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UNITED STATES  
SECURITIES AND EXCHANGE COMMISSION  
Washington, D.C. 20549

**SCHEDULE 14A**

**Proxy Statement Pursuant to Section 14(a) of  
the Securities Exchange Act of 1934**

Filed by the Registrant

Filed by a Party other than the Registrant

Check the appropriate box:

Preliminary Proxy Statement

**Confidential, for Use of the Commission Only (as permitted by Rule 14a-6(e)(2))**

Definitive Proxy Statement

Definitive Additional Materials

Soliciting Material under §240.14a-12

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**AMCI ACQUISITION CORP. II**

(Name of Registrant as Specified in Its Charter)

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(Name of Person(s) Filing Proxy Statement, if other than the Registrant)

Payment of Filing Fee (Check the appropriate box):

No fee required.

Fee paid previously with preliminary materials.

Fee computed on table in exhibit required by Item 25(b) per Exchange Act Rules 14a6(i)(1) and 0 -11.

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**FOR THE SPECIAL MEETING OF STOCKHOLDERS OF  
AMCI ACQUISITION CORP. II**

**THIS PROXY IS SOLICITED ON BEHALF OF THE BOARD OF DIRECTORS**

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X  
Y**

The undersigned hereby appoints Nimesh Patel and Walker Woodson (together, the "Proxies"), and each of them independently, with full power of substitution, as proxies, to vote all of the shares of Common Stock of AMCI Acquisition Corp. II (the "Company" or "AMCI"), a Delaware corporation, that the undersigned is entitled to vote (the "Shares") at the special meeting of stockholders of the Company to be held on February 1, 2023 at 11:00 a.m., New York City time, virtually, at <https://www.cstproxy.com/amciacquisitionii/2023> (the "Special Meeting"), and at any adjournments and/or postponements thereof.

The undersigned acknowledges receipt of the enclosed proxy statement and revokes all prior proxies for said meeting.

**THE SHARES REPRESENTED BY THIS PROXY WHEN PROPERLY EXECUTED WILL BE VOTED IN THE MANNER DIRECTED HEREIN BY THE UNDERSIGNED STOCKHOLDER(S). IF NO SPECIFIC DIRECTION IS GIVEN AS TO THE PROPOSALS ON THE REVERSE SIDE, THIS PROXY WILL BE VOTED "FOR" ALL PROPOSALS.**

**PLEASE MARK, SIGN, DATE, AND RETURN THE PROXY CARD PROMPTLY.**

*(Continued and to be marked, signed and dated on reverse side)*

**Important Notice Regarding the Availability of Proxy Materials for the  
Special Meeting of Stockholders to be held on February 1, 2023.**

This notice of Special Meeting and the accompanying Proxy Statement are available at:  
<https://www.cstproxy.com/amciacquisitionii/2023>.

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**Proposal No. 1 — The Business Combination Proposal** — to consider and vote upon a proposal to adopt the agreement and plan of merger, dated as of March 8, 2022 (as amended on December 7, 2022, and as may be further amended and/or restated from time to time, the "Merger Agreement"), by and among AMCI, AMCI Merger Sub, Inc., a Delaware corporation and a wholly owned subsidiary of AMCI ("Merger Sub"), and LanzaTech NZ, Inc., a Delaware corporation ("LanzaTech"); and the transactions contemplated thereby, pursuant to which Merger Sub will merge with and into LanzaTech with LanzaTech surviving the merger as a wholly owned subsidiary of AMCI (the transactions contemplated by the Merger Agreement, the "Business Combination" and such proposal, the "Business Combination Proposal");

FOR  AGAINST  ABSTAIN

**Proposal No. 2 — The Charter Proposals** — to consider and vote upon a proposal to approve, assuming the Business Combination Proposal is approved and adopted, the following (collectively, the "Charter Proposals"):

(i) the proposed second amended and restated certificate of incorporation of AMCI (the "Proposed Charter"), which will replace AMCI's amended and restated certificate of incorporation, dated August 3, 2021 (the "Current Charter") and will be in effect upon the consummation of the Business Combination;

FOR  AGAINST  ABSTAIN

(ii) the reclassification of AMCI's Class A common stock, par value \$0.0001 per share ("Class A common stock"), and AMCI's Class B common stock, par value \$0.0001 per share ("Class B common stock") into a single class of common stock, par value \$0.0001 per share, of the combined company ("New LanzaTech Common Stock"); and

FOR  AGAINST  ABSTAIN

(iii) the increase in the number of authorized shares of New LanzaTech Common Stock from 300,000,000 shares to 400,000,000 shares and the increase in the number of authorized shares of preferred stock from 1,000,000 shares to 20,000,000 shares;

FOR  AGAINST  ABSTAIN

**Proposal No. 3 — The Advisory Charter Proposals** — to consider and vote upon separate proposals to approve, on a non-binding advisory basis, the following material differences between the Proposed Charter and the Current Charter, which are being presented in accordance with the requirements of the SEC as five separate sub-proposals:

(i) to provide that New LanzaTech will have authorized capital stock of 420,000,000 shares, consisting of 400,000,000 shares of New LanzaTech Common Stock and 20,000,000 shares of preferred stock, par value \$0.0001 per share, as opposed to AMCI having authorized capital stock of 301,000,000 shares, consisting of 280,000,000 shares of Class A common stock, 20,000,000 shares of Class B common stock and 1,000,000 shares of preferred stock;

FOR  AGAINST  ABSTAIN

(ii) to provide that directors of New LanzaTech may be removed from office only for cause and only with the affirmative vote of the holders of at least 66⅔% of the voting power of the outstanding shares of stock of New LanzaTech;

FOR  AGAINST  ABSTAIN

(iii) to change the stockholder vote required to amend certain provisions of the Proposed Charter;

FOR  AGAINST  ABSTAIN

(iv) to prohibit all stockholders from acting by written consent by specifying that any action required or permitted to be taken by stockholders must be effected by a duly called annual or special meeting and may not be effected by written consent; and

FOR  AGAINST  ABSTAIN

(v) to provide for certain additional changes, including, among other things, (i) changing the post-Business Combination company's corporate name from "AMCI Acquisition Corp. II" to "LanzaTech Global, Inc." and making the company's corporate existence perpetual and (ii) removing certain provisions related to our status as a blank check company that will no longer apply upon consummation of the Business Combination;

FOR  AGAINST  ABSTAIN

**Proposal No. 4 — The Stock Issuance Proposal** — to consider and vote upon a proposal to approve, assuming the Business Combination Proposal and the Charter Proposals are approved and adopted, for the purposes of complying with the applicable listing rules of Nasdaq, the issuance of (x) shares of New LanzaTech Common Stock pursuant to the terms of the Merger Agreement and (y) shares of Class A common stock to certain institutional investors in connection with the Private Placement (as defined in the accompanying proxy statement/prospectus), plus any additional shares pursuant to subscription agreements or other agreements we may enter into prior to Closing (the "Stock Issuance Proposal");

FOR  AGAINST  ABSTAIN

**Proposal No. 5 — The Incentive Plan Proposal** — to consider and vote upon a proposal to approve, assuming the Business Combination Proposal, the Charter Proposals and the Stock Issuance Proposal are approved and adopted, the LanzaTech 2023 Long-Term Incentive Plan (the "Incentive Plan"), including the authorization of the initial share reserve, the aggregate number of shares issuable pursuant to incentive stock options within the meaning of section 422 of the Internal Revenue Code of 1986, as amended, and the class(es) of employees eligible for ISOs under the Incentive Plan (the "Incentive Plan Proposal");

FOR  AGAINST  ABSTAIN

**Proposal No. 6 — The Director Election Proposal** — a proposal to elect, assuming the Business Combination Proposal, the Charter Proposals, the Stock Issuance Proposal and the Incentive Plan Proposal are all approved and adopted, directors to the New LanzaTech board of directors (the "Director Election Proposal");

FOR ALL  WITHHOLD ALL  FOR ALL EXCEPT

**Nominees:**

- Barbara Byrne
- Nigel Gormly
- Jennifer Holmgren
- Dorri McWhorter
- Jim Messina
- Nimesh Patel
- Gary Rieschel

To withhold authority to vote for any individual nominee(s), mark "For All Except" and write the name of the nominee(s) on the line below.

**Proposal No. 7 — The Adjournment Proposal** — to consider and vote upon a proposal to approve the adjournment of the Special Meeting to a later date or dates, if necessary, to permit further solicitation and vote of proxies if, based upon the tabulated vote at the time of the Special Meeting, any of the Business Combination Proposal, the Charter Proposals, the Stock Issuance Proposal, the Incentive Plan Proposal and the Director Election Proposal would not be duly approved and adopted by our stockholders or we determine that one or more of the closing conditions under the Merger Agreement is not satisfied or waived ("Adjournment Proposal").

FOR  AGAINST  ABSTAIN

Dated: \_\_\_\_\_, 2023

Signature \_\_\_\_\_

(Signature if held Jointly)

When Shares are held by joint tenants, both should sign. When signing as attorney, executor, administrator, trustee or guardian, please give full title as such. If a corporation, please sign in full corporate name by the president or another authorized officer. If a partnership, please sign in partnership name by an authorized person.

The Shares represented by the proxy, when properly executed, will be voted in the manner directed herein by the undersigned stockholder(s). If no direction is made, this proxy will be voted FOR all proposals. If any other matters properly come before the Special Meeting, unless such authority is withheld on this proxy card, the Proxies will vote on such matters in their discretion.