

ENTERPRISE BANCORP INC /MA/
Form 424B5
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PROSPECTUS SUPPLEMENT
TO PROSPECTUS DATED JULY 18, 2013

Common Stock

Subscription Rights to Purchase up to 465,116 Shares of Common Stock

We are distributing to our shareholders, free of charge, non-transferable subscription rights to purchase shares of our common stock. You will receive one right for each share of common stock that you owned of record as of 5:00 p.m., Eastern Daylight Time, on April 19, 2016. Each right will entitle you to purchase 0.0444 of a share of our common stock at a price of \$21.50 per whole share. If you fully exercise your subscription rights for all of the shares that you hold of record, then you may also subscribe to purchase additional shares, subject to the conditions and limitations described later in this prospectus supplement, at the same price of \$21.50 per share.

We are distributing subscription rights exercisable for up to 465,116 shares. We also reserve the right to issue up to an additional 93,023 shares to accommodate over-subscription requests in the rights offering and/or to facilitate sales of shares to new investors in a supplemental community offering that we are undertaking concurrently with the rights offering.

Your subscription rights may be exercised at any time during the period starting on April 21, 2016 and ending at 5:00 p.m., Eastern Daylight Time, on May 27, 2016, unless we extend the rights offering period, which we may do in our sole discretion. However, we will not extend the rights offering period beyond June 3, 2016. You should carefully consider whether to exercise your rights before the expiration of the rights offering period. The exercise of your subscription rights is irrevocable and our Board of Directors makes no recommendation as to whether you should exercise your rights. Your subscription rights may not be sold, transferred or assigned to anyone else and will not be listed for trading on any stock exchange or trading market.

We are also offering the shares of common stock offered but not subscribed for in the rights offering to the public through a supplemental community offering at \$21.50 per share. This supplemental community offering is available only to persons selected by us, in our sole discretion. The supplemental community offering will expire at the close of business on June 10, 2016, unless we extend it in our sole discretion. However, we will not extend the supplemental community offering period beyond June 17, 2016. We reserve the right to accept or reject, in whole or in part, any subscription tendered in the supplemental community offering. Under no circumstances will we issue more than 558,139 shares in the combined rights and supplemental community offering.

We will conduct the rights offering and the supplemental community offering solely on a "best efforts" basis without the services of an underwriter or placement agent, but we may choose to do so at our discretion.

We may amend, terminate or cancel the rights offering or the supplemental community offering, or both, at any time and for any reason. If we terminate either offering, the subscription agent will return all subscription payments it has received for the terminated offering without interest, penalty or deduction.

Our shares are traded on the NASDAQ Global Market under the symbol "EBTC." On April 19, 2016, the closing sale price for our shares was \$24.75 per share. All shares issued in either the rights offering or the supplemental community offering will also be listed on the NASDAQ Global Market under the same symbol.

This investment in our common stock involves risks. You should carefully consider all of the information set forth in this prospectus supplement and the accompanying prospectus, including the risk factors beginning on page S-15 of this prospectus supplement and on page 4 of the accompanying prospectus, as well as the risk factors and other information contained in any documents we incorporate by reference into this prospectus supplement and the accompanying prospectus before exercising your subscription rights. See "Incorporation of Certain Information by Reference."

OFFERING SUMMARY

Price: \$21.50 per share

| | Per Share | Total (1) |
|----------------|-----------|--------------|
| Gross proceeds | \$21.50 | \$10,000,000 |
| Net proceeds | \$20.86 | \$9,700,000 |

(1) Based on 465,116 shares offered being sold and estimated expenses of \$300,000. No assurance can be given that all or any of the shares will be sold. We reserve the right to issue up to 93,023 additional shares as described further in this prospectus supplement.

NEITHER THE SECURITIES AND EXCHANGE COMMISSION NOR ANY STATE SECURITIES COMMISSION HAS APPROVED OR DISAPPROVED OF THESE SECURITIES OR PASSED UPON THE ADEQUACY OR ACCURACY OF THIS PROSPECTUS SUPPLEMENT. ANY REPRESENTATION TO THE CONTRARY IS A CRIMINAL OFFENSE.

THESE SECURITIES ARE NOT DEPOSITS OR OTHER OBLIGATIONS OF ENTERPRISE BANK AND ARE NOT INSURED OR GUARANTEED BY THE FEDERAL DEPOSIT INSURANCE CORPORATION, THE DEPOSIT INSURANCE FUND OR ANY OTHER GOVERNMENTAL AGENCY OR FUND.

The date of this prospectus supplement is April 21, 2016.

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You should rely only on the information contained in or incorporated by reference into this prospectus supplement and the accompanying prospectus. We have not authorized anyone to provide you with additional or different information from that contained in or incorporated by reference into this prospectus supplement and the accompanying prospectus. You should assume that the information contained in this prospectus supplement is accurate only as of the date on the front cover of this prospectus supplement, the information contained in the accompanying prospectus is accurate only as of the date on the front cover of the prospectus and any information we have incorporated by reference is accurate only as of the date of the document incorporated by reference, regardless of the time of delivery of this prospectus supplement, the accompanying prospectus or any exercise of the subscription rights. Our business, financial condition, results of operations and prospects may have changed since those dates.

ABOUT THIS PROSPECTUS

This document consists of two parts. The first part is the prospectus supplement, which describes the specific terms of this offering. The second part is the accompanying prospectus, which describes more general information about us and our securities, some of which may not apply to this offering. You should read both this prospectus supplement and the accompanying prospectus, together with additional information described under the heading “Where You Can Find More Information” below.

Both this prospectus supplement and the accompanying prospectus include important information about us, our common stock and other information you should know before investing in our common stock. This prospectus supplement also adds to, updates and changes information in the accompanying prospectus. To the extent that any statement we make in the prospectus supplement is inconsistent with the statements made in the accompanying prospectus, the statements made in the accompanying prospectus are deemed modified or superseded by the statements made in this prospectus supplement. You should read both this prospectus supplement and the accompanying prospectus as well as the additional information described under the caption “Where You Can Find More Information” in the accompanying prospectus before investing in our common stock.

As used in this prospectus supplement, the terms “Enterprise Bancorp,” “the Company,” “we,” “our,” and “us” refer to Enterprise Bancorp, Inc. and our consolidated subsidiaries, unless the context indicates otherwise. This prospectus supplement and the accompanying prospectus include our trademarks and other trade names identified herein. All other trademarks and trade names appearing in this prospectus supplement and the accompanying prospectus are the property of their respective holders.

QUESTIONS AND ANSWERS RELATING TO THE RIGHTS OFFERING

The following are examples of what we anticipate will be common questions about the rights offering. The answers are based on selected information included elsewhere in this prospectus supplement and the accompanying prospectus. The following questions and answers do not contain all of the information that may be important to you and may not address all of the questions that you may have about the rights offering. This prospectus supplement and the accompanying prospectus contain more detailed descriptions of the terms and conditions of the rights offering and provide additional information about us and our business, including potential risks related to the rights offering, the common stock of the Company, and our business.

What is being offered in the rights offering?

We are distributing, at no cost or charge to our shareholders, subscription rights to purchase shares of our common stock. These rights may be exercised only by the shareholders to whom they are distributed, and may not be sold, transferred or assigned to anyone else. Holders of our common stock will receive one subscription right for each share of common stock held of record as of 5:00 p.m., Eastern Daylight Time on April 19, 2016, the record date of the rights offering. The subscription rights will be evidenced by subscription rights certificates. Each subscription right will entitle you to purchase 0.0444 of a share of our common stock at a subscription price equal to \$21.50 per whole share. You may exercise any number of your subscription rights, or you may choose not to exercise any subscription rights. Fractional shares of our common stock resulting from the exercise of the basic subscription privilege or the over-subscription opportunity, each as described below, will be eliminated by rounding down to the nearest whole share, with the total subscription payment being adjusted accordingly. As a result, we may not issue the full number of shares authorized for issuance in connection with the rights offering. Any excess subscription payments received by the subscription agent (or rights agent) will be returned, without interest, penalty or deduction, as soon as practicable after the completion of the rights offering.

ALL EXERCISES OF SUBSCRIPTION RIGHTS ARE IRREVOCABLE. Once you deliver your subscription rights certificate to exercise any subscription rights, you cannot revoke the exercise of your subscription rights, even if you later learn information that you consider to be unfavorable and even if the market price of our common stock is below the subscription price. You should not exercise your subscription rights unless you are sure that you wish to purchase additional shares of our common stock.

What is the basic subscription privilege?

For each right that you receive, you will have a basic subscription privilege to buy from us 0.0444 of a share of our common stock at the subscription price. You may exercise your basic subscription privilege for some or all of your subscription rights, or you may choose not to exercise any subscription rights.

For example, if you owned 1,000 shares of our common stock as of 5:00 p.m., Eastern Daylight Time, on the record date, you would receive the same number of subscription rights and would have the right to purchase 44.40 shares of common stock (rounded down to 44 shares) for \$21.50 per share with your basic subscription privilege.

What is the over-subscription opportunity?

If you exercise your basic subscription privilege in full, you, together with other shareholders that exercise their basic subscription privilege in full, will be entitled to subscribe to purchase additional shares, subject to certain conditions and limitations. The subscription price per share that applies to the over-subscription opportunity is the same subscription price per share that applies to the basic subscription privilege.

Are there any limitations on the number of subscription rights I may exercise in the rights offering?

You may only purchase the number of whole shares of common stock purchasable upon exercise of the number of basic subscription rights distributed to you in the rights offering, plus up to the number of shares that may be made available pursuant to the over-subscription opportunity. Accordingly, the number of shares of common stock you may purchase in the rights offering is limited by the number of shares of our common stock you owned on the record date and by the extent to which other shareholders exercise their subscription rights, including any over-subscription requests, as well as by our determination as to the number of shares, if any, that we will offer to sell to new investors in the supplemental community offering. We reserve the right to reject in whole or in part any or all over-subscription requests regardless of the availability of shares.

In addition, on the basis of ownership restrictions contained in our articles of organization, no person or entity or group of persons or entities acting in concert may exercise subscription rights, including over-subscription requests, to

purchase shares of our common stock that, when aggregated with their existing ownership, would result in such person or entity or group acting in

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concert owning or controlling 10% or more of our outstanding shares of common stock following the completion of the rights offering, unless our Board of Directors has approved of such purchase. Under applicable federal and state banking laws, any purchase of shares of our common stock may also require the prior clearance or approval of, or prior notice to, federal and state bank regulatory authorities if the purchase will result in any person or entity or group of persons or entities acting in concert owning or controlling shares in excess of such threshold ownership interest.

What are the limitations on the over-subscription opportunity?

In the event you exercise your basic subscription rights in full, you may also choose to subscribe for any shares of our common stock that are not purchased by our other shareholders through the exercise of their basic subscription rights, subject to limitations on over-subscription privileges described below. You may subscribe for as many shares as are available, up to a limit that would cause your ownership of shares to equal 10% or more of our outstanding common stock following this rights offering.

If sufficient shares of common stock are available, we will seek to honor your exercise of the over-subscription privilege request in full prior to accepting subscriptions during the supplemental community offering. However, we reserve the right to accept or reject, in whole or in part, any over-subscription requests. If over-subscription requests exceed the number of shares of common stock available, we will seek to allocate the available shares of common stock on a pro rata basis among shareholders who over-subscribed, subject, however, to our right to accept or reject, in whole or in part, any over-subscription requests regardless of the availability of shares. Any excess subscription payments will be returned, without interest, penalty or deduction, as soon as practicable after the completion of the rights offering. For more information, see “The Rights Offering — Subscription Rights.”

How do I exercise my subscription rights?

If you wish to exercise your subscription rights, you must deliver the following items to the subscription agent, Computershare Trust Company, N.A., before 5:00 p.m., Eastern Daylight Time, on May 27, 2016:

• a properly completed subscription rights certificate; and

• payment for the full amount of shares of common stock you wish to purchase pursuant to your basic subscription right and over-subscription opportunity.

If your shares are held in the name of a broker, dealer, or other nominee, then you should deliver your subscription rights certificate and subscription payment to that record holder. If you are the record holder, then you should deliver your subscription rights certificate and subscription payment by express mail, overnight delivery or by first class mail to the subscription agent as follows:

By Express Mail or Overnight Delivery: By First Class Mail:

Computershare Trust Company, N.A.
Corporate Actions Voluntary Offer
250 Royall Street, Suite V
Canton, MA 02021

Computershare Trust Company, N.A.
Corporate Actions Voluntary Offer
P.O. Box 43011
Providence, RI 02940-3011

Payments must be made in full in United States dollars for the full number of shares for which you are subscribing by: cashier’s check drawn on a U.S. bank made payable to Computershare Trust Company, N.A. (acting as subscription agent for Enterprise Bancorp, Inc.); or

• personal check drawn upon a U.S. bank made payable to Computershare Trust Company, N.A. (acting as subscription agent for Enterprise Bancorp, Inc.); or

• wire transfer of immediately available funds to the subscription agent as instructed on the subscription rights certificate and in the Instructions for Use of the Enterprise Bancorp, Inc. Subscription Rights Certificate.

Any personal check used to pay for shares of our common stock must clear the appropriate financial institutions prior to 5:00 p.m., Eastern Daylight Time, on May 27, 2016, unless the expiration date is extended, but not beyond June 3, 2016. The clearinghouse may require five or more business days. Accordingly, if you intend to pay the subscription payment by means of a

personal check, we urge you to make payment sufficiently in advance of the expiration of the rights offering to ensure such payment is both received and cleared by such date.

Additional details are provided under “The Rights Offering — Method of Exercising Subscription Rights” and “The Rights Offering — Payment Method.” If you cannot deliver your subscription rights certificate to the subscription agent prior to the expiration of the rights offering, you may follow the guaranteed delivery procedures described under “The Rights Offering — Notice of Guaranteed Delivery.”

Why are we conducting the rights offering?

We are conducting the rights offering as a way of raising equity capital in a cost-effective manner that gives all of our shareholders an opportunity to participate. This additional equity capital will support future asset growth and will otherwise be used for various corporate purposes. We believe that the current economic environment has created significant opportunities for well-positioned community banks, such as Enterprise Bank (the “Bank”), to expand geographically and to increase market share. See also the section of this prospectus supplement below entitled “Use of Proceeds.” In authorizing the rights offering, our Board of Directors evaluated our current rate of growth and our projected future need for additional capital to maintain such growth. Our Board of Directors also considered other alternatives available for raising equity capital, including an underwritten public offering of our common stock, and determined that the rights offering, accompanied by the concurrent supplemental community offering, was in the best interests of the Company and our shareholders.

How was the subscription price of \$21.50 determined?

Our Board of Directors determined the terms of the rights offering, including the subscription price, in its sole discretion. In determining the subscription price, our Board of Directors considered a number of factors, including: the size and timing of the rights offering and the price at which our shareholders might be willing to participate in a rights offering offered on a pro rata basis to all shareholders with an over-subscription opportunity; historical and current trading prices for our common stock; and analysis of information related to other recent rights offerings and the range of discounts that the subscription prices represented to the then prevailing and historical trading prices for those offerings.

The subscription price is not necessarily related to our book value, results of operations, cash flows, financial condition or net worth or any other established criteria of value and may or may not be considered the fair value of our common stock at the time the rights offering was approved by our Board or during the rights offering period. We cannot assure you that the trading price of our common stock will not decline during or after the rights offering. We also cannot assure you that you will be able to sell shares purchased in this offering at a price equal to or greater than the subscription price. We do not intend to change the subscription price in response to changes in the trading price of our common stock prior to the expiration of the rights offering.

What will happen if less than all of the subscription rights are exercised?

In the event shares of common stock remain available for sale after taking into account the exercise of basic subscription rights and such over-subscription requests as we choose to satisfy, we will offer those remaining shares to the public at the \$21.50 per share subscription price in the supplemental community offering. We anticipate that, if we offer shares of our common stock in the supplemental community offering, we will offer the shares to individual investors who reside or operate businesses in our current or prospective market area and to our employees. We may also offer shares in the supplemental community offering to a limited number of institutional investors. We reserve the right to accept or reject in whole or in part any subscription we receive in the supplemental community offering.

Am I required to exercise the rights I receive in the rights offering?

No. You may exercise any number of your subscription rights, or you may choose not to exercise any subscription rights.

What happens if I choose not to exercise my subscription rights?

You are not required to exercise your subscription rights or otherwise take any action in response to this rights offering. If you do not exercise your basic subscription privilege and the rights offering is completed, the number of shares of our common stock you own will not change, but your percentage ownership of our total outstanding common stock will decrease because shares will

be purchased by other shareholders in the rights offering and additional shares may also be issued in the supplemental community offering. In addition, if you exercise your basic subscription privilege in full but do not exercise your over-subscription opportunity in full and other shareholders fully exercise their basic subscription right and over-subscription opportunity and/or additional shares are sold in the supplemental community offering, the percentage of our common stock owned by all of these other shareholders will increase.

How soon must I act to exercise my subscription rights?

The subscription rights may be exercised at any time during the subscription period, which commences on April 21, 2016, through the expiration date for the rights offering, which is 5:00 p.m., Eastern Daylight Time, on May 27, 2016, unless we extend the rights offering period, which we may do in our sole discretion, but not beyond June 3, 2016. If you elect to exercise any subscription rights, the subscription agent must actually receive all required documents and payments from you at or prior to the expiration date.

May I transfer my subscription rights?

No. You may not sell, transfer or assign your subscription rights to anyone else.

Are we requiring a minimum subscription to complete the rights offering?

No. We are not requiring a minimum number of rights exercised or shares sold to complete the rights offering.

Are there any other conditions to the completion of the rights offering?

Yes. The completion of the rights offering is subject to the conditions described in the subsection below entitled “The Rights Offering—Conditions and Termination.”

Can the rights offering be terminated?

Yes. We may terminate the rights offering at any time prior to the expiration date for any reason. If the rights offering is terminated, all subscription payments received by the subscription agent will be returned, without interest, penalty or deduction, as soon as practicable to those persons who subscribed for shares in the rights offering.

What should I do if I want to participate in the rights offering, but my shares are held in the name of my broker, dealer, custodian bank or other nominee?

If you hold your shares of our common stock in the name of a broker, dealer, custodian bank or other nominee, then your broker, dealer, custodian bank or other nominee is the record holder of the shares of our common stock that you own. The record holder must exercise the subscription rights on your behalf for the shares of our common stock you wish to purchase.

We will ask your broker, dealer, custodian bank or other nominee to notify you of the rights offering. You should complete and return to your record holder the form entitled “Beneficial Owner Election Form” if you choose to participate in the rights offering. You should receive this form from your record holder with the other rights offering materials.

If you wish to participate in the rights offering and purchase shares of our common stock, please contact the record holder of your shares promptly.

Will the shares of common stock I acquire in the rights offering be subject to any shareholder agreement restricting my ability to sell or transfer my new shares of common stock?

No. You will not be subject to any shareholder agreement that restricts your ability to sell or transfer any new shares of common stock acquired by you in the rights offering. For more information, see “The Rights Offering – Shareholder Agreements and Other Restrictions.”

After I exercise my subscription rights, can I change my mind?

No. All exercises of subscription rights are irrevocable by the shareholders, even if you later learn information about us that you consider unfavorable. You should not exercise your subscription rights unless you are certain that you wish to purchase the shares of common stock offered pursuant to the rights offering.

Does exercising my subscription rights involve risk?

Yes. The exercise of your subscription rights involves risks. You should carefully consider the risks described under the heading “Risk Factors” in this prospectus supplement, the accompanying prospectus and the documents incorporated by reference into this prospectus supplement and the accompanying prospectus.

Has our Board of Directors made a recommendation to our shareholders regarding the rights offering?

No. Our Board of Directors is not making a recommendation regarding your exercise of the subscription rights. You are urged to decide whether or not to exercise your subscription rights based on your own assessment of our business and the rights offering. See the section entitled “Risk Factors” in this prospectus supplement, the accompanying prospectus, and the documents incorporated by reference into this prospectus supplement and the accompanying prospectus.

What fees or charges apply if I exercise my subscription rights?

There will be no cost to you beyond the subscription price for the shares of common stock you purchase and any fees your broker may charge you.

When will I receive my new shares of common stock?

The subscription agent will arrange for the issuance of the shares of common stock purchased, as soon as practicable after the expiration of the rights offering period. For more information, see “The Rights Offering – Issuance of Shares of Common Stock.”

Will the subscription rights be listed on a stock exchange or trading market?

The subscription rights may not be sold, transferred or assigned to anyone else and will not be listed on the NASDAQ Global Market or any other stock exchange or trading market or on the OTC Bulletin Board. Our common stock trades on the NASDAQ Global Market under the symbol “EBTC,” and the shares of common stock to be issued in connection with the rights offering will also be listed on the NASDAQ Global Market under the same symbol.

What are the U.S. federal income tax consequences of exercising my subscription rights?

The receipt and exercise of your subscription rights will generally not be taxable under U.S. federal income tax laws. You should, however, seek specific tax advice from your personal tax advisor in light of your personal tax situation and as to the applicability and effect of any other tax laws. See the section below entitled “Certain Material U.S. Federal Income Tax Considerations.”

How many shares of common stock will be outstanding after the rights offering?

As of April 19, 2016, there were 10,475,356 shares of our common stock outstanding. We will issue up to 465,116 shares of common stock in the rights offering, depending on the number of subscription rights that are exercised, and we may issue up to 93,023 additional shares to satisfy over-subscription requests and/or to facilitate sales of shares to new investors in the supplemental community offering. Assuming no options are exercised and there are no other changes in the number of outstanding shares prior to the expiration of the rights offering, and based on the number of shares outstanding as of April 19, 2016, if we issue all 465,116 shares of common stock available for the exercise of basic subscription rights in the rights offering, we would have 10,940,472 shares of common stock outstanding following the completion of the rights offering, and if we issue up to the maximum number of 558,139 shares in order to satisfy over-subscription requests and/or to facilitate sales of shares to new investors in the supplemental community offering, we would have 11,033,495 shares of common stock outstanding following the completion of the combined rights and supplemental community offerings.

Who should I contact if I have more questions?

If you have more questions about the rights offering or need additional copies of the rights offering documents, please contact the information agent, Georgeson LLC, at 866-821-0284, or you may contact Keri Freeman, Vice President—Shareholder Services, of Enterprise Bank at 978-656-5767.

If I am not a shareholder but wish to subscribe for shares of common stock in the supplemental community offering, what do I do?

We will accept subscriptions for unsold shares of common stock during the course of the rights offering. Upon completion of the rights offering, subscriptions for the shares of common stock offered in the supplemental community offering may be accepted by us on such basis as we may determine in our sole discretion, subject to the availability of shares after we have satisfied all basic subscription rights that have been properly exercised and any over-subscription requests that we have accepted in the rights offering. You may not revoke or change your subscription after you have submitted your subscription agreement. We reserve the right to accept or reject in whole or in part any subscription we receive in the supplemental community offering. For more information, see “The Supplemental Community Offering.”

Is the supplemental community offering subject to any minimum or maximum subscription amount?

You must subscribe for at least 500 shares of common stock in the supplemental community offering, although we may choose to waive this minimum investment amount in our sole discretion. There is no maximum amount of shares you can subscribe for as long as we have shares remaining available for sale after our rights offering is completed, subject to the limits in the paragraph below. We do, however, reserve the right to accept or reject, in whole or in part, any subscription tendered in the supplemental community offering.

In addition, on the basis of ownership restrictions contained in our articles of organization, no person or entity or group of persons or entities acting in concert may subscribe to purchase shares in the supplemental community offering if such purchase would result in such person or entity or group acting in concert owning or controlling 10% or more of our outstanding shares of common stock following the completion of the supplemental community offering, unless our Board of Directors has approved of such purchase. Under applicable federal and state banking laws, any purchase of shares of our common stock may also require the prior clearance or approval of, or prior notice to, federal and state bank regulatory authorities if the purchase will result in any person or entity or group of persons or entities acting in concert owning or controlling shares in excess of such threshold ownership interest.

SUMMARY

This summary highlights the information contained elsewhere in or incorporated by reference into this prospectus supplement and the accompanying prospectus. This summary does not contain all of the information that you should consider before deciding whether to exercise your subscription rights. You should carefully read this entire prospectus and the accompanying prospectus, including the information contained under the heading “Risk Factors,” and the documents incorporated by reference into this prospectus supplement, which are described below under the headings “Incorporation of Certain Information by Reference” and “Where You Can Find More Information.”

Company Information

Overview

We are a Massachusetts corporation, incorporated in February 1996, and operate as the parent bank holding company of Enterprise Bank and Trust Company referred to as “Enterprise Bank.” Substantially all of Enterprise Bancorp’s operations are conducted through Enterprise Bank. Enterprise Bank, a Massachusetts trust company and state chartered commercial bank which commenced banking operations in 1989, has five wholly owned subsidiaries that are included in Enterprise Bancorp’s consolidated financial statements:

- Enterprise Insurance Services, LLC, organized in 2000 for the purpose of engaging in insurance sales activities;
- Enterprise Investment Services, LLC, organized in 2000 for the purpose of offering non-deposit investment products and services, under the name of “Enterprise Investment Services;” and

- Three Massachusetts security corporations, Enterprise Security Corporation (2005), Enterprise Security Corporation II (2007) and Enterprise Security Corporation III (2007), which hold various types of qualifying securities. The security corporations are limited to conducting securities investment activities that the Bank itself would be allowed to conduct under applicable laws.

As of December 31, 2015, we had, on a consolidated basis, total assets of \$2.3 billion, loans outstanding of \$1.9 billion, investment securities available for sale of \$300.4 million, total deposits of \$2.0 billion, and shareholders’ equity of \$180.3 million.

Market Area

The Company’s primary market area is the greater Merrimack Valley and North Central regions of Massachusetts and Southern New Hampshire. Enterprise has 22 full-service branch banking offices located in the Massachusetts communities of Acton, Andover, Billerica, Chelmsford, Dracut, Fitchburg, Lawrence, Leominster, Lowell, Methuen, Tewksbury, Tyngsboro and Westford; and in the New Hampshire communities of Derry, Hudson, Nashua, Pelham and Salem, which serve those cities and towns as well as the surrounding communities. Management actively seeks to strengthen its market position by capitalizing on market opportunities to grow all business lines and the continued pursuit of organic growth and strategic expansion within existing and into neighboring geographic markets.

Primary Lines of Business

The Company principally is engaged in the business of gathering deposits from the general public and investing primarily in loans and investment securities and utilizing the resulting cash flows to conduct operations, expand the branch network, and pay dividends to shareholders. Through the Bank and its subsidiaries, the Company offers a range of commercial and consumer loan products, deposit products and cash management services; the Company also offers investment advisory and wealth management, trust and insurance services. Management continually examines new products and technologies in order to maintain a highly competitive mix of offerings and state-of-the-art delivery channels in order to tailor product lines to customers’ needs. These products and services are outlined below.

The Company specializes in lending to business entities, non-profit organizations, professionals and individuals. The Company’s primary lending focus is on the development of high quality commercial relationships achieved through active business development efforts, strong community involvement, focused marketing strategies, and long-term relationships with established commercial developers, growing businesses and non-profits. Loans made to businesses include commercial mortgage loans, construction and land development loans, secured and unsecured commercial loans and lines of credit, and standby letters of credit. The Company also originates equipment lease financing for businesses. Loans made to individuals include conventional

residential mortgage loans, home equity loans and lines, residential construction loans on primary and secondary residences, and secured and unsecured personal loans and lines of credit. The Company seeks to manage its loan portfolio to avoid concentration by industry or loan size to lessen its credit risk exposure.

Deposits have traditionally been the principal source of the Company's funds. Enterprise offers commercial checking, business and municipal savings accounts, term certificates of deposit ("CDs"), money market and business sweep accounts, Interest on Lawyers Trust Accounts, and escrow management accounts, as well as checking and Simplified Employee Pension accounts to employees of our business customers. A broad selection of competitive retail deposit products are also offered, including personal checking accounts earning interest and/or reward points, savings accounts, money market accounts, individual retirement accounts and CDs. Terms on CDs are offered ranging from one month to seventy-two months. As a member of the Federal Deposit Insurance Corporation ("FDIC"), the Bank's depositors are provided deposit protection up to the maximum FDIC insurance coverage limits.

In addition to the deposit products discussed above, commercial banking and municipal customers may take advantage of cash management services including remote deposit capture, Automated Clearing House credit and debit origination, credit card processing, wholesale and retail lockbox deposit, escrow management, Non-Sufficient Funds check recovery, coin and currency processing, check reconciliation, check payment fraud prevention, international and domestic wire transfers, corporate credit cards, and automated investment sweep of excess funds into enhanced FDIC insured money market and commercial checking accounts.

The Company provides a range of investment advisory and management services delivered via two channels, Enterprise Investment Advisors and Enterprise Investment Services. Investment advisory and management services include customized investment management and trust services provided under the label "Enterprise Investment Advisors" to individuals, family groups, commercial businesses, trusts, foundations, non-profit organizations, and endowments. Enterprise Investment Services provides brokerage and management services through a third-party arrangement with Commonwealth Financial Network, a licensed securities brokerage firm, with products designed primarily for the individual investor.

Competition

We face robust competition to attract and retain customers. National and larger regional banks have a local presence in our market area. These established larger banks, as well as recent larger entrants into the local market area, have certain competitive advantages, including greater financial resources and the ability to make larger loans to a single borrower. Numerous local savings banks, commercial banks, cooperative banks and credit unions also compete in our market area. The expanded commercial lending capabilities of credit unions and the shift to commercial lending by traditional savings banks means that both of these types of traditionally consumer-orientated institutions now compete for our targeted commercial customers. In addition, the non-taxable status of credit unions allows them certain advantages as compared to taxable institutions such as us. Competition for loans, deposits and cash management services, investment advisory assets, and insurance business also comes from other businesses that provide financial services, including consumer finance companies, mortgage brokers and lenders, private lenders, insurance companies, securities brokerage firms, institutional mutual funds, registered investment advisors, non-bank payment channels, and internet based banks. Management actively seeks to strengthen our competitive position by capitalizing on the market opportunities and the continued pursuit of strategic growth within existing and neighboring geographic markets. Management believes that we have established a positive reputation within our market area as a dependable commercial-focused community bank. Management is committed to differentiating Enterprise from the competition by providing a full range of diversified financial services and products with consistent and exceptional customer service, a highly-trained and dedicated staff of knowledgeable banking professionals, open and honest communication with clients, and a committed focus on active community involvement which we believe has led to a strong referral network with business and community leaders.

Management continually examines our product lines and technologies in order to maintain a highly competitive mix of offerings and delivery channels, and to target products to customer needs. Advances in, and the increased use of, technology, such as internet and mobile banking, electronic transaction processing and information security, are expected to have a significant impact on the future competitive landscape confronting financial institutions.

Recent Developments

Set forth below is summary unaudited consolidated financial information for Enterprise Bancorp as of March 31, 2016. These preliminary results are subject to completion of our customary quarterly financial closing and review procedures. We caution that our final results for the quarter ended March 31, 2016 as reported in our Quarterly Report on Form 10-Q for the quarter ended March 31, 2016 that we will file with the Securities and Exchange Commission (“SEC”) could vary significantly from these preliminary results.

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As of March 31, 2016, we had, on a consolidated basis, total assets of \$2.3 billion, loans outstanding of \$1.9 billion, investment securities available for sale of \$304.9 million, total deposits of \$2.1 billion, and shareholders' equity of \$186.1 million.

Net income and diluted earnings per share for the three months ended March 31, 2016 amounted to \$4.3 million and \$0.41, respectively.

Corporate Information

Enterprise Bancorp's principal executive office is located at 222 Merrimack Street, Lowell, Massachusetts 01852. Our telephone number is 978-459-9000. Our website address is www.enterprisebanking.com. Except for incorporated documents listed elsewhere in this prospectus supplement, none of the information contained on, or that may be accessed through, our website is a prospectus or constitutes part of, or is otherwise incorporated into, this prospectus supplement.

The Rights Offering

The following summary describes the principal terms of the rights offering, but is not intended to be complete. See the section of this prospectus supplement below entitled "The Rights Offering" for a more detailed description of the terms and conditions of the rights offering.

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| Securities Offered | We are distributing at no cost or charge to you one subscription right for each share of common stock that you owned as of 5:00 p.m., Eastern Daylight Time, on the record date, April 19, 2016, either as a holder of record or, in the case of shares held of record by brokers, custodian banks or other nominees on your behalf, as beneficial owner of the shares. |
| Subscription Price | The subscription price per share of common stock is \$21.50. |
| Basic Subscription Privilege | For each right that you own, you will have a basic subscription privilege to buy from us 0.0444 of a share of our common stock at the subscription price. You may exercise your basic subscription privilege for some or all of your subscription rights, or you may choose not to exercise your subscription rights. Fractional shares of our common stock resulting from the exercise of the basic subscription privilege or the over-subscription opportunity will be eliminated by rounding down to the nearest whole share. As a result, we may not issue the full number of shares authorized for issuance in connection with this rights offering. |
| Over-subscription Opportunity | If you exercise your basic subscription privilege in full, you will also have an opportunity to subscribe to purchase any shares that our other subscription rights holders do not purchase under their basic subscription privilege. The subscription price for shares purchased pursuant to the over-subscription opportunity will be the same as the subscription price for the basic subscription privilege. We reserve the right to reject in whole or in part any or all over-subscription requests, and we may choose to issue some or all of the shares that we may issue beyond the number necessary to satisfy properly exercised basic subscription rights solely to new investors in the supplemental community offering. If we receive over-subscription requests for more shares than we have made available to be purchased pursuant to such requests, then, subject to our right to reject in whole or in part any over-subscription requests, we will allocate the shares of our common stock to be issued pursuant to the exercise of the over-subscription requests pro rata among those over-subscribing rights holders. "Pro rata" means in proportion to the number of shares of our common stock that you and the other subscription rights holders have agreed to purchase by exercising the basic subscription privilege. If you are not allocated the full amount of shares for which you over-subscribe, you will receive a refund of the subscription price, without interest, penalty or deduction, that you delivered for those shares of our common stock that are not allocated to you. The subscription agent will mail such refunds as soon as practicable after the completion of the offering. |

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| Record Date | April 19, 2016 |
| Expiration Date of Rights Offering | The subscription rights offering will expire at 5:00 p.m., Eastern Daylight Time, on May 27, 2016, unless the expiration date is extended, but not beyond June 3, 2016. |
| No Minimum | There is no minimum number of rights that must be exercised or shares sold as a condition to accepting subscriptions and closing the offerings. |
| Procedure for Exercising Subscription Rights | The subscription rights may be exercised at any time during the subscription period, which commences on April 21, 2016. To exercise your subscription rights, you must properly complete the enclosed subscription rights certificate and deliver it, along with the full subscription price (including any amounts in respect of an over-subscription request), to the subscription agent, Computershare Trust Company, N.A., before 5:00 p.m., Eastern Daylight Time, on May 27, 2016, unless the expiration date is extended, but not beyond June 3, 2016. If you cannot deliver your subscription rights certificate to the subscription agent on time, you may follow the guaranteed delivery procedures described below under the heading entitled “The Rights Offering—Notice of Guaranteed Delivery.” If you hold shares of our common stock through the Enterprise employee stock purchase plan, you should refer to the specific forms provided by the subscription agent, including the Instructions for Use of Enterprise Bancorp, Inc. Rights Certificate Form. To exercise your subscription rights, you must properly complete the enclosed subscription rights certificate form and deliver it, along with the full subscription price (including any amounts in respect of an over-subscription request), to the subscription agent, Computershare Trust Company, N.A., before 5:00 p.m., Eastern Daylight Time, on May 24, 2016, unless the expiration date is extended. |
| Use of Proceeds | We intend to use the net proceeds to fund future asset growth and for general corporate purposes. See the section below entitled “Use of Proceeds.” |
| Non-Transferability of Subscription Rights | The subscription rights may not be sold, transferred or assigned to anyone else and will not be listed for trading on the NASDAQ Global Market or any other stock exchange or trading market or on the OTC Bulletin Board. |
| No Revocation of Exercise by Shareholders | All exercises of subscription rights are irrevocable, even if you later learn information about us that you consider unfavorable. You should not exercise your subscription rights unless you are certain that you wish to purchase the shares of common stock offered pursuant to the rights offering. |
| Conditions to the Rights Offering | The completion of the rights offering is subject to the conditions described in the section below entitled “The Rights Offering—Conditions and Termination.” If shares of common stock remain available for sale after the expiration of the rights offering, our officers and directors will offer and sell those remaining shares to the public on a best efforts basis at the \$21.50 per share subscription price. |
| Supplemental Community Offering | You must subscribe for at least 500 shares of common stock in the supplemental community offering, although we may choose to waive this minimum investment amount in our sole discretion. We anticipate that, if we offer shares in the supplemental community offering, we will offer the shares to individual investors who reside or operate businesses in our current or prospective market area and to our employees. We may also offer shares in the supplemental community offering to a limited number of institutional investors. We also reserve the right to accept or reject, in whole or in part, any subscription tendered in the supplemental community offering. |

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| Expiration Date of Supplemental Community Offering | The supplemental community offering will expire at 5:00 p.m., Eastern Daylight Time, on June 10, 2016, unless the expiration date is extended, but not beyond June 17, 2016. |
| Amendment; Termination | We may amend the terms of the offerings or extend the offering periods. We also reserve the right to terminate the offerings at any time prior to the expiration date for any reason. If the offerings are terminated, all subscription payments received by the subscription agent will be returned, without interest, penalty or deduction, as soon as practicable following termination. |
| No Board Recommendation | Our Board of Directors is not making a recommendation regarding your exercise of the subscription rights. You are urged to make your own decision whether or not to exercise your subscription rights based on your own assessment of our business and the rights offering. See the section below entitled “Risk Factors.” |
| Certain Material U.S. Federal Income Tax Considerations | The receipt and exercise of your subscription rights will generally not be taxable under U.S. federal income tax laws. However, you should seek specific tax advice from your personal tax advisor in light of your personal tax situation and as to the applicability and effect of any other tax laws. See the section below entitled “Certain Material U.S. Federal Income Tax Considerations.” |
| Subscription Agent Information Agent Shares of Common Stock Outstanding Before the Rights Offering | Computershare Trust Company, N.A. Georgeson LLC As of April 19, 2016, 10,475,356 shares of our common stock were outstanding. |
| Shares of Common Stock Outstanding After Completion of the Rights Offering | We will issue up to 465,116 shares of common stock in the rights offering, depending on the number of subscription rights that are exercised, and we may issue up to 93,023 additional shares to satisfy over-subscription requests and/or to facilitate sales of shares to new investors in the supplemental community offering. Assuming no options are exercised and there are no other changes in the number of outstanding shares prior to the expiration of the rights offering period, and based on the number of shares of common stock outstanding as of April 19, 2016, if we issue all 465,116 shares of common stock available for the exercise of basic subscription rights in the rights offering, we would have 10,940,472 shares of common stock outstanding following the completion of the rights offering, and if we issue up to the maximum number of 558,139 shares in order to satisfy over-subscription requests and/or to facilitate sales of shares to new investors in the supplemental community offering, we would have 11,033,495 shares of common stock outstanding following the completion of the combined rights and supplemental community offerings. |
| Risk Factors | Shareholders considering making an investment by exercising subscription rights in the rights offering and investors considering investing in the supplemental community offering should carefully read and consider the information set forth in the section entitled “Risk Factors” beginning on page S-15 of this prospectus supplement and page 4 of the accompanying prospectus, together with the other information contained in or incorporated by reference into this prospectus supplement and the accompanying prospectus, including the information contained under the heading “Risk Factors” in our Annual Reports on Form 10-K for the year ended December 31, 2015 (“2015 Form 10-K”) filed with the SEC on March 15, 2016. |

Fees and
Expenses

We will pay the fees and expenses related to the offerings, which we estimate to be \$300,000.

Questions

If you have more questions about the rights offering or need additional copies of the rights offering documents, please contact the information agent, Georgeson LLC, at 866-821-0284, or you may contact Keri Freeman, Vice President—Shareholder Services, of Enterprise Bank at 978-656-5767.

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SELECTED HISTORICAL CONSOLIDATED FINANCIAL DATA

The selected historical consolidated financial information of Enterprise Bancorp has been derived from our audited consolidated financial statements contained in our 2015 Form 10-K and should be read in conjunction with our financial statements, the notes thereto and “Management’s Discussion and Analysis of Financial Condition and Results of Operation” in Item 7 of our 2015 Form 10-K, which are incorporated herein by reference. See “Incorporation of Certain Information by Reference” beginning on page S-36. The summary consolidated financial results are not indicative of our expected future operating results.

For Year Ended

December 31,

~~2015~~ 2014 2013 2012 2011

Earnings Data: