

**SUPPLEMENT TO PROXY STATEMENT
FOR THE ANNUAL MEETING OF STOCKHOLDERS
OF LANZATECH GLOBAL, INC.
To Be Held on July 28, 2025**

This supplement (the “Supplement”) supplements the definitive proxy statement on Schedule 14A (the “Proxy Statement”) filed by LanzaTech Global, Inc. (the “Company”) with the Securities and Exchange Commission (the “SEC”) on June 18, 2025 in connection with the annual meeting of stockholders to be held on July 28, 2025 at 2:00 p.m. Central Time. This Supplement is being filed with the SEC and made available to stockholders on or about July 17, 2025.

This Supplement updates and, to the extent inconsistent therewith, supersedes the disclosure in the Proxy Statement to reflect that Proposal 10, the Adjournment Proposal, is a routine matter and, as such, is eligible for discretionary voting by brokers, banks and other nominees under applicable stock exchange rules. As a result, a broker, bank or other nominee who has not received instruction from its clients will have the discretion to vote its clients’ uninstructed shares on Proposal 10.

The following sections of the Proxy Statement are hereby amended and restated as follows:

The tenth paragraph under the heading “What votes are required to elect directors and to approve the other proposals at the Annual Meeting?” on page 13 of the Proxy Statement is amended to reflect the changes below (additions are reflected in underlined blue text, subtractions are reflected in red strikethrough):

Proposal 10, approval of the Adjournment Proposal, requires the affirmative vote of a majority of the voting power of the shares of Voting Stock present, including by means of remote communication, or represented by proxy and entitled to vote on the Adjournment Proposal. Abstentions will have the same effect as a vote “AGAINST” the Adjournment Proposal. Broker non-votes ~~will have no effect on the vote for the Adjournment Proposal~~ are not expected for this proposal because it is a routine matter.

The text under the heading “Which ballot measures are considered “routine” or “non-routine”?” on page 15 of the Proxy Statement is amended to reflect the changes below (additions are reflected in underlined blue text, subtractions are reflected in red strikethrough):

Q: Which ballot measures are considered “routine” or “non-routine”?

A: If your shares are held in street name and you do not provide your voting instructions to your broker, bank or other nominee, your shares may be voted without your instructions by your broker, bank or other nominee but only under certain circumstances. Specifically, under applicable rules, shares held in the name of your broker, bank or other nominee may be voted by your broker, bank or other nominee on certain “routine” matters if you do not provide voting instructions. Only ~~two~~three proposals are considered “routine” matters for which brokers, banks or other nominees may vote uninstructed shares: (i) Proposal 2, regarding the ratification of the appointment of Deloitte & Touche LLP as our independent registered public accounting firm for the fiscal year ending December 31, 2025 ~~and~~, (ii) Proposal 5, regarding the Split-Related Proposals and (iii) Proposal 10, regarding the Adjournment Proposal. Consequently, no broker non-votes are expected in connection with Proposal 2 ~~and~~, Proposal 5 and Proposal 10.

Proposals 1, 3, 4 and 6-~~10~~9 are generally considered “non-routine matters” under applicable rules, meaning a broker, bank or other nominee cannot vote without your instructions on such non-routine matters. If you do not provide voting instructions on a non-routine matter, your shares will not be voted on that matter, which is referred to as a

“broker non-vote.” Therefore, it is critical that you indicate your vote on those proposals if you want your vote to be counted.

The first paragraph under the heading “Required Vote” on page 51 of the Proxy Statement is amended to reflect the changes below (additions are reflected in underlined blue text, subtractions are reflected in red strikethrough):

The affirmative vote of a majority of the voting power of the shares of Voting Stock present, including by means of remote communication, or represented by proxy and entitled to vote on the Adjournment Proposal is required for approval of the Adjournment Proposal (with the Preferred Stock having three votes for each share of Common Stock into which the shares of Preferred Stock held by such Holder are convertible, subject to the voting cap described in the Certificate of Designation (see “Questions and Answers About the Annual Meeting-What voting cap is the Preferred Stock subject to?”)). Abstentions will have the same effect as a vote “AGAINST” the Adjournment Proposal. Broker non-votes ~~will have no effect on the vote for the Adjournment Proposal~~ are not expected for this proposal because it is a routine matter.

This Supplement should be read in conjunction with the Proxy Statement. Except as specifically supplemented by the information contained herein, this Supplement does not modify any other information set forth in the Proxy Statement, including the statement that, even if the Adjournment Proposal is not adopted, the Company’s bylaws provide that any meeting of stockholders, annual or special, may be adjourned by the chair of the meeting, from time to time (including to address a technical failure to convene or continue a meeting using remote communication), whether or not there is a quorum, to reconvene at the same or some other place. From and after the date of this Supplement, all references to the “Proxy Statement” are to the Proxy Statement as supplemented hereby.

Your vote is important. Information on how to vote your shares is contained in the Proxy Statement. Whether or not you plan to attend the virtual annual meeting, we urge you to please cast your vote as soon as possible by using one of the methods described in the Proxy Statement.
