Supplement dated February 10, 2023 To Supplement dated June 3, 2022 To prospectus supplement dated August 3, 2021 (To prospectus dated August 3, 2021)

36,117,622 shares



Dynex Capital, Inc.

Common stock

We have entered into amendment no. 4 to the distribution agreement, dated June 29, 2018, as amended May 31, 2019, August 3, 2021, June 3, 2022 and February 10, 2023 (collectively, the "Distribution Agreement"), with J.P. Morgan Securities LLC, JMP Securities LLC, JonesTrading Institutional Services LLC and BTIG, LLC (collectively the "Sales Agents" and each individually a "Sales Agent"), relating to shares of our common stock, par value \$0.01 per share, of Dynex Capital, Inc. (the "Company"), offered from time to time through the Sales Agents, acting as Sales Agents or principals under this prospectus supplement (the "Supplement") and accompanying base prospectus (together, the "prospectus"), which supplements the prospectus supplement, dated August 3, 2021 (the "Prospectus Supplement") and the prospectus supplement, dated June 3, 2022 (the "Prior Supplement"). Sales of our common stock, if any, pursuant to this Supplement, the Prior Supplement and the Prospectus Supplement will be made in sales deemed to be "at the market offerings" as defined in Rule 415(a)(4) under the Securities Act of 1933, as amended, by means of ordinary brokers' transactions on the New York Stock Exchange or otherwise at market prices prevailing at the time of sale, at prices related to prevailing market prices or at negotiated prices. This Supplement should be read in conjunction with the Prospectus Supplement. Capitalized terms used and not defined herein shall have the meanings ascribed to such terms in the Prospectus Supplement.

This Supplement is being filed to reflect the amendment of the Distribution Agreement to increase the offer and sale of shares of the Company's common stock by 13,000,000. Accordingly, after taking into account the prior increase of 15,000,000 shares of the Company's common stock offered in the Prior Supplement, each reference to "8,117,622 shares" in the Prospectus Supplement is hereby amended to be "36,117,622 shares." As of the date of this Supplement, we have issued 19,154,156 shares of common stock through the Distribution Agreement and we have 22,210,388 authorized shares of common stock available for issuance.

If we offer and sell all of the remaining shares available for issuance under the Distribution Agreement, the number of shares of our common stock outstanding after this offering will be 70,799,835 shares. This number of outstanding shares is based on 53,836,369 shares of our common stock outstanding as of January 12, 2023 and assumes the offer and sale of all 16,963,466 remaining shares. Under the terms of the Distribution Agreement, we are not obligated to offer or sell any shares of our common stock.

The validity of the shares offered pursuant to this Supplement will be passed upon for us by Mayer Brown LLP, New York, New York. The Sales Agents are being represented in this offering by Cooley LLP, New York, New York.

J.P. Morgan

JMP Securities

JonesTrading

BTIG

The date of this prospectus supplement is February 10, 2023.

Incorporation of information by reference

The Securities and Exchange Commission (the "SEC") allows us to "incorporate by reference" the information we file with it, which means that we can disclose important information to you by referring you to other documents that we have filed with the SEC. These incorporated documents contain important business and financial information about us that is not included in or delivered with this prospectus supplement and the accompanying base prospectus. The information incorporated by reference is considered to be part of this prospectus supplement and the accompanying base prospectus, and later information filed with the SEC will update and supersede this information.

We incorporate by reference the documents listed below and any future filings we make with the SEC under Section 13(a), 13(c), 14 or 15(d) of the Exchange Act, until the offering of securities covered by this prospectus is complete:

- Our Annual Report on Form 10-K for the year ended December 31, 2021 filed with the SEC on February 28, 2022;
- Our Quarterly Reports on Form 10-Q for the period ended March 31, 2022 filed with the SEC on May 2, 2022, for the period ended June 30, 2022 filed with the SEC on August 1, 2022 and for the period ended September 30, 2022 and filed with the SEC on October 31, 2022;
- Our Definitive Proxy Statement on Schedule 14A filed with the SEC on March 31, 2022;
- Our Current Report on Form 8-K filed with the SEC on January 30, 2023 (including Exhibit 99.1); and
- The description of our common stock included in our registration statement on Form 8-A, filed pursuant to Section 12 (b) of the Exchange Act on January 17, 1989, including any amendment or report filed for the purpose of updating that description.

You may obtain copies of these documents at no cost by writing or telephoning us at the following address:

Investor Relations Dynex Capital, Inc. 4991 Lake Brook Drive, Suite 100 Glen Allen, Virginia 23060 (804) 217-5800