Advanced Emissions Solutions, Inc.

Investor Presentation

January 2024

Nasdaq: ADES

Disclaimer

This presentation includes forward-looking statements within the meaning of Section 21E of the Securities Exchange Act of 1934, which provides a "safe harbor" for such statements in certain circumstances. When used in this presentation, the words "can," "will," "intends," "expects," "believes," similar expressions and any other statements that are not historical facts are intended to identify those assertions as forward-looking statements. All statements that address activities, events or developments that Advanced Emissions Solutions, Inc. ("ADES" or the "Company") intend, expect or believe may occur in the future are forward-looking statements. These forward-looking statements may relate to such matters as business strategy, expectations about future demand for our APT products, pressure on APT margins, estimated costs associated with potential capital improvements at our facilities and potential production outputs thereafter, expected market supply of granulated activated carbon ("GAC") products and the cost savings and environmental benefits of our GAC products. These forward-looking statements involve risks and uncertainties. Actual events or results could differ materially from those discussed in the forward-looking statements as a result of various factors including, but not limited to: its ability to maintain relationships with customers, suppliers and others with whom it does business, or its results of operations and business generally; risks related to diverting management's attention from the Company's ongoing business operations; the ability to meet Nasdaq's listing standards following the consummation of the Transaction; opportunities for additional sales of our activated carbon products and end-market diversification; the Company's ability to meet customer supply requirements; the rate of coal-fired power generation in the United States; timing of new and pending regulations and any legal challenges to or extensions of compliance dates of them, the U.S. government's failure to promulgate regulations that benefit our business; changes in laws and regulations; Internal Revenue Service interpretations or guidance, accounting rules, any pending court decisions, prices, economic conditions and market demand; impact of competition; availability, cost of and demand for alternative energy sources and other technologies; technical, start up and operational difficulties; competition within the industries in which the Company operates; loss of key personnel; ongoing effects of the COVID-19 pandemic and associated economic downturn on operations and prospects; as well as other factors relating to our business, as described in the Company's filings with the U.S. Securities and Exchange Commission (the "SEC"), with particular emphasis on the risk factor disclosures contained in those filings. You are cautioned not to place undue reliance on the forward-looking statements and to consult filings ADES has made and will make with the SEC for additional discussion concerning risks and uncertainties that may apply to the business and the ownership of ADES securities. The forward-looking statements speak only as to the date of this presentation, and the Company does not undertake any obligation to update its forward-looking statements to reflect events or circumstances that may arise after the date of this presentation.

Non-GAAP Financial Measures

Included in this presentation are certain financial measures that are not calculated in accordance with U.S. generally accepted accounting principles ("GAAP") designed to supplement, and not substitute, the Company's financial information presented in accordance with GAAP. The non-GAAP measures as defined by the Company may not be comparable to similar non-GAAP measures presented by other companies. The presentation of such measures, which may include adjustments to exclude unusual or non-recurring items, should not be construed as an inference that the Company's future results or leverage will be unaffected by other unusual or non-recurring items. Please see the Company's filings with the SEC for how we define these non-GAAP measures, a discussion of why we believe they are useful to investors, and certain limitations and reconciliations thereof to the most directly comparable GAAP measures.

EXPERTISE | RELIABILITY | COMPLIANCE

Who we are, what we do

Environmental technology company with unique products for growing markets

- Producing activated carbon and other environmentally beneficial carbon products for use in:
  - PFAS remediation
  - Soil, water and air purification
  - Asphalt additives
- Utilizing bituminous coal waste as feedstock to reduce emissions and improve environmental footprint
- Providing innovative environmental solutions for a cleaner future

Investment Highlights

ADES

Vertically integrated activated carbon producer with unique patent protected technology

Shift to underserved and growing granular activated carbon market repositions business for growth through higher margin products

Competitive advantage via product performance, cost, environmental benefits and industry-leading R&D team

Existing asset base significantly undervalued

ADES at a Glance

Producing activated carbon since 2008

Strong asset and customer base

~195 patents & applications across large and diverse markets

Top 3 Activated Carbon Supplier

~17% North American market share

Fully Integrated Supply Chain

Enables cost control, supply surety and margin enhancement

Material Environmental Benefits

Reduced lifecycle environmental footprint while addressing regulatory changes

$71 million

Revenue

(YTD 9/30/23)

$53 million

Cash

(9/30/23)

Purifying and protecting our world's natural and finite resources including air, soil and water

Products and Market Applications

Products
Granular Activated Carbon (GAC)
Powdered Activated Carbon (PAC)
Colloidal Carbon Product (CCP)

Potential Applications	
Mercury Emissions	Pharma
Biogas	Potable Water
Wastewater Treatment	Specialty
Food & Beverage	Automotive
	Soil & Groundwater Remediation

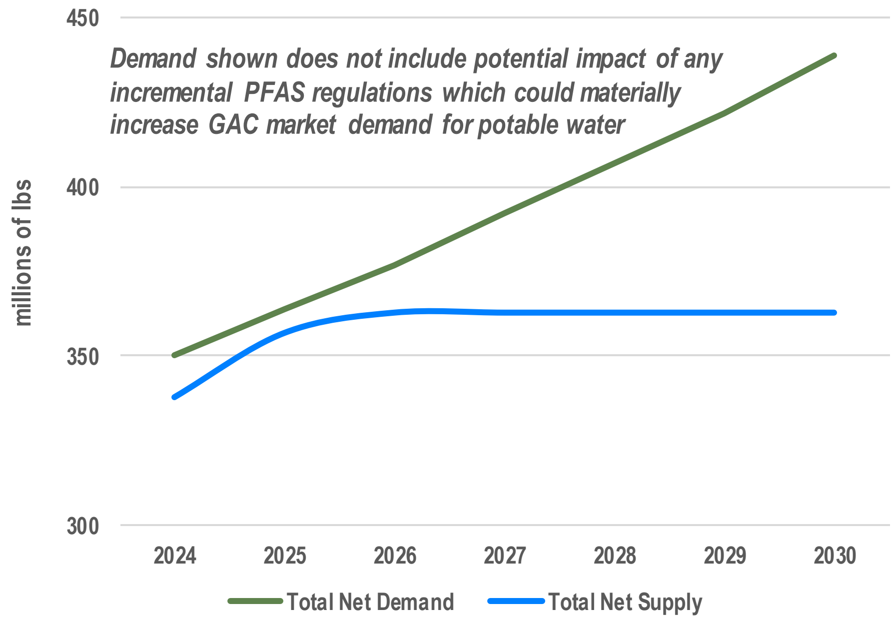
Product	Market	Outlook
GAC	Municipal water, soil and groundwater remediation and specialty gas purification	Growing
PAC	Power generation, industrial and municipal water	Stable / Declining
CCP	Soil and groundwater remediation	Growing

Ongoing R&D addressing potential applications in diverse growing markets including carbon black additives (tires, polymer composites and coatings) and asphalt additives (infrastructure and building)

North American Granular Activated Carbon (GAC) Outlook

Supply struggling to match steady demand growth

GAC Market Outlook



Source: Market data and Company estimates; inclusive of current ADES plant expansion

GAC Market Drivers

- Demand growing steadily (c.4% per annum), driven by expanded market applications
- Limited near-term scope to increase industry capacity due to permitting timelines, significant capex and constrained domestic feedstock
- Imports limited by growing global demand, ongoing import tariffs and high transcontinental shipping costs

Granular Activated Carbon – Market Update

Strong macro tailwinds

EPA expected to release its National Primary Drinking Water Regulation in Q1 2024 with a material focus on PFAS or "Forever Chemicals"

Regulation is anticipated to:

- **Establish new materially higher standards** for drinking water across USA
- **Create increased demand** for effective remediation products (e.g. GAC)
- **Exacerbate shortages of supply** (constrained feedstock)

Trend for stricter regulations and constrained supply anticipated to be replicated globally, further increasing product demand

Our Opportunity

ADES' unique products, process and supply chain are key differentiators

Company is uniquely positioned to benefit from this trend and will be the only GAC producer:

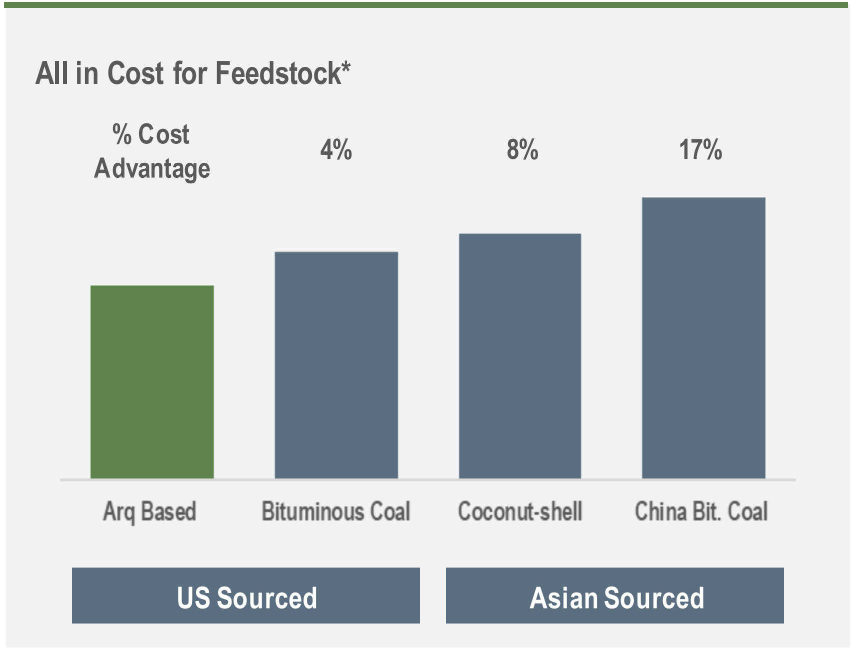
- **with vertically integrated domestic supply chain**
- **using bituminous coal waste as feedstock with significant environmental benefits**
- **with estimated 40% lower* Scope 1 & 2 CO_2e emissions (vs virgin coal-based GAC)**

* Additional information on slide 12

Our Cost Advantage

By controlling and using our own supply of bituminous coal waste as feedstock for our GAC product, we:

- Source competitively relative to traditionally mined coal
- Mitigate alternative feedstock price volatility
- Avoid potential supply issues
- Benefit from competitive operating costs supported by net positive power generation
- Avoid imports impacted through variable freight costs, tariffs and duties

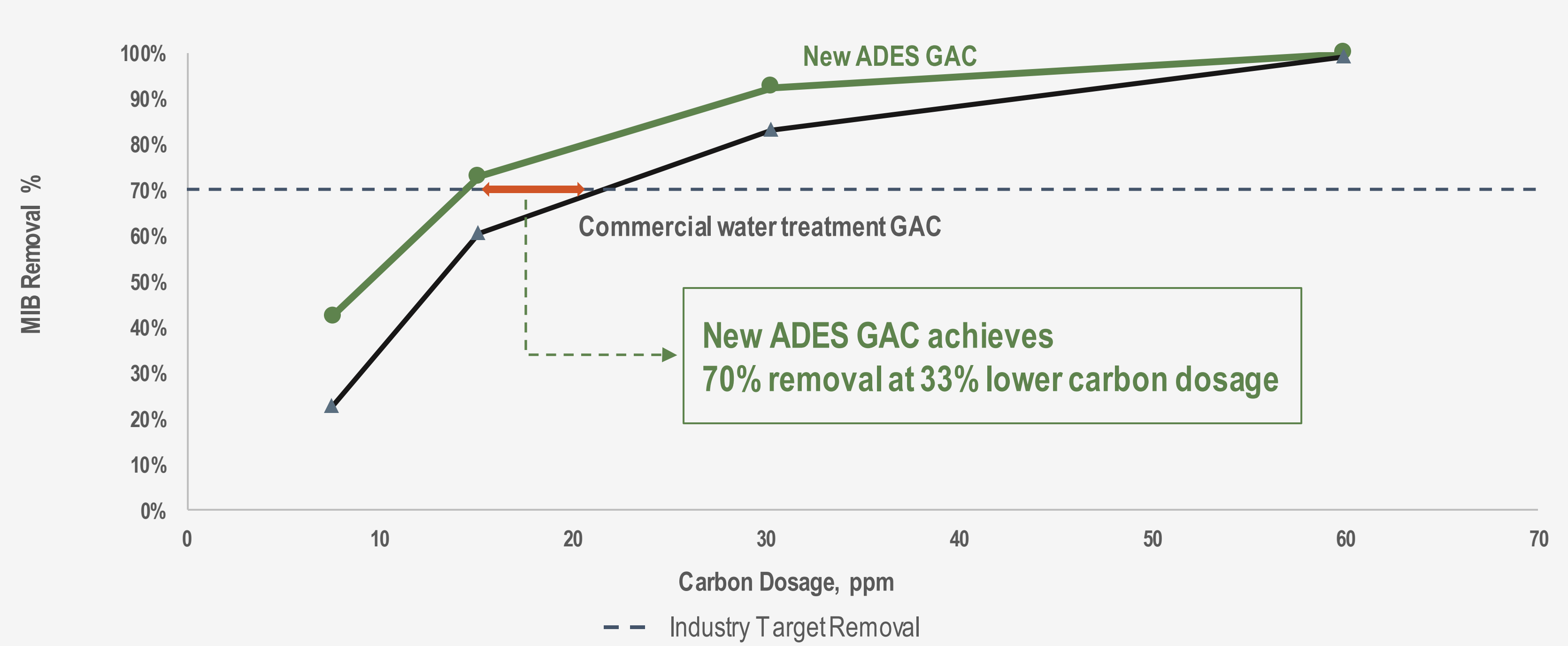


* Company estimates

Our Performance Benefits

Municipal water customer testing of our GAC product demonstrates improved performance in water purification for key contaminants

Methyl-Isoborneol (MIB) Removal



Our Environmental Benefits

By using bituminous coal waste as our feedstock for our GAC product, we enable:

- Approximately 40% reduction in CO^2 emissions for equivalent performance*
- No additional mining requirement
- Reclamation and repurposing of land via recovery of waste

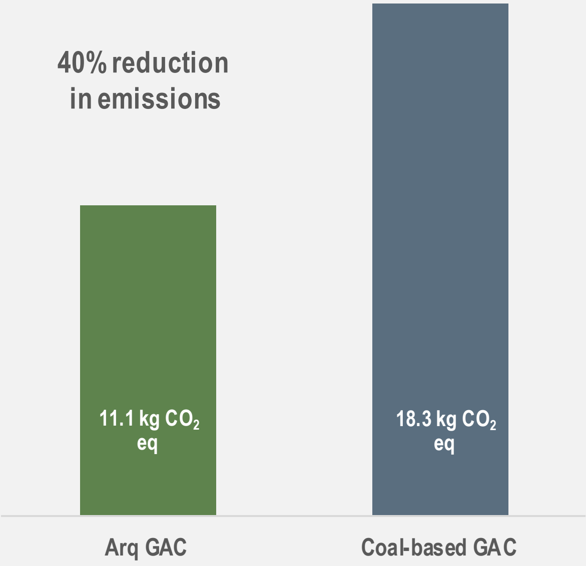
Corbin Site 2021

Concept - Future Land Use

*Source: Company estimates

CO2e Emissions for Equivalent Performance (CO2e per kg)

Scope 1 and 2 Emissions*



Significant and Undervalued Asset Base

Provides springboard for growth into higher margin products

Research & Development Facility (Denver, CO)

Red River Activated Carbon Plant (Coushatta, LA)

Corbin Feedstock Production Plant (Corbin, KY)

- Estimated replacement value of existing assets >$500 million*
- Legacy PAC business provides infrastructure, sales team, customer relationships and market expertise mitigating expansion plan risk
- GAC products carry higher market price points and margins and applications in faster-growing markets
- Shift toward GAC production from existing facilities and strategic expansion projects increases our market breadth and repositions business for growth

* Source: Based on Company's estimates of potential greenfield projects

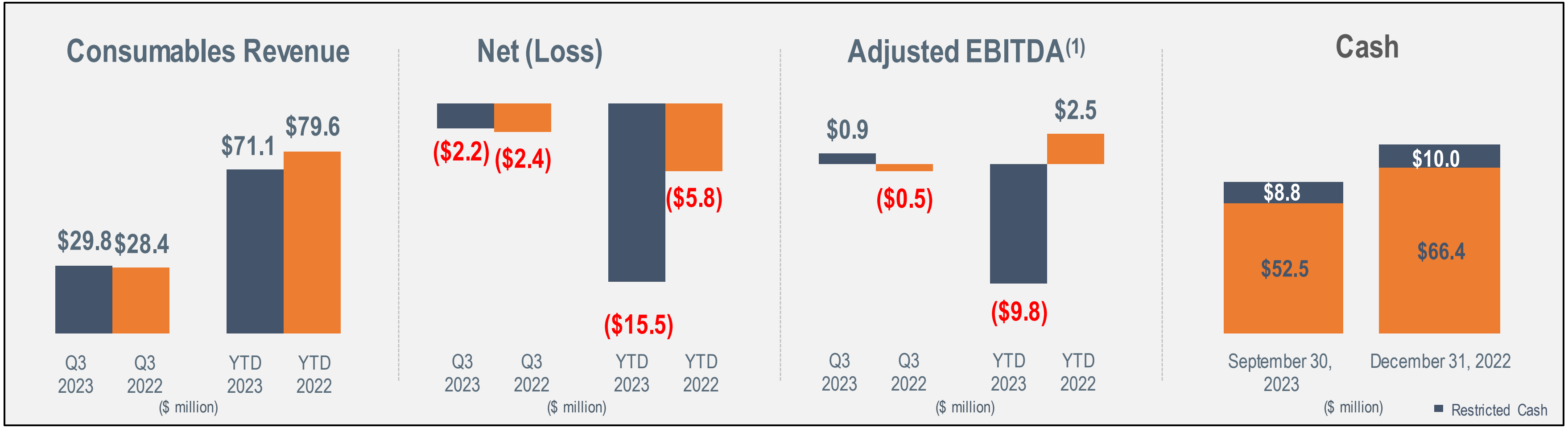
Strategic Projects – Existing GAC Expansion and Beyond

- Five individual phases of development, each independent of the other and can be executed at the Company's sole discretion
  - No commitment other than Phase 1 which has commenced
  - Each phase will be individually evaluated based on current and potential demand
- Cumulative phased developments could produce > 75 million lbs of GAC products annually*
- Phase 1 capex currently estimated to be $45-50 million with an estimated completion date of Q4 2024; cumulative Phase 1-5 capex currently estimated to be ~$250 million

	Project	Estimated Spend ($mm) *	Cumulative GAC Production (million lbs) **
Phase 1	GAC expansion	$45 – 50	25
Phase 2	2nd GAC expansion	$40 – 43	50
Phase 3	Remediation Expansion	$10 – 11	N/A
Phase 4	Further Plant/GAC expansion	$120 – 130	75
Phase 5	Efficiency Projects	$10 - 16	N/A

* As of September 30th 2023
** Company estimates

Financial Highlights



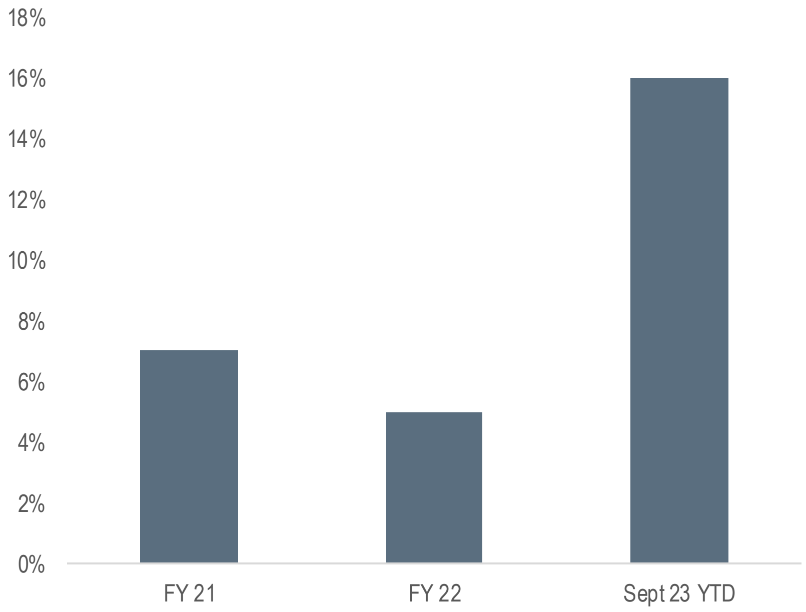
- Q3 revenue increased 5% YoY driven by ongoing pricing initiatives, partially offset by lower volumes impacted by natural gas pricing
- Q3 net loss was $2.2 million compared to $2.4 million in the prior year – driven by a smaller operating loss
- Q3 Adjusted EBITDA improved to $0.9 million
- Cash, including restricted cash, totaled $61.3 million as of quarter-end
- Total debt, inclusive of financing leases, totaled $21.2 million
- Q3 and YTD Net Loss and Adjusted EBITDA include $1.3 million of severance expense related to two executive employees

(1) Adjusted EBITDA is a non-GAAP measure. See attached appendix for definitions and reconciliations

Customer Sales Price and Margin Improvements

Driving stability of legacy PAC business

YoY Average Sales Price (ASP) Performance



Core focus on profitability over volume

- Average Selling Price ("ASP") consistently improving YoY
- In 2022, ~24% of total volume sold was at negative margin
- September 2023 YTD saw material reduction of unprofitable contracts
- By year end of 2023, anticipate only two customers with negative gross margin, constituting just ~3% of forecasted 2024 total volumes

Outlook & Milestones

Optimize PAC portfolio and eliminate unfavorable margin contracts

Ongoing

Secure lead GAC customers and build out sales channels

Ongoing

Complete Phase I expansion & achieve 25M lb GAC production capacity

In process

First GAC sales by year-end 2024

In process

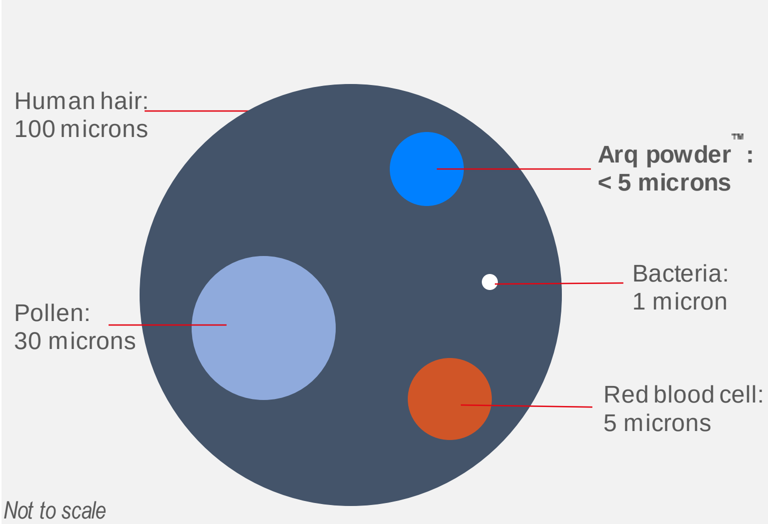
Summary

- Shift to granular activated carbon repositions business for growth
- Addressing growing and underserved markets
- Competitive advantage for products
- Reduced execution risk from existing capabilities
- Strong balance sheet and market position

Appendix

Our Unique Feedstock – Arq Powder™

Unique Microfine Hydrocarbon Feedstock Properties

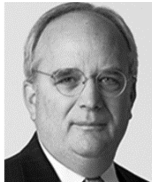


Not to scale

Our unique patented technology enables liberation of hydrocarbon molecules from coal mining waste:

- Creates purified hydrocarbon by removing inorganic material
- Microfine powder ("Arq powder™") has massive surface area with material benefits in activated carbon applications
- Consistent, high-quality material produced from unique process

Leadership Team



Robert Rasmus – Chief Executive Officer
Robert has numerous years of experience leading organizational strategy, investments, and mergers and acquisitions in multiple industries, including as Co-founder, Chairman, CEO and former member of the Board of Directors of Hi-Crush Proppants, Hi-Crush GP, National Industrial Sands Association, FB Logistics, NextStage Logistics.

Jeremy "Deke" Williamson – Chief Operating Officer
Joined ADES in 2023 and currently serves as the Chief Operating Officer. Deke has more than 20 years of industrial manufacturing experience. Prior to joining ADES, Deke held various positions at Hi-Crush, Inc. and was previously the plant manager at Southeast Missouri Stone.

Stacia Hansen – Chief Accounting Officer
Joined ADES in 2015. Stacia has more than 12 years accounting experience in financial reporting, technical accounting, Sarbanes-Oxley Act compliance. Previously, Stacia worked in Assurance Services, at Ernst & Young, LLP.

Joe Wong – Chief Technology Officer
Joined ADES in 2018 and currently serves as CTO. Joe has over 35 years of industry leadership experience in R&D and product development in specialty materials. Prior to joining ADES, Joe served as CTO for ADA Carbon Solutions.

Paul Groves – New Products Commercialization
Joined ADES in 2023 via the Arq transaction. Paul has over 30 years of experience in the Energy & Resources markets. Paul is a former Managing Director at Petrofac, along with previous senior roles at BG Group, Shell and Alcan.

Garrett Chandler – Vice President of Sales
Joined ADA Carbon Solutions in 2016. Previously, Garrett worked for Occidental Chemical Corporation (NYSE: OXY), where he managed commercial efforts across diverse markets including oil and gas, pharmaceuticals, steel, specialty chemicals, plastics, and pulp & paper.

Kimberly Hansen – Vice President of Finance
Joined ADES in 2014 and currently serves as Vice President of Finance. Kimberly has over 20 years of finance and accounting experience and has served in various roles within the Company.

Clay Smith – General Counsel & Secretary
Joined ADA Carbon Solutions in 2014. Prior to joining ADA, Clay was an Associate at Troutman Sanders, LLP for 6 years where his practice was focused on the infrastructure, telecom and construction industries.

Appendix: Non-GAAP Financial Measure & Adjusted EBITDA Reconciliation to Net (Loss) Income

Note on Non-GAAP Financial Measures

To supplement the Company's financial information presented in accordance with U.S. generally accepted accounting principles, or GAAP, this investor presentation includes non-GAAP measures of certain financial performance. The non-GAAP measures include Consolidated Adjusted EBITDA. The Company included non-GAAP measures because management believes that they help to facilitate comparison of operating results between periods. The Company believes the non-GAAP measures provide useful information to both management and users of the financial statements by excluding certain expenses that may not be indicative of core operating results and business outlook. These non-GAAP measures are not in accordance with, or an alternative to, measures prepared in accordance with GAAP and may be different from non-GAAP measures used by other companies. In addition, these non-GAAP measures are not based on any comprehensive set of accounting rules or principles. These measures should only be used to evaluate the Company's results of operations in conjunction with the corresponding GAAP measures.

The Company has defined Consolidated Adjusted EBITDA as net income, adjusted for the impact of the following items that are either non-cash or that the Company does not consider representative of its ongoing operating performance: depreciation, amortization, depletion and accretion, amortization of upfront customer consideration, interest expense, net, income tax expense; then reduced by the non-cash impact of equity earnings from equity method investments and increased by cash distributions from equity method investments. The Company believes that the Consolidated Adjusted EBITDA measure is less susceptible to variances that affect the Company's operating performance.

The Company presents the non-GAAP measures because the Company believes they are useful as supplemental measures in evaluating the performance of the Company's operating performance and provide greater transparency into the results of operations. The Company's management uses Consolidated Adjusted EBITDA as a factor in evaluating the performance of its business. The adjustments to Consolidated Adjusted EBITDA in future periods are generally expected to be similar. Consolidated Adjusted EBITDA has limitations as an analytical tool, and you should not consider these measures in isolation or as a substitute for analyzing the Company's results as reported under GAAP.

Appendix: Adjusted EBITDA Reconciliation to Net (Loss) Income

	Three Months Ended September 30,		Nine Months Ended September 30,	
(in thousands)	2023	2022	2023	2022
Net loss[1]	$ (2,175)	$ (2,391)	$ (15,539)	$ (5,750)
Depreciation, amortization, depletion and accretion	2,711	1,671	7,276	4,765
Amortization of Upfront Customer Consideration	127	127	381	381
Interest expense, net	224	44	822	163
Income tax benefit	—	—	(33)	—
EBITDA (EBITDA loss)	887	(549)	(7,093)	(441)
Cash distributions from equity method investees	412	—	1,512	5,613
Equity earnings	(412)	—	(1,512)	(3,222)
Gain on sale of Marshall Mine, LLC	—	—	(2,695)	—
Loss on early settlement of long-term receivable	—	—	—	535
Loss on change in estimate, asset retirement obligation	—	—	—	34
Adjusted EBITDA (Adjusted EBITDA loss)	$ 887	$ (549)	$ (9,788)	$ 2,519

(1) Included in Net loss for the three and nine months ended September 30, 2023 is zero and $4.9 million, respectively, of transaction and integration costs incurred related to the Arq Acquisition. Included in Net Loss for the three and nine months ended September 30, 2022 is $2.4 million and $3.7 million, respectively, of transaction and integration costs incurred related to the Arq Acquisition. Additionally, for the nine months ended September 30, 2023, Net loss included $4.2 million of Arq payroll and benefit costs. Further included in Net Loss for the three and nine months ended September 30, 2023 is $1.3 million of severance expense related to two executive employees.