp).
- Demand at Arden Hills pellet facility is highly correlated to gas prices as there is lower demand from Wisconsin's coal power plant (WPS) for our mercury removal product.
- WPS committing to 1,200 tons of pellets for A\$4.3m with delivery by end of calendar year.



Joint venture with Kentucky Carbon Processing (KCP)



- The JV with Kentucky Carbon Processing (KCP) facilitates expansion into the higher value end markets with improved margins
- The Inez Power Activated Carbon Plant will produce both pelletized and granular activated carbon from coal based raw materials.
- The 12-acre site, formerly an active surface coal mine operation, has been fully reclaimed and repurposed for power generation of up to 7 MW.
- The facility will be the only coal-based pellet producer in North America.
- The high-quality raw materials will expand the addressable market to include industrial water treatment applications, including entry into the PFAS 'forever chemicals' removal market.
- The 10,000 ton per annum plant is currently close to commissioning, with production expected to commence over the coming quarters.
- The facility can be expanded to 20,000 tons per year for a small additional investment.
- Carbonxt share of the joint venture is 35.5% but moves to 50.0% after US\$4.5m of final milestone payments (US\$10.0m total investment).
- The JV provides surety of raw material supply, with gross margins in excess of Carbonxt's legacy production facilities.
- Carbonxt is currently engaged with customers at prices in excess of the \$1.75/lb represented in the example presented.

Joint venture operating targets

		Ramp-up	Stage 1	Stage 2
Production	[tons pa]	5,000	10,000	20,000
Price	[US\$/lb]	\$1.75	\$1.75	\$1.75
Revenue	[US\$m]	17.50	35.00	70.00
Gross Margin	[%]	45%	45%	45%
Gross Profit	[US\$m]	7.88	15.75	31.50
Opex	[US\$m]	-2.10	-3.15	-5.60
EBITDA	[US\$m]	5.78	12.60	25.90
FX	[AUD/USD]	0.65	0.65	0.65
Carbonxt share	[%]	50%	50%	50%
Carbonxt EBITDA	[A\$m]	4.44	9.69	19.92

Carbonxt's opportunity in water utilities



The Kentucky JV delivers three key outcomes

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

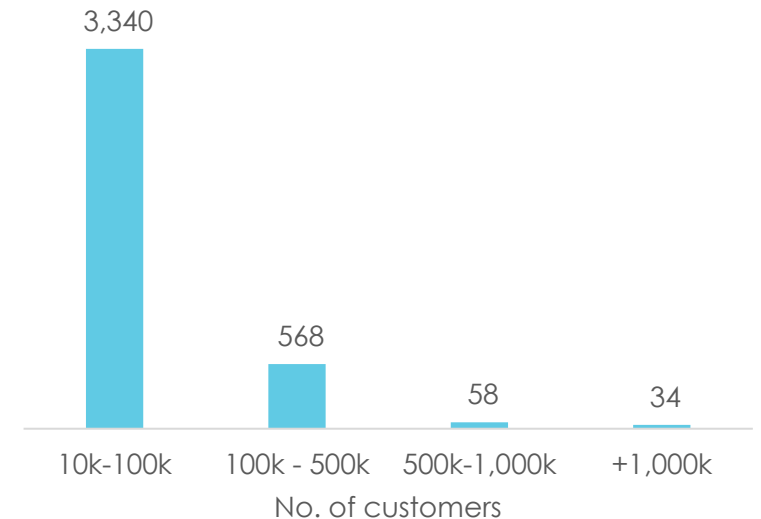
Granular Activated Carbon

- 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 or more customers.
- Water utilities currently account for approximately 50% of Granular Activated Carbon market with annual expenditure of over US\$300m. (Source: Persistence Market Research).
- The new PFAS legislation will increase the use of activated carbon filtration to ensure the stricter regulatory standards are met.

US Water Utilities



"PFAS contamination has been an ongoing issue that affects public safety and health. The new regulation will require significant action from water utilities to test and treat water to meet these standards, which will undoubtedly increase the demand for effective treatment technologies like activated carbon."

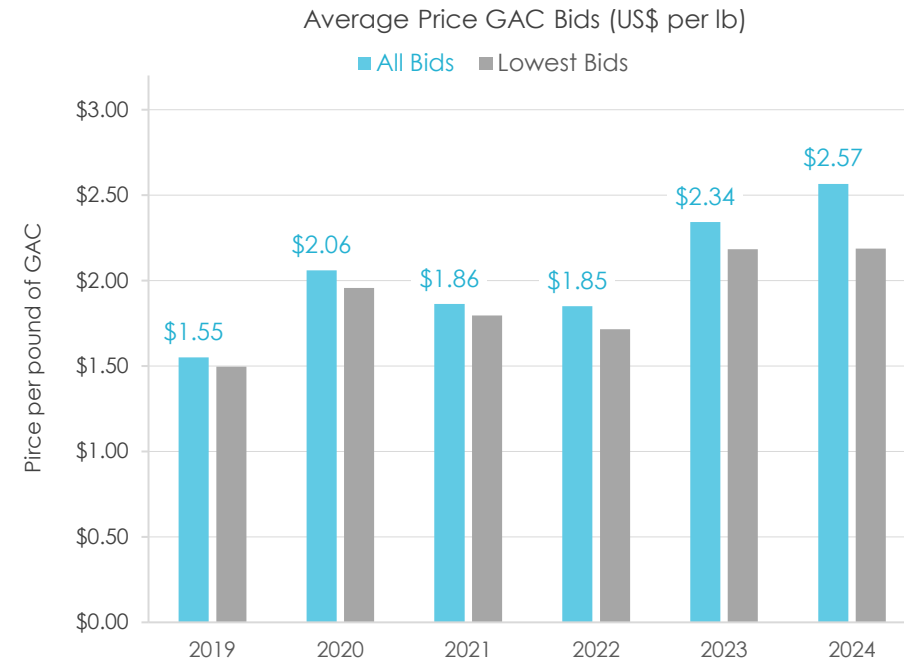
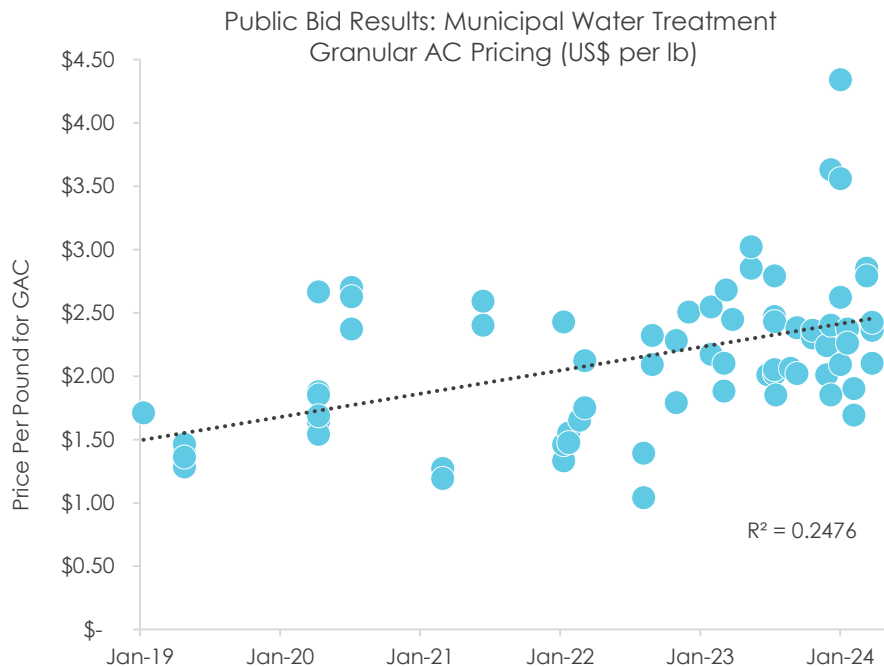
Michael S. Regan, EPA Administrator

Activated Carbon: Pricing



- 35 states have introduced various policies to address PFAS pollution. 13 states have already enacted legislation to reduce PFAS in drinking water.
- The charts below displays GAC pricing data from publicly available pricing tenders.
- Carbonxt expects to realise comparable pricing for Granular & Pellets produced at the Kentucky facility.
- Carbonxt is in discussion with a significant number of potential customers for supplying product at prices in line with the financial modelling used to make the investment decision for the new Kentucky facility.

Granular Activated Carbon Pricing

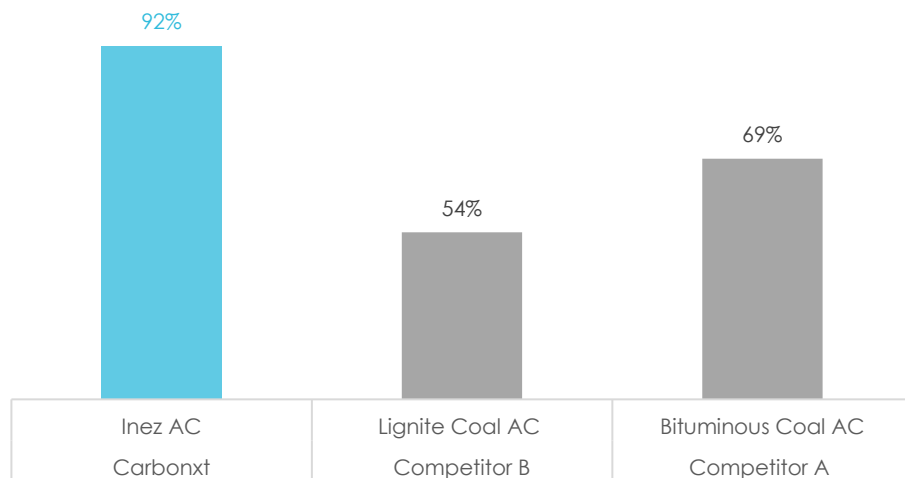


Kentucky – A premium product

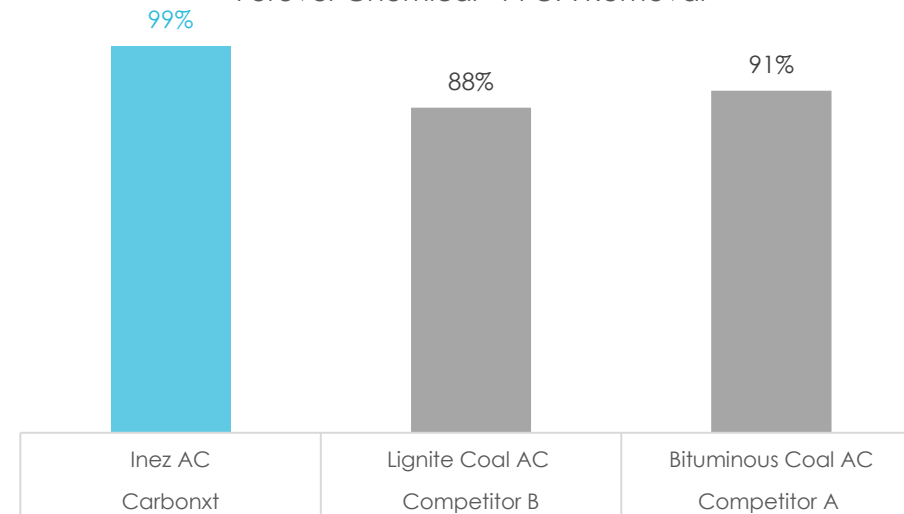


- The Kentucky JV was established to produce a premium product and facilitate entry into the liquid-phase market.
- With access to high-quality raw materials, initial product testing confirms a market leading product.
- The data shown below articulates the premium-performance when compared to key competitors across multiple markets

Taste & Odor - Geosmin Removal



Forever Chemical - PFOA Removal



- Taste and odour removal is a large market in the water treatment segment.
- The Inez carbon has the desired surface chemistry and structure for removal.
- This allows Carbonxt to compete in performance-based bids in the water treatment arena that will effectively result in higher sales price opportunities.
- Competitive removal of PFOA in comparison to the main industry counterparts
- Removal of 99% of PFOA in water treatment environment
- Coal-based materials perform significantly better for short and long chained PFAS in comparison to other raw materials.

Summary

- The high-quality raw materials and technical skills of the Carbonxt R&D team will afford the Company the opportunity to address a range of industrial water treatment applications.
- The existing water phase market approximately twice as large as the air-phase market.
- The PFAS regulations will materially increase the size of the water-phase market.
- There is limited new supply being brought to market.
- Pricing for Activated Carbon products has been increasing.
- Customer interest in the production from our new facility is high.

Timeline

Apr-23	Site work begins
May-23	JV Agreement finalised
Nov-23	All major equipment delivered to site
Mar-24	Customer discussions initiated
3Q2024	Plant Commissioning & Manufacturing launch



Agglomerating Equipment



Ash Hoppers



Activation Equipment



Turbine Generator

Senior Management and Board of Directors



Dr. David Mazyck – **DIRECTOR & CHIEF TECHNOLOGY OFFICER**

- World-leading expert on activated carbon .
- Has developed carbon products for the major multinational companies .
- Former Chairman of the Activated Carbon Standards Committee for the American Waterworks Association.
- Member of the World Coal Association and an appointee to the United Nations.



Warren Murphy - **MANAGING DIRECTOR**

- Co-Head of the Australian Infrastructure & Project Finance Group and Head of Energy at Babcock & Brown.
- Led the development of Babcock & Brown's energy sector capability in ANZ, including the founding of Infigen Energy.
- Previously director of the ASX listed Alinta Limited and Sydney Gas Limited.



Dr. Regina Rodriguez – **CEO, CARBONXT, Inc.**

- Over 10 year of experience in the activated carbon industry in the area of product development and commercialization.
- US National Science Foundation researcher.
- Chairwoman of the Activated Carbon Standards Committee for the American Waterworks Association .
- Holds 10 patents in activated carbon technology.



Matthew Driscoll – **CHAIRMAN**

- Significant experience across several industries, including online technologies, financial services, fintech, property and resources.
- 30 years' experience in capital markets and the financial services.
- An accomplished company director in roles across listed and private companies.



Dr. Imtiaz Kathawalla – **DIRECTOR**

- Past Vice-President at NYSE-listed Cabot Corporation, a global, specialty chemical company where he had a 27-year career.
- Most recent position with Cabot Corporation was as General Manager of Cabot's Purification Solutions Division.



Nicholas Andrews - **DIRECTOR**

- Executive Chairman & CEO at Magontec Ltd. (ASX:MGL), an established business in the global magnesium sector.
- Member of the Executive Committee and serves on the Board of the International Magnesium Association.
- Held several senior roles in the financial services sector across both investment management and investment banking.

A photograph of a water treatment facility at sunset. The image shows a long, straight channel of water with a series of weirs or spillways. The water is flowing over the weirs, creating a series of small cascades. The sky is a mix of blue and orange, and the sun is low on the horizon, reflecting on the water. In the background, there are industrial structures, including a large white tank and a tall tower.

CONTACT

Warren Murphy

Managing Director



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APPENDIX

Production Facilities

Black Birch Powdered Carbon Plant - Georgia

- Products: Wood-based powdered activated carbon (MatsPAC, AquaPAC and CEMPAC)
- Capacity: Current production of 6,000 tons per annum. New mill will allow for production up to 10,000 tons per annum and provide redundancy
- Opportunity: Currently supplying product mercury markets in coal fired, waste to energy and cement industries. Ability to further penetrate water market with blending of new JV carbon to uplift

Arden Hills Pelletization Plant - Minnesota

- Products: Pelletized wood and lignite carbons for use in mercury removal and tolling arrangements (NAQ-ACP, CTC-ACP)
- Capacity: Current production capable up to 7,500 tons per annum
- Opportunity: Expansion into new pellet applications. Early stage discussion with customers.

Inez Power AC Plant Kentucky - KCP

- Products: Agglomerated bituminous coal based pelletized AC
- Initial Capacity: 10,000 tons per annum
- Opportunity: Industrial pellet users alongside with water treatment for chronic contaminants and forever chemicals removal

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