Filed by AMCI Acquisition Corp. II pursuant to Rule 425 under the Securities Act of 1933 and deemed filed pursuant to Rule 14a-12 under the Securities Exchange Act of 1934 Subject Company: AMCI Acquisition Corp. II Commission File No. 001-40282 Date: March 8, 2022

LanzaTech

Employee FAQ

1. What was announced today?

• LanzaTech is merging with AMCI Acquisition Corp. II ("AMCI"), commencing a process that will result in LanzaTech becoming a public company listing our stock on the Nasdaq.

2. What is AMCI Acquisition Corp. II?

• AMCI Acquisition Corp. II is a Nasdaq-listed special purpose acquisition company (SPAC) whose purpose is to merge with another company such as LanzaTech and bring that company public.

3. What were the terms of the transaction?

- LanzaTech will raise gross proceeds of approximately \$275 million through the business combination, including \$150 million of cash held by AMCI and an approx. \$125 million committed PIPE (Private Investment in Public Equity).
- The combined company is expected to have an estimated enterprise value of approximately \$1.8B and a pro forma equity value of approximately \$2.2B.
- The aggregate consideration payable in the merger will be in the form of shares of the new combined public company, with an aggregate value of approximately \$1.8B, and with each such share valued at \$10.
- LanzaTech stockholders will receive new shares of the combined public company at an exchange ratio agreed between LanzaTech and AMCI based on the above equity value of approximately \$1.8B.
- Each LanzaTech warrant that is automatically convertible by its terms as a result of the merger will be so automatically converted for the stock consideration described above. Each LanzaTech warrant that does not so automatically convert will be converted into a warrant to purchase shares of the new combined public company based on the exchange ratio described above.
- Each LanzaTech stock option will be converted into stock options of the new combined public company, with respect to a number of shares of the new combined public company based on the exchange ratio described above.
- Each award of restricted shares of LanzaTech will be converted into an award of restricted shares of the new combined public company, based on the exchange ratio described above.

4. When is the deal expected to close / when will LanzaTech become public?

• It is expected to close in the third quarter of 2022.

- In the weeks following the deal announcement, AMCI will file a registration statement on Form S-4, which is a document that is typically filed in connection with this type of transaction. This filing will be reviewed by the Securities and Exchange Commission (SEC). Once the SEC has completed its review of the Form S-4, AMCI will set a Special Meeting date for its stockholders to approve the transaction, and we will seek approval of the transaction from our stockholders. Approval of LanzaTech's and AMCI's stockholders is required to complete the transaction.
- The day after the deal is closed, LanzaTech will become a publicly traded company listed on the Nasdaq.

5. Will anything change with LanzaTech's leadership?

- LanzaTech's current executive team will continue to lead the combined company, with Dr. Jennifer Holmgren continuing as Chief Executive Officer of the combined company.
- The Board of Directors of the combined company will include representation from LanzaTech and AMCI.

6. What does this mean for me as an employee of LanzaTech?

- We will continue to operate under the LanzaTech name and there will be no meaningful changes to the team or how we do business.
- However, as we enter this new chapter as a public company, there are some rules we must all follow. There will be new reporting requirements, some restrictions on financial trading, and the SEC has strict guidelines governing external communications.
- Accordingly, you must refrain from making statements about our company or our performance in open forums (e.g., online, to friends or family, on Facebook, Twitter, LinkedIn, via email, to existing or prospective customers, etc.). This means you cannot share or promote anything other than what LanzaTech puts on our channels, even with your friends and family. This is not an arbitrary ask it is a legal mandate that we are obligated to follow during this process.

7. What do I do if someone from outside LanzaTech asks me about this transaction?

- If someone asks you about LanzaTech's plans to go public or its company fundamentals, the best response is something polite like, "We're really proud and excited, but it's business as usual at LanzaTech." If pushed further, you can say something like, "I can't speak to that, but I would be happy to connect you with the appropriate team members."
- Should you receive any press inquiries, you must not respond to them. Instead, please forward details of the inquiry to Freya Burton at freya@lanzatech.com who can help handle media requests appropriately during this sensitive time.
- Please note that members of the media or those otherwise looking for information may not always disclose themselves as such—it could even be partners, industry contacts or others you know personally. Please exercise extra caution when anyone approaches you, asking you about the company or its plans.

8. What does this mean for me and my options?

• Once the transaction is complete, which is expected in the third quarter of 2022, you will be part of a publicly traded company. Your options will become options to purchase shares of the combined, publicly traded company that results from the merger. The timing of the vesting of your options will not change with this merger. The value of your option grants will not change. You will receive new options for shares in the public company; the number of such options will be different based on the exchange ratio discussed above, but the dollar value of your options will remain the same. Further details will be provided over the next several weeks. For now, there is no impact on the structure of your shares in LanzaTech.

9. Can I buy stock in AMCI or the combined public company?

- You should not be buying or selling AMCI stock (or encouraging others to do so) before the transaction is completed.
- As an employee, you are an "insider" of LanzaTech, and you likely have knowledge of non-public information about LanzaTech. Possession of non-public information means you should not trade in AMCI stock as it could be considered "insider trading," which is illegal.
- Non-public information may include information about LanzaTech's financial performance, the likelihood of being able to close on the business combination, new product/service offerings, developments regarding key suppliers or customers, etc. A good rule of thumb is to consider anything on our website public, and anything that is in a press release or a public video as being public information. Everything else should be considered "non-public."
- Trading while in possession of non-public information (either by you, or by someone at your recommendation or "tip") could have serious consequences for you, including severe fines and jail sentences. It could also risk delaying or jeopardizing the transaction with AMCI.
- In addition, never provide non-public information to anyone outside of LanzaTech (unless specifically authorized).

10. Will there be an employee stock ownership plan as part of this process?

HR/Legal will be following up later with additional information.

11. What if I have a question? Who should I go to?

If you have questions about the transaction, please contact Omar El-Sharkawy, Director, Corporate Development: [***]

Important Information About the Business Combination and Where to Find It

The proposed business combination (the "Business Combination") between AMCI and LanzaTech NZ, Inc. ("LanzaTech") will be submitted to stockholders of AMCI for their consideration. AMCI intends to file a registration statement on Form S-4 (the "Registration Statement") with the SEC that will include both a prospectus with respect to the combined company's securities to be issued in connection with the Business Combination and a proxy statement to be distributed to AMCI's stockholders in connection with AMCI's solicitation of proxies for the vote by its stockholders in connection with the Business Combination and other matters as described in the Registration Statement. **AMCI urges its investors, stockholders and other interested persons to read, when available, the preliminary proxy statement/prospectus and any amendments thereto and the definitive proxy statement/prospectus, as well as other documents filed by AMCI with the SEC because these documents will contain important information about AMCI, LanzaTech and the Business Combination. After the Registration Statement is declared effective, AMCI will mail the definitive proxy statement/prospectus to its stockholders as of a record date to be established for voting on the Business Combination. Stockholders will also be able to obtain a copy of the Registration Statement, including the preliminary and definitive proxy statement/prospectus, once available, as well as other documents filed by AMCI with definitive proxy statement/prospectus, once available, as well as other documents filed with the SEC regarding the Business Combination and other documents filed by AMCI with the SEC, without charge, at the SEC's website located at www.sec.gov or by directing a request to: AMCI Acquisition Corp. II, 600 Steamboat Road, Greenwich, CT 06830.**

Participants in the Solicitation

AMCI and LanzaTech and their respective directors and executive officers may be considered participants in the solicitation of proxies with respect to the Business Combination described in this press release under the rules of the SEC. Information about the directors and executive officers of AMCI is set forth in AMCI's final prospectus relating to its initial public offering filed with the SEC on August 4, 2021 (the "AMCI IPO Prospectus"). Information regarding the persons who may, under the rules of the SEC, be deemed participants in the solicitation of AMCI stockholders in connection with the Business Combination will be set forth in the proxy statement/prospectus when it becomes available. Stockholders, potential investors and other interested persons should read the proxy statement/prospectus carefully when it becomes available before making any voting or investment decisions. These documents can be obtained free of charge from the sources indicated above.

Forward-Looking Statements

This communication includes forward-looking statements regarding, among other things, the plans, strategies and prospects, both business and financial, of AMCI and LanzaTech. These statements are based on the beliefs and assumptions of the management of AMCI and LanzaTech. Although AMCI and LanzaTech believe that their respective plans, intentions and expectations reflected in or suggested by these forward-looking statements are reasonable, neither AMCI nor LanzaTech can assure you that either will achieve or realize these plans, intentions or expectations. Forward-looking statements are inherently subject to risks, uncertainties and assumptions. Generally, statements that are not historical facts, including statements concerning possible or assumed future actions, business strategies, events or results of operations, are forward-looking statements. These statements may be preceded by, followed by or include the words "believes," "estimates," "expects," "projects," "forecasts," "may," "will," "should," "seeks," "plans," "scheduled," "anticipates," or "intends" or similar expressions. The forward-looking statements are based on projections prepared by, and are the responsibility of, AMCI's or LanzaTech's management. These forward-looking statements are not guarantees of future performance, conditions or results, and involve a number of known and unknown risks, uncertainties, assumptions and other important factors, many of which are outside the control of the parties, that could cause actual results or outcomes to differ materially from those discussed in the forward-looking statements. Important factors that may affect actual results or outcomes include, among others, factors relating to the Business Combination, including the parties' ability to meet the closing conditions of the Business Combination, the uncertainty of the projected financial information with respect to LanzaTech; the level of AMCI stockholder redemptions, if any, the ability to realize the benefits expected from the Business Combination; and the ability to list and maintain such listing of the combined company's securities following the Business Combination; factors relating to the business, operations and financial performance of LanzaTech, including with respect to LanzaTech's development activities, industry partnerships and intellectual property rights; and other factors, such as market opportunities for the combined company, AMCI's or the combined company's ability to raise financing in the future and the impacts of COVID-19 on the combined company's business; and those factors discussed under the heading "Risk Factors" in the AMCI IPO Prospectus, AMCI's Quarterly Report on Form 10-Q for the quarter ended September 30, 2021, and other documents of AMCI filed, or to be filed, with the SEC. New risk factors emerge from time to time and it is not possible to predict all such risk factors, nor can AMCI or LanzaTech assess the impact of all such risk factors on the businesses of AMCI and LanzaTech prior to the Business Combination, and the combined company following the Business Combination, or the extent to which any factor or combination of factors may cause actual results to differ materially from those contained in any forward-looking statements. Forward-looking statements are not guarantees of performance. You should not put undue reliance on these statements, which speak only as of the date hereof. All forward-looking statements attributable to AMCI or LanzaTech or persons acting on their behalf are expressly qualified in their entirety by the foregoing cautionary statements. AMCI and LanzaTech prior to the Business Combination, and the combined company following the Business Combination, undertake no obligations to update or revise publicly any forward-looking statements, whether as a result of new information, future events or otherwise, except as required by law.

No Offer or Solicitation

This communication shall not constitute a solicitation of a proxy, consent or authorization with respect to any securities or in respect of the Business Combination. This communication shall also not constitute an offer to sell or the solicitation of an offer to buy any securities, nor shall there be any sale of securities in any state or jurisdiction in which such offer, solicitation or sale would be unlawful prior to registration or qualification under the securities laws of any such state or jurisdiction. No offer of securities shall be made except by means of a prospectus meeting the requirements of the Securities Act of 1933, as amended, or an exemption therefrom.