

**APPLICATION FOR DETERMINATION OF NEED  
SUBSTANTIAL CAPITAL EXPENDITURE  
BOSTON MEDICAL CENTER  
DoN APPLICATION # BMCHS-22080908-HE**

**BY**

**BMC HEALTH SYSTEM, INC.  
ONE BOSTON MEDICAL CENTER PLACE  
BOSTON, MA 02118**

**AUGUST 9, 2022**

**BMC HEALTH SYSTEM, INC.**  
**DoN APPLICATION # BMCHS-22080908-HE**  
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**APPENDIX 1:**  
**DoN APPLICATION FORM**



# Massachusetts Department of Public Health Determination of Need Application Form

Version: 11-8-17

Application Type:  Application Date: 08/09/2022 8:20 am

Applicant Name:

Mailing Address:

City:  State:  Zip Code:

Contact Person:  Title:

Mailing Address:

City:  State:  Zip Code:

Phone:  Ext:  E-mail:

## Facility Information

List each facility affected and or included in Proposed Project

1 Facility Name:

Facility Address:

City:  State:  Zip Code:

Facility type:  CMS Number:

## 1. About the Applicant

1.1 Type of organization (of the Applicant):

1.2 Applicant's Business Type:  Corporation  Limited Partnership  Partnership  Trust  LLC  Other

1.3 What is the acronym used by the Applicant's Organization?

1.4 Is Applicant a registered provider organization as the term is used in the HPC/CHIA RPO program?  Yes  No

1.5 Is Applicant or any affiliated entity an HPC-certified ACO?  Yes  No

1.5.a If yes, what is the legal name of that entity?

1.6 Is Applicant or any affiliate thereof subject to M.G.L. c. 6D, § 13 and 958 CMR 7.00 (filing of Notice of Material Change to the Health Policy Commission)?  Yes  No

1.7 Does the Proposed Project also require the filing of a MCN with the HPC?  Yes  No

1.8 Has the Applicant or any subsidiary thereof been notified pursuant to M.G.L. c. 12C, § 16 that it is exceeding the health care cost growth benchmark established under M.G.L. c. 6D, § 9 and is thus, pursuant to M.G.L. c. 6D, §10 required to file a performance improvement plan with CHIA?  Yes  No

1.9 Complete the Affiliated Parties Form

## 2. Project Description

2.1 Provide a brief description of the scope of the project.

See Appendix 2A: DoN Narrative - Proposed Project Description

2.2 and 2.3 Complete the Change in Service Form

## 3. Delegated Review

3.1 Do you assert that this Application is eligible for Delegated Review?  Yes  No

## 4. Conservation Project

4.1 Are you submitting this Application as a Conservation Project?  Yes  No

## 5. DoN-Required Services and DoN-Required Equipment

5.1 Is this an application filed pursuant to 105 CMR 100.725: DoN-Required Equipment and DoN-Required Service?  Yes  No

## 6. Transfer of Ownership

6.1 Is this an application filed pursuant to 105 CMR 100.735?  Yes  No

## 7. Ambulatory Surgery

7.1 Is this an application filed pursuant to 105 CMR 100.740(A) for Ambulatory Surgery?  Yes  No

## 8. Transfer of Site

8.1 Is this an application filed pursuant to 105 CMR 100.745?  Yes  No

## 9. Research Exemption

9.1 Is this an application for a Research Exemption?  Yes  No

## 10. Amendment

10.1 Is this an application for a Amendment?  Yes  No

## 11. Emergency Application

11.1 Is this an application filed pursuant to 105 CMR 100.740(B)?  Yes  No

## 12. Total Value and Filing Fee

Enter all currency in numbers only. No dollar signs or commas. Grayed fields will auto calculate depending upon answers above.

**Your project application is for:** Hospital/Clinic Substantial Capital Expenditure

|   |                  |
|---|------------------|
| 12.1 Total Value of this project:   | \$121,239,760.00 |
| 12.2 Total CHI commitment expressed in dollars: (calculated)  | \$6,061,988.00   |
| 12.3 Filing Fee: (calculated)   | \$242,479.52     |
| 12.4 Maximum Incremental Operating Expense resulting from the Proposed Project:   | \$76,035,332.00  |
| 12.5 Total proposed Construction costs, specifically related to the Proposed Project, If any, which will be contracted out to local or minority, women, or veteran-owned businesses expressed in estimated total dollars. |                  |

## 13. Factors

Required Information and supporting documentation consistent with 105 CMR 100.210

Some Factors will not appear depending upon the type of license you are applying for.

Text fields will expand to fit your response.

### Factor 1: Applicant Patient Panel Need, Public Health Values and Operational Objectives

#### F1.a.i Patient Panel:

Describe your existing Patient Panel, including incidence or prevalence of disease or behavioral risk factors, acuity mix, noted health disparities, geographic breakdown expressed in zip codes or other appropriate measure, demographics including age, gender and sexual identity, race, ethnicity, socioeconomic status and other priority populations relevant to the Applicant's existing patient panel and payer mix.

See Appendix 2B: DoN Narrative - Proposed Project Factors

#### F1.a.ii Need by Patient Panel:

Provide supporting data to demonstrate the need for the Proposed Project. Such data should demonstrate the disease burden, behavioral risk factors, acuity mix, health disparities, or other objective Patient Panel measures as noted in your response to Question F1.a.i that demonstrates the need that the Proposed Project is attempting to address. If an inequity or disparity is not identified as relating to the Proposed Project, provide information justifying the need. In your description of Need, consider the principles underlying Public Health Value (see instructions) and ensure that Need is addressed in that context as well.

See Appendix 2B: DoN Narrative - Proposed Project Factors

#### F1.a.iii Competition:

Provide evidence that the Proposed Project will compete on the basis of price, total medical expenses, provider costs, and other recognized measures of health care spending. When responding to this question, please consider Factor 4, Financial Feasibility and Reasonableness of Costs.

See Appendix 2B: DoN Narrative - Proposed Project Factors

#### F1.b.i Public Health Value /Evidence-Based:

Provide information on the evidence-base for the Proposed Project. That is, how does the Proposed Project address the Need that Applicant has identified.

See Appendix 2B: DoN Narrative - Proposed Project Factors

#### F1.b.ii Public Health Value /Outcome-Oriented:

Describe the impact of the Proposed Project and how the Applicant will assess such impact. Provide projections demonstrating how the Proposed Project will improve health outcomes, quality of life, or health equity. Only measures that can be tracked and reported over time should be utilized.

See Appendix 2B: DoN Narrative - Proposed Project Factors

#### F1.b.iii Public Health Value /Health Equity-Focused:

For Proposed Projects addressing health inequities identified within the Applicant's description of the Proposed Project's need-base, please justify how the Proposed Project will reduce the health inequity, including the operational components (e.g. culturally competent staffing). For Proposed Projects not specifically addressing a health disparity or inequity, please provide information about specific actions the Applicant is and will take to ensure equal access to the health benefits created by the Proposed Project and how these actions will promote health equity.

See Appendix 2B: DoN Narrative - Proposed Project Factors

F1.b.iv Provide additional information to demonstrate that the Proposed Project will result in improved health outcomes and quality of life of the Applicant's existing Patient Panel, while providing reasonable assurances of health equity.

See Appendix 2B: DoN Narrative - Proposed Project Factors

F1.c Provide evidence that the Proposed Project will operate efficiently and effectively by furthering and improving continuity and coordination of care for the Applicant's Patient Panel, including, how the Proposed Project will create or ensure appropriate linkages to patients' primary care services.

See Appendix 2B: DoN Narrative - Proposed Project Factors

F1.d Provide evidence of consultation, both prior to and after the Filing Date, with all Government Agencies with relevant licensure, certification, or other regulatory oversight of the Applicant or the Proposed Project.

See Appendix 2B: DoN Narrative - Proposed Project Factors

F1.e.i Process for Determining Need/Evidence of Community Engagement: For assistance in responding to this portion of the Application, Applicant is encouraged to review *Community Engagement Standards for Community Health Planning Guideline*. With respect to the existing Patient Panel, please describe the process through which Applicant determined the need for the Proposed Project.

See Appendix 2B: DoN Narrative - Proposed Project Factors

F1.e.ii Please provide evidence of sound Community Engagement and consultation throughout the development of the Proposed Project. A successful Applicant will, at a minimum, describe the process whereby the "Public Health Value" of the Proposed Project was considered, and will describe the Community Engagement process as it occurred and is occurring currently in, at least, the following contexts: Identification of Patient Panel Need; Design/selection of DoN Project in response to "Patient Panel" need; and Linking the Proposed Project to "Public Health Value".

See Appendix 2B: DoN Narrative - Proposed Project Factors

## Factor 2: Health Priorities

Addresses the impact of the Proposed Project on health more broadly (that is, beyond the Patient Panel) requiring that the Applicant demonstrate that the Proposed Project will meaningfully contribute to the Commonwealth's goals for cost containment, improved public health outcomes, and delivery system transformation.

### F2.a **Cost Containment:**

Using objective data, please describe, for each new or expanded service, how the Proposed Project will meaningfully contribute to the Commonwealth's goals for cost containment.

See Appendix 2B: DoN Narrative - Proposed Project Factors

### F2.b **Public Health Outcomes:**

Describe, as relevant, for each new or expanded service, how the Proposed Project will improve public health outcomes.

See Appendix 2B: DoN Narrative - Proposed Project Factors

### F2.c **Delivery System Transformation:**

Because the integration of social services and community-based expertise is central to goal of delivery system transformation, discuss how the needs of their patient panel have been assessed and linkages to social services organizations have been created and how the social determinants of health have been incorporated into care planning.

See Appendix 2B: DoN Narrative - Proposed Project Factors

### Factor 3: Compliance

Applicant certifies, by virtue of submitting this Application that it is in compliance and good standing with federal, state, and local laws and regulations, including, but not limited to M.G.L. c. 30, §§ 61 through 62H and the applicable regulations thereunder, and in compliance with all previously issued notices of Determination of Need and the terms and conditions attached therein .

F3.a Please list all previously issued Notices of Determination of Need

| Add/Del Rows  | Project Number        | Date Approved | Type of Notification                           | Facility Name         |
|---|-----------------------|---------------|--|-----------------------|
| <input type="checkbox"/> + <input type="checkbox"/> - | BMCHS-220624<br>06-TS | 07/21/2022    | Transfer of Site/Change in Designated Location | Boston Medical Center |

**Factor 4: Financial Feasibility and Reasonableness of Expenditures and Costs**

Applicant has provided (as an attachment) a certification, by an independent certified public accountant (CPA) as to the availability of sufficient funds for capital and ongoing operating costs necessary to support the Proposed Project without negative impacts or consequences to the Applicant's existing Patient Panel.

**F4.a.i Capital Costs Chart:**

For each Functional Area document the square footage and costs for New Construction and/or Renovations.

| Add/Del Rows                                      | Functional Areas   | Present Square Footage |       | Square Footage Involved in Project |  |            |  | Resulting Square Footage |       | Total Cost       |            | Cost/Square Footage |            |
|---|--|------------------------|-------|------------------------------------|--|------------|--|--------------------------|-------|------------------|------------|---------------------|------------|
|   |  | Net                    | Gross | New Construction                   |  | Renovation |  | Net                      | Gross | New Construction | Renovation | New Construction    | Renovation |
| <input type="checkbox"/> <input type="checkbox"/> | See Appendix 4B: Factor 4 Materials - Factor 4.a.i Capital Costs Chart |                        |       |                                    |  |            |  |                          |       |                  |            |                     |            |
| <input type="checkbox"/> <input type="checkbox"/> |  |                        |       |                                    |  |            |  |                          |       |                  |            |                     |            |
| <input type="checkbox"/> <input type="checkbox"/> |  |                        |       |                                    |  |            |  |                          |       |                  |            |                     |            |
| <input type="checkbox"/> <input type="checkbox"/> |  |                        |       |                                    |  |            |  |                          |       |                  |            |                     |            |
| <input type="checkbox"/> <input type="checkbox"/> |  |                        |       |                                    |  |            |  |                          |       |                  |            |                     |            |
| <input type="checkbox"/> <input type="checkbox"/> |  |                        |       |                                    |  |            |  |                          |       |                  |            |                     |            |
| <input type="checkbox"/> <input type="checkbox"/> |  |                        |       |                                    |  |            |  |                          |       |                  |            |                     |            |
|   | Total: (calculated)  |                        |       |                                    |  |            |  |                          |       |                  |            |                     |            |

| F4.a.ii For each Category of Expenditure document New Construction and/or Renovation Costs. |  |                    |                    |                       |
|---|--|--------------------|--------------------|-----------------------|
|   | Category of Expenditure  | New Construction   | Renovation         | Total<br>(calculated) |
|   | <b>Land Costs</b>  |                    |                    |                       |
|   | Land Acquisition Cost  | \$0.               | \$0.               | \$0.                  |
|   | Site Survey and Soil Investigation   | \$185000.          | \$26000.           | \$211000.             |
|   | Other Non-Depreciable Land Development   | \$0.               | \$0.               | \$0.                  |
|   | <b>Total Land Costs</b>  | <b>\$185000.</b>   | <b>\$26000.</b>    | <b>\$211000.</b>      |
|   | <b>Construction Contract (including bonding cost)</b>  |                    |                    |                       |
|   | Depreciable Land Development Cost  | \$0.               | \$0.               | \$0.                  |
|   | Building Acquisition Cost  | \$0.               | \$0.               | \$0.                  |
|   | Construction Contract (including bonding cost)   | \$39387838.        | \$67509554.        | \$106897392.          |
|   | Fixed Equipment Not in Contract  | \$0.               | \$1200000.         | \$1200000.            |
|   | Architectural Cost (Including fee, Printing, supervision etc.) and Engineering Cost                        | \$3544907.         | \$6183861.         | \$9728768.            |
|   | Pre-filing Planning and Development Costs  | \$0.               | \$105075.          | \$105075.             |
|   | Post-filing Planning and Development Costs   | \$0.               | \$35025.           | \$35025.              |
| Add/Del Rows  | Other (specify)  |                    |                    |                       |
| <input type="checkbox"/> + <input type="checkbox"/> -                                       |  |                    |                    |                       |
|   | Net Interest Expensed During Construction  | \$0.               | \$0.               | \$0.                  |
|   | Major Movable Equipment  | \$0.               | \$0.               | \$0.                  |
|   | <b>Total Construction Costs</b>  | <b>\$42932745.</b> | <b>\$75033515.</b> | <b>\$117966260.</b>   |
|   | <b>Financing Costs:</b>  |                    |                    |                       |
|   | Cost of Securing Financing (legal, administrative, feasibility studies, mortgage insurance, printing, etc) | \$0.               | \$3062500.         | \$3062500.            |
|   | Bond Discount  | \$0.               | \$0.               | \$0.                  |
| Add/Del Rows  | Other (specify)  |                    |                    |                       |
| <input type="checkbox"/> + <input type="checkbox"/> -                                       |  |                    |                    |                       |
|   | <b>Total Financing Costs</b>   | <b>\$0.</b>        | <b>\$3062500.</b>  | <b>\$3062500.</b>     |
|   | <b>Estimated Total Capital Expenditure</b>   | <b>\$43117745.</b> | <b>\$78122015.</b> | <b>\$121239760.</b>   |

## Factor 5: Relative Merit

F5.a.i Describe the process of analysis and the conclusion that the Proposed Project, on balance, is superior to alternative and substitute methods for meeting the existing Patient Panel needs as those have been identified by the Applicant pursuant to 105 CMR 100.210(A)(1). When conducting this evaluation and articulating the relative merit determination, Applicant shall take into account, at a minimum, the quality, efficiency, and capital and operating costs of the Proposed Project relative to potential alternatives or substitutes, including alternative evidence-based strategies and public health interventions.

**Proposal:**

See Appendix 2B: DoN Narrative - Proposed Project Factors

**Quality:**

See Appendix 2B: DoN Narrative - Proposed Project Factors

**Efficiency:**

See Appendix 2B: DoN Narrative - Proposed Project Factors

**Capital Expense:**

See Appendix 2B: DoN Narrative - Proposed Project Factors

**Operating Costs:**

See Appendix 2B: DoN Narrative - Proposed Project Factors

List alternative options for the Proposed Project:

**Alternative Proposal:**

See Appendix 2B: DoN Narrative - Proposed Project Factors

**Alternative Quality:**

See Appendix 2B: DoN Narrative - Proposed Project Factors

**Alternative Efficiency:**

See Appendix 2B: DoN Narrative - Proposed Project Factors

**Alternative Capital Expense:**

See Appendix 2B: DoN Narrative - Proposed Project Factors

**Alternative Operating Costs:**

See Appendix 2B: DoN Narrative - Proposed Project Factors

Add additional Alternative Project

Delete this Alternative Project

F5.a.ii Describe the process of analysis and the conclusion that the Proposed Project, on balance, is superior to alternative and substitute methods for meeting the existing Patient Panel needs as those have been identified by the Applicant pursuant to 105 CMR 100.210(A)(1). When conducting this evaluation and articulating the relative merit determination, Applicant shall take into account, at a minimum, the quality, efficiency, and capital and operating costs of the Proposed Project relative to potential alternatives or substitutes, including alternative evidence-based strategies and public health interventions.

See Appendix 2B: DoN Narrative - Proposed Project Factors

## Documentation Check List

The Check List below will assist you in keeping track of additional documentation needed for your application. Once you have completed this Application Form the additional documents needed for your application will be on this list. E-mail the documents as an attachment to: [DPH.DON@state.ma.us](mailto:DPH.DON@state.ma.us)

- Copy of Notice of Intent
- Affidavit of Truthfulness Form
- Scanned copy of Application Fee Check
- Affiliated Parties Table Question 1.9
- Change in Service Tables Questions 2.2 and 2.3
- Certification from an independent Certified Public Accountant
- Notification of Material Change
- Articles of Organization / Trust Agreement
- Community Engagement Plan form
- Current IRS Form, 990 Schedule H CHNA/CHIP and/or Current CHNA/CHIP submitted to Massachusetts AGO's Office
- Community Engagement Stakeholder Assessment form
- Community Engagement-Self Assessment form

## Document Ready for Filing

When document is complete click on "document is ready to file". This will lock in the responses and date and time stamp the form.

To make changes to the document un-check the "document is ready to file" box. Edit document then lock file and submit

Keep a copy for your records. Click on the "Save" button at the bottom of the page.

To submit the application electronically, click on the "E-mail submission to Determination of Need" button.

**This document is ready to file:**



Date/time Stamp: 08/09/2022 8:20 am

E-mail submission to  
Determination of Need

**Application Number: BMCCHS-22080908-HE**

**Use this number on all communications regarding this application.**

Community Engagement-Self Assessment form

**APPENDIX 2:**  
**DOH NARRATIVE**

**APPENDIX 2A:**

**DoN NARRATIVE – PROPOSED PROJECT DESCRIPTION**

## 2.1 Provide a brief description of the scope of the project.

### A. PROPOSED PROJECT COMPONENTS

BMC Health System, Inc. ("Applicant", "BMC Health System", or "System"), with a principal office located at One Boston Medical Center Place, Boston, Massachusetts 02118, is filing a Notice of Determination of Need ("DoN") ("Application") with the Massachusetts Department of Public Health ("Department" or "DPH") for a substantial capital expenditure by Boston Medical Center Corporation d/b/a Boston Medical Center ("BMC" or "Hospital") located at One Boston Medical Center Place, Boston, Massachusetts 02118. Specifically, this Application requests approval for the following:

- (A) Construction and renovation to BMC's existing Yawkey Building 5th and 6th floors to accommodate the addition of seventy (70) new inpatient beds, including sixty (60) additional medical/surgical beds and ten (10) additional intensive care unit ("ICU") beds;
- (B) Renovation of BMC's existing Menino Building 2nd floor to accommodate the addition of five (5) new inpatient operating rooms ("ORs"), as well as additional pre- and post-operative/post-anesthesia care unit ("PACU") space; and
- (C) Other construction and renovation projects to accommodate the proposed inpatient expansion projects, support campus infrastructure reorganization efforts, and improve existing services, facilities, and patient experience and wayfinding at the Hospital, as follows:
  - Modification to two (2) existing service elevators in the Yawkey Building to add emergency call service between Yawkey Building 5th and 6th floors and ensure connection to emergency and patient support services in the Menino Building, to support the inpatient bed expansion;
  - Relocation of the Hospital's existing 28-bed observation unit from the Menino Building 2nd floor to the Yawkey Building 5th floor to accommodate the inpatient OR expansion;
  - Reduction of one existing (1) inpatient general procedure room and relocation of one (1) existing negative pressure inpatient procedure room within the Menino Building 2nd floor, to accommodate the inpatient OR expansion;
  - Necessary infrastructure upgrades and expansion and renovation of sterile and non-sterile support areas to support the new Menino Building inpatient ORs, including installation of a new air handling unit, addition of a new clean core, renovation of staff support and patient/family areas, and renovation of the Central Processing Department's decontamination space;
  - Construction of a sterile staff and materials corridor connecting the Moakley Building and expanded Menino Building inpatient OR suites, to increase productivity and improve patient experience;
  - Construction and renovation to BMC's existing Menino and Yawkey Building lobbies to create a single exterior entry point, expanded cafeteria seating, and other upgrades for enhanced patient experience; and
  - Construction and renovation to BMC's existing Menino Building to accommodate an expanded Emergency Department ("ED") vestibule, for improved patient experience.

Collectively, these component projects are the "Proposed Project."

## B. OVERVIEW OF THE APPLICANT AND HOSPITAL

The Applicant is a Massachusetts, non-profit, integrated health care system whose mission is providing exceptional care without exception. Through its various subsidiaries, System affiliates, and community health center partners, BMC Health System provides primary, specialty, and tertiary care, as well as access to a managed care organization, an accountable care organization ("ACO"), and other health related programs, to under-resourced populations in the Boston metropolitan area and individuals throughout Greater Boston, Massachusetts, and beyond who are underserved by existing health care services.

BMC, the System's academic safety net hospital, was incorporated as a Massachusetts charitable corporation in 1996 with the merger of Boston City Hospital, Boston Specialty and Rehabilitation Hospital, and the Boston University Medical Center Hospital. Today, BMC is a private, not-for-profit 514-bed urban academic medical center located in Boston's historic South End with satellites and partner locations in Boston and the surrounding communities. As the largest safety net hospital in New England, BMC emphasizes community-based, accessible care and is dedicated to providing consistently exceptional health services to all in need of care regardless of insurance status or ability to pay. Nearly 75% of the Hospital's patients come from under-resourced populations, such as the low-income and elderly, who rely on government payers such as Medicaid, the Health Safety Net ("HSN"), and Medicare for their coverage. Almost one-third of BMC's patients do not speak English as their primary language.

The Hospital is the primary teaching affiliate for the Boston University School of Medicine. The Hospital is a recognized leader in groundbreaking medical research and provides a full spectrum of emergency, outpatient and hospital inpatient services as well as specialized care for complex health problems. Throughout their seventy (70) medical specialties and subspecialties, BMC providers conduct over one million patient visits per year. In addition, the Hospital is the busiest provider of trauma and emergency services in New England.

## C. OVERVIEW OF THE NEED FOR THE PROPOSED PROJECT AND RELATED FACTORS

As discussed in detail throughout this Application, the Proposed Project seeks to address inpatient capacity constraints and related demands at BMC due to challenges inherent in BMC's historical physical campus layout, which have been exacerbated by recent changes in the health care environment that have increased patient volume. To this point, the Applicant notes that the Hospital's campus layout challenges date back to the 1996 merger that created two distinct BMC campuses separated by a single city block, each with their own inpatient and outpatient services. Since 2000, the Applicant has worked continuously to implement strategic space modifications to address the physical constraints and operational inefficiencies associated with BMC's layout and to respond to ever-evolving clinical trends through a measured approach of renovation and new construction. The campus consolidation efforts executed under BMC's previously approved 2014 DoN were a belated culmination of the 1996 merger, with the aim of creating a single unified, patient-centered clinical campus.

While successful in establishing centralized services and complementary use adjacencies that drove operational efficiency and cost containment, the previously approved DoN also resulted in a decrease in BMC's total approved campus square footage and licensed capacity. At the time, BMC's patient population supported such downsizing. However, following substantial completion of BMC's campus consolidation efforts, changes have occurred in the health care environment that have a direct impact on BMC's patient volume and the space it requires to deliver the types of services needed by its patients. These include population growth, increasingly acute and

complex patient needs, increases in patients impacted by homelessness and substance use disorders ("SUDs"), onset of the COVID-19 pandemic, development and implementation of ACO models, a focus on targeting social determinants of health ("SDoHs"), and effects of space planning due to evolving state design and construction regulatory requirements. BMC's inpatient admission and utilization rates, as well as its hospital visits and inpatient surgical case volumes, reflect these current health care trends.

Patient panel data indicate that BMC's inpatient bed and inpatient surgical visit and patient volumes have remained high over the last three fiscal years ("FY") despite a nationwide reduction in demand for health care services due to the COVID-19 pandemic. Overall inpatient service utilization at the Hospital has increased alongside the increasingly acute and complex needs of BMC's patient population. These increases in demand not only stress BMC's inpatient resources, but also cause capacity constraints across the Hospital. The ED in particular is impacted by these constraints as patients must board until an inpatient bed is available. This results in the utilization of critical ED resources, contributes to ED overcrowding, and delays the timely delivery of care in the most appropriate setting. Moreover, demand at BMC is expected to continue to increase as the population ages and the prevalence of chronic disease across the Hospital's under-resourced patient panel increases.

Consistent with BMC's distinct measured approach to campus growth and development, the goal of the Proposed Project is to implement strategic space modifications to address identified demand constraints and allow the Hospital to both meet current patient panel needs and better serve its patient panel into the future. The Proposed Project is designed to conservatively increase inpatient bed and OR capacity by prioritizing BMC's existing space and infrastructure through small additions, interior renovations, and relocations rather than building new. Through this approach, the Applicant aims to position BMC's existing property and uses to support the needs of BMC's patient panel and ensure the Hospital's long-term ability to provide high-quality patient care and accommodate patient volumes in an evolving health care environment.

With regard to its patient panel, the Applicant highlights the importance of the Proposed Project in ensuring BMC's ability to meet the needs of the area's most under-resourced populations. To this point, the Applicant notes that although Massachusetts' health insurance system enables individuals to seek care at any hospital, BMC remains the largest safety net provider in Boston and New England. Unwavering in its long-standing commitment to address the health needs of its community, the Hospital has innovated and demonstrated remarkable creativity in providing a wide range of services and programs beyond the traditional medical model to remediate gaps created by SDoHs and meet the unmet basic needs of the many diverse, vulnerable people it serves. However, to continue this work and further address health inequities, the Hospital must ensure that an appropriate infrastructure and resources exist to meet patient demand. The Proposed Project is designed with these goals in mind and will provide members of BMC's patient panel, including those within identified under-resourced populations, with enhanced access to equitable and high-quality health care services and related SDoH programs at BMC.

Finally, the Proposed Project will compete on the basis of price, total medical expenses ("TME"), provider costs, and other recognized measures of health care spending, and will meaningfully contribute to Massachusetts' goals for cost containment by ensuring timely and equitable access to inpatient services. Through the expansion of inpatient bed and surgical capacity, BMC will reduce overcrowding in its ED as well as create operational efficiencies throughout the Hospital. There are positive financial and clinical impacts associated with providing timely access to care and moving patients from the resource-intensive ED to the inpatient setting. Moreover, the Proposed Project will allow BMC to expand upon efforts to address the social drivers of health,

ultimately leading to cost reductions. Finally, the Proposed Project meets the Commonwealth's goals for cost containment through the provision of timely care in an appropriate setting, which has proven to reduce mortality and morbidity for chronic conditions and translates to better patient clinical quality outcomes and reduced costs.

In consideration of these factors, the Applicant believes the Proposed Project meets the factors of review for DoN approval.

**APPENDIX 2B:**

**DON NARRATIVE – PROPOSED PROJECT FACTORS**

## Factor 1: Applicant Patient Panel Need, Public Health Values and Operational Objectives

### F1.a.i Patient Panel:

**Describe your existing Patient Panel, including incidence or prevalence of disease or behavioral risk factors, acuity mix, noted health disparities, geographic breakdown expressed in zip codes or other appropriate measure, demographics including age, gender and sexual identity, race, ethnicity, socioeconomic status and other priority populations relevant to the Applicant's existing patient panel and payer mix.**

#### A. OVERVIEW OF PATIENT PANEL SELECTION

As noted above in the Project Description, BMC Health System is a Massachusetts non-profit integrated health care system whose mission is providing exceptional care without exception. BMC Health System is currently comprised of four corporate affiliates that provide a variety of services, for which BMC Health System oversees operations and provides governance and long-term strategic planning as well as budgetary and financial assistance.<sup>1</sup> Of these four entities, Boston Medical Center Corporation, the owner and operator of BMC, is the Applicant's sole corporate affiliate involved in the direct provision of patient care services. Accordingly, the Applicant relies upon BMC's patient panel for purposes of this Application to determine the need for the Proposed Project.

#### B. OVERVIEW OF BMC'S PATIENT PANEL

Discussed in detail in the Project Description, BMC is a private, non-profit, 514-bed, urban academic medical center that emphasizes community-based, accessible care. Located in Boston's historic South End neighborhood, the Hospital provides a full spectrum of pediatric and adult care services from primary to family medicine to advanced specialty care, and is the largest safety net hospital and the busiest trauma center in New England.

In addition to its main hospital campus, BMC also offers services to patients through various hospital satellites, school-based health centers, and physician group locations. With regard to its physician groups, BMC operates Boston University Affiliated Physicians, Inc. ("BUAP"), a non-profit corporation that employs physicians in Boston to provide health care services, perform medical and clinical research, and provide health and medical education programs. Additionally, BMC operates Faculty Practice Foundation, Inc., d/b/a Boston University Medical Group ("BUMG"),<sup>2</sup> a non-profit integrated multi-specialty academic group practice that represents over 880 physicians, non-physician clinicians, educators, and researchers across 18 clinical departments at BMC and coordinates the delivery of managed care services by its physician

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<sup>1</sup> BMC Health System is currently comprised of the following four corporate affiliates:

- (1) Boston Medical Center Corporation;
- (2) Boston Medical Center Health Plan, Inc., a non-profit corporation established to administer the WellSense Health Plan, a managed care organization providing comprehensive health insurance coverage options through Medicaid, Qualified Health Plans, and Senior Care Options to Massachusetts and New Hampshire residents;
- (3) Cornerstone Health Solutions, LLC, a pharmacy management services business with expertise in the operation of advanced health system specialty pharmacy programs; and
- (4) BMC Insurance Co., Ltd. of Vermont, a non-profit dormant captive insurance company originally formed to provide insurance coverage for property and certain liability exposures arising from acts of terrorism under the Terrorism Risk Insurance Act of 2002.

BMC Health System is the sole corporate member of each of the four entities.

<sup>2</sup> BUMG is jointly owned and operated by Boston Medical Center Corporation and Boston University Medical School.

organizations known as faculty practice plans ("FPPs"). BMC also partners with various community health centers ("CHCs") to meet patients' health care needs in the communities where they live, and participates with such CHCs and other provider organizations as part of the Boston Accountable Care Organization ("BACO"). Together with its affiliates and CHC partners, BMC provides an integrated system of health care delivery to ensure that vulnerable and underserved populations in the Boston metropolitan area have access to coordinated, high-quality, and cost-effective primary, specialty, and tertiary care that meets individual patients' needs and preferences.

### C. PATIENT PANEL DATA

#### 1. BMC's Overall Patient Panel<sup>3</sup>

As outlined in Table 1, utilization data for the 36-month period covering FY19 through FY21 and preliminary data for FY22 demonstrate that BMC serves a large and diverse patient panel. Despite decreasing slightly in FY20 during the height of the COVID-19 pandemic, BMC's patient panel increased overall between FY19 and FY21, from 228,138 patients and 1,073,269 encounters in FY19 to 299,258 patients and 1,378,548 encounters in FY2021. Significantly, the Applicant notes that the Hospital experienced increases in its patient panel over this time period even after accounting for utilization attributed solely to COVID-19 testing and vaccinations.<sup>4</sup>

With regard to gender, BMC's patient panel consists of approximately 55.1% females and 44.8% males based on FY21 data, with gender unknown for less than 0.01% of the patient population. In terms of age, the majority of BMC's patient panel is between the ages of 18-64 (73.8% in FY21). However, there are also a substantial number of patients that are 0-17 years of age (11.9% in FY21) and 65+ (14.2% in FY21). Race/ethnicity data as self-reported by BMC patients indicate that BMC's panel is comprised of a mix of races. Specifically, in FY21, the predominant races served by BMC were White/Caucasian (30.8%) and Black/African American (29.3%). Additionally, patients self-identified as Hispanic/Latino (12%), Asian (5.6%), American Indian/Alaska Native (0.3%), Native Hawaiian/Pacific Islander (0.2%), and Other (21.8%). Finally, geographic origin demographics show that BMC patients mainly reside in the Boston/Greater Boston area, with

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<sup>3</sup> Please note that BMC's patient panel does not include utilization of patient care services at the following locations:

- (1) Codman Square Health Center ("CSHC"), including CSHC and TechBoston Academy School Health Center;
- (2) East Boston Neighborhood Health Center ("EBNHC"), including EBNHC's 20 Maverick Square, 79 Paris Street, and 10 Gove Street locations; EBHS School Based Health Center; Winthrop Community Health Center; and South End Community Health Center, including its 1601 Washington Street and 400 Shawmut Ave locations;
- (3) DotHouse Health;
- (4) South Boston Community Health Center ("SBCHC"), including SBCHC's 386 West Broadway, 409 West Broadway, and 505 Congress Street locations; and
- (5) Greater Roslindale Medical & Dental.

Although listed on BMC's hospital license, these providers are freestanding and utilize distinct data collection systems. With regard to the CHCs, the Applicant notes these providers are subject to federal standards which require them to collect data on a calendar year basis, and, therefore that the data for each cannot be amalgamated with the Hospital's data which are collected on a FY basis. With regard to Greater Roslindale Medical & Dental, the Applicant notes that the satellite utilizes an IT mechanism different from that of the Hospital which makes it difficult to achieve amalgamation without duplication of patient counts. Given these data aggregation challenges, patient panel data for each of the five (5) providers listed above are outlined separately at Appendix 3A. Notwithstanding these current data aggregation challenges, the Applicant notes that systems and processes are in place to ensure coordination of care, appropriate care transitions, and information sharing across BMC's various locations.

<sup>4</sup> For instance, FY21 data show that of the approximately 207K COVID-19 vaccinations BMC provided to its patients, 196K were done on vaccine only visits and the remaining 11K occurred on visits when patients had other services. After accounting for these data, BMC's patient panel visits in FY21 still represent an increase from FY19.

nearly 60% of patients residing in the following 10 communities: Dorchester, Boston, Roxbury, Brockton, Mattapan, Hyde Park, Revere, Quincy, Chelsea, and Lynn.

| Table 1: BMC Patient Panel Demographics |                  |       |                |       |                  |       |                       |       |
|---|------------------|-------|----------------|-------|------------------|-------|-----------------------|-------|
| Demographic                             | FY19             |       | FY20           |       | FY21             |       | FY22 YTD <sup>5</sup> |       |
|   | Count            | %     | Count          | %     | Count            | %     | Count                 | %     |
| <b>BMC Total Unique Patients</b>        | <b>228,138</b>   |       | <b>207,237</b> |       | <b>299,258</b>   |       | <b>105,725</b>        |       |
| <b>Gender</b>                           |                  |       |                |       |                  |       |                       |       |
| Female                                  | 127,698          | 56.0% | 115,932        | 55.9% | 164,952          | 55.1% | 85,796                | 56.9% |
| Male                                    | 100,297          | 44.0% | 91,146         | 44.0% | 134,146          | 44.8% | 64,822                | 43.0% |
| Other/Unknown                           | 143              | 0.1%  | 159            | 0.1%  | 160              | 0.1%  | 107                   | 0.1%  |
| <b>Age</b>                              |                  |       |                |       |                  |       |                       |       |
| 0-17                                    | 35,174           | 15.4% | 30,702         | 14.8% | 35,705           | 11.9% | 19,253                | 12.8% |
| 18-64                                   | 160,134          | 70.2% | 145,970        | 70.4% | 220,976          | 73.8% | 108,033               | 71.7% |
| 65+                                     | 32,799           | 14.4% | 30,534         | 14.7% | 42,548           | 14.2% | 23,420                | 15.5% |
| <b>Race/Ethnicity<sup>6</sup></b>       |                  |       |                |       |                  |       |                       |       |
| American Indian/Alaska Native           | 829              | 0.4%  | 766            | 0.4%  | 980              | 0.3%  | 477                   | 0.3%  |
| Asian                                   | 10,344           | 4.5%  | 9,395          | 4.5%  | 16,756           | 5.6%  | 7,578                 | 5.0%  |
| Black/African American                  | 78,570           | 34.4% | 71,748         | 34.6% | 87,615           | 29.3% | 50,623                | 33.6% |
| Hispanic/Latino                         | 19,844           | 8.7%  | 25,105         | 12.1% | 35,856           | 12.0% | 19,757                | 13.1% |
| Native Hawaiian/Pacific Islander        | 352              | 0.2%  | 384            | 0.2%  | 650              | 0.2%  | 294                   | 0.2%  |
| White/Caucasian                         | 62,296           | 27.3% | 54,311         | 26.2% | 92,034           | 30.8% | 37,224                | 24.7% |
| Other <sup>7</sup>                      | 55,903           | 24.5% | 45,528         | 22.0% | 65,367           | 21.8% | 34,772                | 23.1% |
| <b>Geographic Origin<sup>8</sup></b>    |                  |       |                |       |                  |       |                       |       |
| Dorchester                              | 41,212           | 18.1% | 38,661         | 18.7% | 50,673           | 16.9% | 27,665                | 18.4% |
| Boston                                  | 31,395           | 13.8% | 28,539         | 13.8% | 47,193           | 15.8% | 23,681                | 15.7% |
| Roxbury                                 | 12,793           | 5.6%  | 11,990         | 5.8%  | 14,882           | 5.0%  | 8,855                 | 5.9%  |
| Brockton                                | 8,928            | 3.9%  | 8,035          | 3.9%  | 9,239            | 3.1%  | 4,676                 | 3.1%  |
| Mattapan                                | 7,540            | 3.3%  | 6,909          | 3.3%  | 9,139            | 3.1%  | 5,466                 | 3.6%  |
| Hyde Park                               | 7,002            | 3.1%  | 6,293          | 3.0%  | 9,730            | 3.3%  | 5,053                 | 3.4%  |
| Revere                                  | 6,547            | 2.9%  | 5,984          | 2.9%  | 6,794            | 2.3%  | 3,389                 | 2.2%  |
| Quincy                                  | 6,147            | 2.7%  | 5,673          | 2.7%  | 7,759            | 2.6%  | 3,909                 | 2.6%  |
| Chelsea                                 | 5,367            | 2.4%  | 4,875          | 2.4%  | 5,259            | 1.8%  | 2,695                 | 1.8%  |
| Lynn                                    | 5,204            | 2.3%  | 4,775          | 2.3%  | 5,081            | 1.7%  | 2,645                 | 1.8%  |
| All Other                               | 96,003           | 42.1% | 85,503         | 41.3% | 133,509          | 44.6% | 62,691                | 41.6% |
| <b>BMC Total Patient Visits</b>         | <b>1,073,269</b> |       | <b>977,488</b> |       | <b>1,378,548</b> |       | <b>332,588</b>        |       |

In addition to the demographics outlined in Table 1, the payer mix for BMC's patient panel for the last three fiscal years is outlined in Table 2. As shown in the table, the percentage of BMC's primary care lives covered by alternative payer mix ("APM") and ACO contracts is 23.2%, based on FY21 data. The table also shows that the largest portion of BMC's patients receive insurance coverage through a public payer; in FY21, BMC's public payer mix included nearly 50% of all

<sup>5</sup> BMC's FY is from 10/1 – 9/30. FY22 data is provided YTD through 12/2021 and, therefore, is subject to change.

<sup>6</sup> Race/ethnicity data is based on patient self-reporting. For patients that reported multiple races, the primary race (the race selected first) was utilized for purposes of this DoN data pull.

<sup>7</sup> "Other" includes: Not Specified, Other, Declined - Not Available, and Unknown.

<sup>8</sup> Corresponding zip codes are: Dorchester (02121, 02122, 02124, 02125); Boston (02104, 02108 – 02118, 02123, 02127, 02128, 02133, 02163, 02196, 02199, 02201, 02205, 02206, 02210, 02212, 02215 – 02217, 02241); Roxbury (02119, 02120); Brockton (02301 – 02304); Mattapan (02126); Hyde Park (02136); Revere (02151); Quincy (02169 – 02171, 02269); Chelsea (02150); and Lynn (01901 – 01905).

patients. Additionally, commercially insured patients represented 40.6% of BMC’s patient panel and free care and HSN patients represented 2.7%. Remaining patients (7.4%) were covered by some other form of insurance.

| Table 2: BMC APM/ACO and Payer Mix Percentages                                      |       |       |       |          |
|---|-------|-------|-------|----------|
|   | FY19  | FY20  | FY21  | FY22 YTD |
| <b>APM Contract Percentages (for any system-affiliated Primary Care Physicians)</b> |       |       |       |          |
| APM and ACO Contracts   | 25.1% | 26.2% | 23.2% | 25.8%    |
| Non-APM and Non-ACO Contracts   | 74.9% | 73.8% | 76.8% | 74.2%    |
| <b>Payer Mix Percentages</b>  |       |       |       |          |
| Commercial <sup>9</sup>   | 34.0% | 34.5% | 40.6% | 33.3%    |
| HMO/POS   | 10.2% | 10.4% | 13.9% | 11.0%    |
| PPO   | 8.8%  | 8.8%  | 11.6% | 8.9%     |
| Other <sup>10</sup>   | 15.0% | 15.3% | 15.1% | 13.4%    |
| MassHealth  | 14.6% | 13.6% | 10.9% | 10.8%    |
| Managed Medicaid  | 28.3% | 28.3% | 24.6% | 27.1%    |
| Commercial Medicare   | 5.8%  | 6.5%  | 6.1%  | 7.4%     |
| Medicare FFS  | 9.5%  | 9.3%  | 7.8%  | 7.7%     |
| Free Care/HSN   | 4.9%  | 4.4%  | 2.7%  | 1.3%     |
| All Other <sup>11</sup>   | 2.8%  | 3.4%  | 7.4%  | 12.3%    |

## 2. Project-Specific Patient Panels

The Proposed Project will increase access to medical/surgical and ICU inpatient beds as well as inpatient ORs. Accordingly, in addition to reviewing the demographic data for the Hospital overall, the Applicant also conducted a focused review of its patient panel’s historical medical/surgical, ICU, and inpatient surgical demographic profiles to determine the need for the Proposed Project.

### a. Inpatient Bed Panels

The demographic profiles outlined in Tables 3 through 6 below illustrate that BMC’s medical/surgical and ICU inpatient panels are largely reflective of the Hospital’s panel overall in terms of gender, age, race/ethnicity, and geographic origin. As outlined in Table 3, in FY21, 47% of the Hospital’s medical/surgical patients were female and 53% were male, and 39.3% of the Hospital’s ICU patients were female and 60.7% were male/other.

| Table 3: BMC Medical/Surgical and ICU Patient Panel Demographics – Gender |               |       |               |       |               |       |              |       |
|---|---------------|-------|---------------|-------|---------------|-------|--------------|-------|
|   | FY19          |       | FY20          |       | FY21          |       | FY22 YTD     |       |
|   | Count         | %     | Count         | %     | Count         | %     | Count        | %     |
| <b>Total Unique M/S Patients</b>  | <b>11,719</b> |       | <b>10,541</b> |       | <b>11,002</b> |       | <b>2,970</b> |       |
| Female  | 5,602         | 47.8% | 4,894         | 46.4% | 5,176         | 47.0% | 1,443        | 48.6% |
| Male  | 6,117         | 52.2% | 5,647         | 53.6% | 5,826         | 53.0% | 1,527        | 51.4% |

<sup>9</sup> “Commercial” includes: Aetna, Allways Health Partners, Blue Cross Blue Shield, WellSense Health Plan f/k/a BMC HealthNet, Cigna, Fallon, Harvard Pilgrim Health Care, Tufts, United, and Other Commercial Plan.

<sup>10</sup> Please note that in some instances, the Applicant is not able to easily isolate whether a Commercial plan is HMO/POS or PPO/Indemnity. In these instances, in an effort to offer a complete payer mix for the patient panel, “Commercial – Other” has been provided an alternative category.

<sup>11</sup> “All Other”: Workers Comp, Motor Vehicle Accident, Government Other (e.g., Corrections, TriCare, VA), COVID-19 HRSA Uninsured Treatment Fund, International, Other Payer, and Not Specified.

|                                  |              |       |              |       |              |       |            |       |
|----------------------------------|--------------|-------|--------------|-------|--------------|-------|------------|-------|
| <b>Total Unique ICU Patients</b> | <b>3,751</b> |       | <b>3,291</b> |       | <b>3,403</b> |       | <b>895</b> |       |
| Female                           | 1,545        | 41.2% | 1,293        | 39.3% | 1,338        | 39.3% | 370        | 41.3% |
| Male/Other/Unknown <sup>12</sup> | 2,206        | 58.8% | 1,998        | 60.7% | 2,065        | 60.7% | 525        | 58.7% |

Additionally, as shown in Table 4, while the majority of BMC's medical/surgical and ICU patients are under 65 years old, there are also substantial percentages of these panels that are 65+. In FY21, 63.5% of medical/surgical patients and 59.8% of ICU patients were 0-64 years old, followed by 36.5% of medical/surgical patients and 40.2% of ICU patients 65 years and older.

| Table 4: BMC Medical/Surgical and ICU Patient Panel Demographics – Age |               |       |               |       |               |       |              |       |
|--|---------------|-------|---------------|-------|---------------|-------|--------------|-------|
|  | FY19          |       | FY20          |       | FY21          |       | FY22 YTD     |       |
|  | Count         | %     | Count         | %     | Count         | %     | Count        | %     |
| <b>Total Unique M/S Patients</b>                                       | <b>11,719</b> |       | <b>10,541</b> |       | <b>11,002</b> |       | <b>2,970</b> |       |
| 0-64 <sup>13</sup>   | 7,639         | 65.2% | 6,875         | 65.2% | 6,989         | 63.5% | 1,798        | 60.5% |
| 65+  | 4,080         | 34.8% | 3,666         | 34.8% | 4,013         | 36.5% | 1,172        | 39.5% |
| <b>Total Unique ICU Patients</b>                                       | <b>3,751</b>  |       | <b>3,291</b>  |       | <b>3,403</b>  |       | <b>895</b>   |       |
| 0-64 <sup>14</sup>   | 2,284         | 60.9% | 2,043         | 62.1% | 2,035         | 59.8% | 521          | 58.2% |
| 65+  | 1,467         | 39.1% | 1,248         | 37.9% | 1,368         | 40.2% | 374          | 41.8% |

With respect to race and ethnicity, the data which are self-reported by patients provide that BMC's medical/surgical and ICU patient panels are reflective of the Hospital's commitment to provide equitable care to a diverse patient population. As outlined in Table 5, in FY21, medical/surgical patients self-identified as follows: 37.7% as Black/African American, 34.2% as White/Caucasian, 18.1% as Hispanic/Latino, 4.0% as Asian, 0.3% as American Indian/Alaska Native, and 5.7% as Other or declined to respond. During this same time period, ICU patients self-identified similarly, as follows: 36.8% as White/Caucasian, 35.8% as Black/African American, 13.4% as Hispanic/Latino, 3.5% as Asian, and 10.4% as Other or declined to respond.

| Table 5: BMC Medical/Surgical and ICU Patient Panel Demographics – Race/Ethnicity <sup>15</sup> |               |       |               |       |               |       |              |       |
|---|---------------|-------|---------------|-------|---------------|-------|--------------|-------|
|   | FY19          |       | FY20          |       | FY21          |       | FY22 YTD     |       |
|   | Count         | %     | Count         | %     | Count         | %     | Count        | %     |
| <b>Total Unique M/S Patients</b>  | <b>11,719</b> |       | <b>10,541</b> |       | <b>11,002</b> |       | <b>2,970</b> |       |
| American Indian/Alaska Native   | 29            | 0.2%  | 32            | 0.3%  | 33            | 0.3%  | 13           | 0.4%  |
| Asian   | 312           | 2.7%  | 312           | 3.0%  | 440           | 4.0%  | 106          | 3.6%  |
| Black/African American  | 4,349         | 37.1% | 4,143         | 39.3% | 4,144         | 37.7% | 1,195        | 40.2% |
| Hispanic/Latino   | 1,043         | 8.9%  | 1,563         | 14.8% | 1,988         | 18.1% | 477          | 16.1% |
| White/Caucasian   | 4,393         | 37.5% | 3,571         | 33.9% | 3,765         | 34.2% | 1,048        | 35.3% |
| Other <sup>16</sup>   | 1,593         | 13.6% | 920           | 8.7%  | 632           | 5.7%  | 131          | 4.4%  |
| <b>Total Unique ICU Patients</b>  | <b>3,751</b>  |       | <b>3,291</b>  |       | <b>3,403</b>  |       | <b>895</b>   |       |
| Asian   | 109           | 2.9%  | 93            | 2.8%  | 119           | 3.5%  | 33           | 3.7%  |
| Black/African American  | 1,339         | 35.7% | 1,232         | 37.4% | 1,218         | 35.8% | 315          | 35.2% |
| Hispanic/Latino   | 273           | 7.3%  | 378           | 11.5% | 457           | 13.4% | 116          | 13.0% |

<sup>12</sup> Includes: "Male" and "Other/Unknown" for confidentiality due to regulations related to data with counts <11.

<sup>13</sup> "0-64" includes: "0-17" and "18-64" for confidentiality due to regulations related to data with counts <11.

<sup>14</sup> "0-64" includes: "0-17" and "18-64" for confidentiality due to regulations related to data with counts <11.

<sup>15</sup> Race/ethnicity data is based on patient self-reporting. For patients that reported multiple races, the primary race (the race selected first) was utilized for purposes of this DoN data pull.

<sup>16</sup> "Other" includes: "Other" (Not Specified, Other, Declined - Not Available, and Unknown) and "Native Hawaiian/Pacific Islander" for confidentiality due to regulations related to data with counts <11.

|                     |       |       |       |       |       |       |     |       |
|---------------------|-------|-------|-------|-------|-------|-------|-----|-------|
| White/Caucasian     | 1,498 | 39.9% | 1,212 | 36.8% | 1,254 | 36.8% | 348 | 38.9% |
| Other <sup>17</sup> | 532   | 14.2% | 376   | 11.4% | 355   | 10.4% | 83  | 9.3%  |

Finally, geographic origin demographics in Table 6 indicate that BMC's medical/surgical and ICU patients mainly reside in the Boston/Greater Boston area, similar to the Hospital's panel overall.

| Table 6: BMC Medical/Surgical and ICU Patient Panel Demographics – Geographic Origin |               |       |               |       |               |       |              |       |
|--|---------------|-------|---------------|-------|---------------|-------|--------------|-------|
|  | FY19          |       | FY20          |       | FY21          |       | FY22 YTD     |       |
|  | Count         | %     | Count         | %     | Count         | %     | Count        | %     |
| <b>Total Unique M/S Patients<sup>18</sup></b>  | <b>11,719</b> |       | <b>10,541</b> |       | <b>11,002</b> |       | <b>2,970</b> |       |
| Dorchester   | 2,242         | 19.1% | 2,243         | 21.3% | 2,361         | 21.5% | 652          | 22.0% |
| Boston   | 1,762         | 15.0% | 1,819         | 17.3% | 1,644         | 14.9% | 468          | 15.8% |
| Roxbury  | 751           | 6.4%  | 770           | 7.3%  | 762           | 6.9%  | 216          | 7.3%  |
| Brockton   | 415           | 3.5%  | 395           | 3.7%  | 387           | 3.5%  | 92           | 3.1%  |
| Mattapan   | 399           | 3.4%  | 361           | 3.4%  | 409           | 3.7%  | 95           | 3.2%  |
| Quincy   | 357           | 3.0%  | 314           | 3.0%  | 361           | 3.3%  | 85           | 2.9%  |
| Hyde Park  | 278           | 2.4%  | 250           | 2.4%  | 264           | 2.4%  | 79           | 2.7%  |
| Revere   | 219           | 1.9%  | 185           | 1.8%  | 199           | 1.8%  | 43           | 1.4%  |
| Chelsea  | 214           | 1.8%  | 218           | 2.1%  | 199           | 1.8%  | 39           | 1.3%  |
| Jamaica Plain  | 208           | 1.8%  | 217           | 2.1%  | 193           | 1.8%  | 55           | 1.9%  |
| All Other  | 4,874         | 41.6% | 3,769         | 35.8% | 4,223         | 38.4% | 1,146        | 38.6% |
| <b>Total Unique ICU Patients<sup>19</sup></b>  | <b>3,751</b>  |       | <b>3,291</b>  |       | <b>3,403</b>  |       | <b>895</b>   |       |
| Dorchester   | 715           | 19.1% | 725           | 22.0% | 695           | 20.4% | 186          | 20.8% |
| Boston   | 575           | 15.3% | 510           | 15.5% | 503           | 14.8% | 147          | 16.4% |
| Roxbury  | 251           | 6.7%  | 258           | 7.8%  | 232           | 6.8%  | 64           | 7.2%  |
| Brockton   | 150           | 4.0%  | 146           | 4.4%  | 134           | 3.9%  | 32           | 3.6%  |
| Quincy   | 132           | 3.5%  | 120           | 3.6%  | 133           | 3.9%  | 29           | 3.2%  |
| Mattapan   | 125           | 3.3%  | 106           | 3.2%  | 126           | 3.7%  | 28           | 3.1%  |
| Hyde Park  | 84            | 2.2%  | 62            | 1.9%  | 61            | 1.8%  | 16           | 1.8%  |
| Randolph   | 69            | 1.8%  | 50            | 1.5%  | 48            | 1.4%  | 15           | 1.7%  |
| Jamaica Plain & Chelsea  | 128           | 3.4%  | 127           | 3.9%  | 100           | 2.9%  | 14           | 1.6%  |
| All Other  | 1,552         | 40.6% | 1,187         | 36.1% | 1,371         | 40.3% | 364          | 40.7% |

In addition to the above-outlined demographics, the Applicant also reviewed the payer mixes for its medical/surgical and ICU patient panels. As shown in Table 7, APM/ACO contract percentages are similar to the BMC panel overall – nearly 25% of the Hospital's medical/surgical and ICU patients are covered by APM/ACO contacts. However, an even greater percentage of medical/surgical and ICU patients receive insurance coverage through a public payer when compared with the Hospital panel overall. In FY21, BMC's medical/surgical public payer mix included 78% of all medical/surgical patients, including MassHealth, Managed Medicaid,

<sup>17</sup> "Other" includes: "Other" (Not Specified, Other, Declined - Not Available, and Unknown), "American Indian/Alaska Native", and "Native Hawaiian/Pacific Islander" for confidentiality due to regulations related to data with counts <11.

<sup>18</sup> Corresponding zip codes are as follows: Dorchester (02121, 02122, 02124, 02125); Boston (02104, 02108 – 02118, 02123, 02127, 02128, 02133, 02163, 02196, 02199, 02201, 02205, 02206, 02210, 02212, 02215 – 02217, 02241); Roxbury (02119, 02120); Brockton (02301, 02302, 02303, 02304); Mattapan (02126); Quincy (02169 – 02171, 02269); Hyde Park (02136); Revere (02151); Chelsea (02150); and Jamaica Plain (02130).

<sup>19</sup> Corresponding zip codes are as follows: Dorchester (02121, 02122, 02124, 02125); Boston (02104, 02108 – 02118, 02123, 02127, 02128, 02133, 02163, 02196, 02199, 02201, 02205, 02206, 02210, 02212, 02215 – 02217, 02241); Roxbury (02119, 02120); Brockton (02301 – 02304); Quincy (02169 – 02171, 02269); Mattapan (02126); Hyde Park (02136); Randolph (02368); and Jamaica Plain (02130) & Chelsea (02150).

Commercial Medicare, and Medicare FFS beneficiaries. During this same time period, BMC's ICU public payer mix included 79% of all ICU patients. The remainder of patients were covered by a commercial plan, under the HSN, or through some other form of insurance.

| Table 7: BMC Medical/Surgical and ICU APM/ACO and Payer Mix Percentages             |                  |       |       |                        |       |       |       |                        |
|---|------------------|-------|-------|------------------------|-------|-------|-------|------------------------|
|   | Medical/Surgical |       |       |                        | ICU   |       |       |                        |
|   | FY19             | FY20  | FY21  | FY22 YTD <sup>20</sup> | FY19  | FY20  | FY21  | FY22 YTD <sup>21</sup> |
| <b>APM Contract Percentages (for any system-affiliated Primary Care Physicians)</b> |                  |       |       |                        |       |       |       |                        |
| APM and ACO Contracts   | 20.2%            | 22.6% | 22.9% | 23.1%                  | 19.4% | 21.7% | 23.0% | 23.0%                  |
| Non-APM and Non-ACO Contracts   | 79.8%            | 77.4% | 77.1% | 76.9%                  | 80.6% | 78.3% | 77.0% | 77.0%                  |
| <b>Payer Mix Percentages</b>  |                  |       |       |                        |       |       |       |                        |
| Commercial <sup>22</sup>  | 18.0%            | 17.3% | 18.0% | 15.5%                  | 15.2% | 14.4% | 15.1% | 13.3%                  |
| HMO/POS   | 6.3%             | 5.9%  | 6.4%  | 5.2%                   | 5.9%  | 5.5%  | 6.0%  | 4.6%                   |
| PPO   | 4.1%             | 4.0%  | 4.1%  | 3.8%                   | 3.5%  | 3.5%  | 4.1%  | 3.9%                   |
| Other <sup>23</sup>   | 7.5%             | 7.4%  | 7.5%  | 6.5%                   | 5.8%  | 5.4%  | 4.9%  | 4.8%                   |
| MassHealth  | 13.7%            | 13.7% | 12.7% | 11.2%                  | 11.9% | 12.7% | 11.4% | 8.6%                   |
| Managed Medicaid  | 21.6%            | 25.0% | 24.2% | 25.2%                  | 22.9% | 24.1% | 25.3% | 23.5%                  |
| Commercial Medicare   | 15.6%            | 17.3% | 19.1% | 21.3%                  | 17.2% | 19.0% | 19.8% | 23.5%                  |
| Medicare FFS  | 26.2%            | 22.4% | 22.0% | 22.9%                  | 27.1% | 24.0% | 22.5% | 23.6%                  |
| Free Care/HSN   | 2.4%             | 1.6%  | 1.2%  | 0.5%                   | -     | -     | -     | -                      |
| All Other <sup>24</sup>   | 2.5%             | 2.8%  | 2.8%  | 3.5%                   | 5.8%  | 5.8%  | 6.0%  | 7.6%                   |

***b. Inpatient Surgical Panel***

Like the inpatient bed panels, the inpatient surgical panel is largely reflective of the Hospital panel overall. Gender, age, race/ethnicity, and geographic origin demographic data for this panel are outlined in Table 8. As shown in the table, in FY21, 51.1% of the Hospital's inpatient surgical patients were female and 48.9% were male. During this same time, age demographics show that the majority (72.4%) of inpatient surgical patients were ages 18-64, followed by a substantial percent of patients ages 65+ (24.8%), and a subsequently smaller percentage of patients ages 0-17 (2.8%). With respect to race and ethnicity, in FY21, BMC's inpatient surgical patients self-identified as follows: White/Caucasian (36.8%), Black/African American (31.6%), Hispanic/Latino (23.3%), and Asian (3.5%). The remainder of patients (4.7%) chose not to report or reported in a category not specified here. Finally, geographic origin demographics indicate that, similar to the Hospital's overall patient panel and the Hospital's inpatient bed patient panels, the Hospital's inpatient surgical patients reside largely in the Boston/Greater Boston area.

<sup>20</sup> BMC's FY is from 10/1 – 9/30. FY22 data is provided YTD through 12/2021 and, therefore, is subject to change.

<sup>21</sup> BMC's FY is from 10/1 – 9/30. FY22 data is provided YTD through 12/2021 and, therefore, is subject to change.

<sup>22</sup> "Commercial" includes: Aetna, Allways Health Partners, Blue Cross Blue Shield, WellSense Health Plan f/k/a BMC HealthNet, Cigna, Fallon, Harvard Pilgrim Health Care, Tufts, United, and Other Commercial Plan.

<sup>23</sup> Please note that in some instances, the Applicant is not able to easily isolate whether a Commercial plan is HMO/POS or PPO/Indemnity. In these instances, in an effort to offer a complete payer mix for the patient panel, "Commercial – Other" has been provided an alternative category.

<sup>24</sup> For the medical/surgical service line, "All Other" includes: Workers Comp, Motor Vehicle Accident, Government Other (e.g., Corrections, TriCare, VA), COVID-19 HRSA Uninsured Treatment Fund, International, Other Payer, and Not Specified. For the ICU service line, "All Other" includes: Workers Comp, Motor Vehicle Accident, Government Other (e.g., Corrections, TriCare, VA), COVID-19 HRSA Uninsured Treatment Fund, International, Other Payer, and Not Specified, as well as Free Care/HSN for confidentiality due to regulations related to data with counts <11.

| Table 8: BMC Inpatient OR Patient Panel Demographics |              |       |              |       |              |       |                        |       |
|--|--------------|-------|--------------|-------|--------------|-------|------------------------|-------|
| Demographic  | FY19         |       | FY20         |       | FY21         |       | FY22 YTD <sup>25</sup> |       |
|  | Count        | %     | Count        | %     | Count        | %     | Count                  | %     |
| <b>BMC Total Unique Patients</b>                     | <b>4,741</b> |       | <b>4,114</b> |       | <b>4,703</b> |       | <b>1,184</b>           |       |
| <b>Gender</b>  |              |       |              |       |              |       |                        |       |
| Female   | 2,487        | 52.5% | 2,061        | 50.1% | 2,405        | 51.1% | 647                    | 54.6% |
| Male   | 2,254        | 47.5% | 2,053        | 49.9% | 2,298        | 48.9% | 537                    | 45.4% |
| <b>Age</b>   |              |       |              |       |              |       |                        |       |
| 0-17   | 171          | 3.6%  | 138          | 3.4%  | 131          | 2.8%  | 34                     | 2.9%  |
| 18-64  | 3,369        | 71.1% | 2,965        | 72.1% | 3,407        | 72.4% | 838                    | 70.8% |
| 65+  | 1,201        | 25.3% | 1,011        | 24.6% | 1,165        | 24.8% | 312                    | 26.4% |
| <b>Race/Ethnicity<sup>26</sup></b>                   |              |       |              |       |              |       |                        |       |
| Asian  | 145          | 3.1%  | 129          | 3.1%  | 166          | 3.5%  | 39                     | 3.3%  |
| Black/African American                               | 1,554        | 32.8% | 1,392        | 33.8% | 1,487        | 31.6% | 372                    | 31.4% |
| Hispanic/Latino                                      | 446          | 9.4%  | 689          | 16.7% | 1,096        | 23.3% | 267                    | 22.6% |
| White/Caucasian                                      | 1,829        | 38.6% | 1,499        | 36.4% | 1,732        | 36.8% | 447                    | 37.8% |
| Other <sup>27</sup>                                  | 767          | 16.2% | 405          | 9.8%  | 222          | 4.7%  | 59                     | 5.0%  |
| <b>Geographic Origin<sup>28</sup></b>                |              |       |              |       |              |       |                        |       |
| Dorchester   | 718          | 15.1% | 714          | 17.4% | 773          | 16.4% | 205                    | 17.3% |
| Boston   | 558          | 11.8% | 515          | 12.5% | 573          | 12.2% | 149                    | 12.6% |
| Roxbury  | 225          | 4.7%  | 228          | 5.5%  | 230          | 4.9%  | 61                     | 5.2%  |
| Brockton   | 192          | 4.0%  | 187          | 4.5%  | 184          | 3.9%  | 45                     | 3.8%  |
| Mattapan   | 148          | 3.1%  | 115          | 2.8%  | 160          | 3.4%  | 31                     | 2.6%  |
| Quincy   | 129          | 2.7%  | 127          | 3.1%  | 164          | 3.5%  | 25                     | 2.1%  |
| Revere   | 115          | 2.4%  | 92           | 2.2%  | 107          | 2.3%  | 30                     | 2.5%  |
| Hyde Park  | 111          | 2.3%  | 75           | 1.8%  | 117          | 2.5%  | 26                     | 2.2%  |
| Chelsea  | 104          | 2.2%  | 79           | 1.9%  | 96           | 2.0%  | 25                     | 2.1%  |
| Lynn   | 94           | 2.0%  | 89           | 2.2%  | 86           | 1.8%  | 12                     | 1.0%  |
| All Other  | 2,347        | 49.5% | 1,893        | 46.0% | 2,213        | 47.1% | 575                    | 48.6% |

Additionally, the Applicant reviewed the payer mix for its inpatient surgical panel. This information is detailed in Table 9. Similar to the BMC panel overall and the BMC inpatient bed panels, approximately 25% of the Hospital's inpatient surgical patients are covered by APM/ACO contacts. Additionally, like the Hospital's inpatient bed panels, the vast majority of BMC's inpatient surgical patients receive insurance coverage through a public payer. In FY21, BMC's inpatient surgical public payer mix included 71.2% of all medical/surgical patients, including MassHealth, Managed Medicaid, Commercial Medicare, and Medicare FFS beneficiaries. The remainder of patients were covered by a commercial plan, under the HSN, or through some other form of insurance.

<sup>25</sup> BMC's FY is from 10/1 – 9/30. FY22 data is provided YTD through 12/2021 and, therefore, is subject to change.

<sup>26</sup> Race/ethnicity data is based on patient self-reporting. For patients that reported multiple races, the primary race (the race selected first) was utilized for purposes of this DoN data pull.

<sup>27</sup> "Other" includes: "Other" (Not Specified, Other, Declined - Not Available, and Unknown), "American Indian/Alaska Native", and "Native Hawaiian/Pacific Islander" for confidentiality due to regulations related to data with counts <11.

<sup>28</sup> Corresponding zip codes are as follows: Dorchester (02121, 02122, 02124, 02125); Boston (02104, 02108 – 02118, 02123, 02127, 02128, 02133, 02163, 02196, 02199, 02201, 02205, 02206, 02210, 02212, 02215 – 02217, 02241); Roxbury (02119, 02120); Brockton (02301, 02302, 02303, 02304); Mattapan (02126); Quincy (02169 – 02171, 02269); Revere (02151); Hyde Park (02136); Chelsea (02150); and Lynn (01901 – 01905).

| Table 9: BMC Inpatient OR APM/ACO and Payer Mix Percentages                         |       |       |       |          |
|---|-------|-------|-------|----------|
|   | FY19  | FY20  | FY21  | FY22 YTD |
| <b>APM Contract Percentages (for any system-affiliated Primary Care Physicians)</b> |       |       |       |          |
| APM and ACO Contracts   | 21.6% | 23.8% | 25.9% | 25.4%    |
| Non-APM and Non-ACO Contracts   | 78.4% | 76.2% | 74.1% | 74.6%    |
| <b>Payer Mix Percentages</b>  |       |       |       |          |
| Commercial <sup>29</sup>  | 24.5% | 23.6% | 24.6% | 22.2%    |
| <i>HMO/POS</i>  | 7.8%  | 7.5%  | 8.0%  | 7.0%     |
| <i>PPO</i>  | 6.4%  | 5.9%  | 5.8%  | 5.8%     |
| <i>Other</i> <sup>30</sup>  | 10.3% | 10.2% | 10.9% | 9.4%     |
| MassHealth  | 16.0% | 15.1% | 14.7% | 13.0%    |
| Managed Medicaid  | 24.5% | 25.7% | 27.5% | 28.5%    |
| Commercial Medicare   | 10.7% | 11.8% | 12.1% | 13.5%    |
| Medicare FFS  | 19.1% | 18.6% | 16.9% | 16.6%    |
| All Other <sup>31</sup>   | 5.2%  | 5.2%  | 4.2%  | 6.1%     |

**F1.a.ii Need by Patient Panel:**  
**Provide supporting data to demonstrate the need for the Proposed Project. Such data should demonstrate the disease burden, behavioral risk factors, acuity mix, health disparities, or other objective Patient Panel measures as noted in your response to Question F1.a.i that demonstrates the need that the Proposed Project is attempting to address. If an inequity or disparity is not identified as relating to the Proposed Project, provide information justifying the need. In your description of Need, consider the principles underlying Public Health Value (see instructions) and ensure that Need is addressed in that context as well.**

As indicated in the Project Description, BMC was incorporated in 1996 with the merger of various Boston hospitals. In addition to the challenges of delivering care in existing aging and deficient buildings, the physical remnants of the merger left BMC with inefficient operational challenges by having two clinical zones on the east and west ends of the campus. In response, the Applicant has historically undertaken a measured approach of renovation and new construction to ensure the Hospital's sustainability as an academic medical center providing exceptional care to its patient panel. Specifically, since 2000, the Applicant has worked continuously to right-size BMC's campus to match the ever-evolving health care landscape through careful building resource and site planning. These efforts have focused on: maximizing the use of existing building square footage with strategic renovations and additions; adaptively reusing historic buildings for non-clinical uses; carefully aligning uses that need to be on campus and those that can be off campus; and reserving building new facilities where existing building resources prove to be deficient or significant changes in its patient panel volume demand it.

The major objective executed under BMC's previously approved 2014 DoN was consolidating its two clinical campuses to create a new clinical core at its Menino Campus to the west. This project

<sup>29</sup> "Commercial" includes: Aetna, Allways Health Partners, Blue Cross Blue Shield, WellSense Health Plan f/k/a BMC HealthNet, Cigna, Fallon, Harvard Pilgrim Health Care, Tufts, United, and Other Commercial Plan.

<sup>30</sup> Please note that in some instances, the Applicant is not able to easily isolate whether a Commercial plan is HMO/POS or PPO/Indemnity. In these instances, in an effort to offer a complete payer mix for the patient panel, "Commercial – Other" has been provided an alternative category.

<sup>31</sup> "All Other" includes: Workers Comp, Motor Vehicle Accident, Government Other (e.g., Corrections, TriCare, VA), COVID-19 HRSA Uninsured Treatment Fund, International, Other Payer, and Not Specified, as well as Free Care/HSN for confidentiality due to regulations related to data with counts <11.

successfully established centralized services and complementary use adjacencies that drove operational efficiency. Furthermore, this project positioned BMC to better serve its patients in a health care environment that demands cost containment. However, it also resulted in a decrease in BMC's total approved campus square footage and licensed capacity.

Following substantial completion of its previously approved DoN project, several changes have occurred in the health care environment that have a direct impact on BMC's patient volume and the space it requires to deliver the types of services needed by its patients. These changes include, but are not limited to, patient population growth, increasingly acute and complex patient needs, increases in patients impacted by homelessness and SUDs, onset of the COVID-19 pandemic, participation in an ACO, a focus on targeting SDoHs, and effects of space planning due to evolving state design and regulatory requirements for construction. All these factors have stressed the utilization of BMC's inpatient resources and have created rates of demand that are above ideal percentages.

The goal of the Proposed Project is to address these demand constraints and allow the Hospital to better serve its patient panel into the future. Consistent with BMC's distinct measured approach to campus growth and development, the Proposed Project is designed to implement strategic space modifications to accommodate increases in inpatient volume, right-size and modernize clinical space to meet current building code and clinical standards, and leverage the highest and best use of building resources. In addition, the Proposed Project will allow BMC to continue centralization of services and ideal adjacencies, and enhance campus unification as well as patient and visitor circulation and accessibility. To this end, the Proposed Project includes the following components:

- (A) Construction and renovation to BMC's existing Yawkey Building 5th and 6th floors to accommodate the addition of seventy (70) new inpatient beds, including sixty (60) additional medical/surgical beds and ten (10) additional ICU beds;
- (B) Renovation of BMC's existing Menino Building 2nd floor to accommodate the addition of five (5) new inpatient ORs, as well as additional pre- and post-operative/PACU space, including sixteen (16) new pre- and post-operative/PACU beds; and
- (C) Other construction and renovation projects to accommodate the proposed inpatient expansion projects, support campus infrastructure reorganization efforts, and improve existing services, facilities, and patient experience and wayfinding at the Hospital.

The specific needs associated with each of these project components are discussed in detail below.

#### A. NEED FOR EXPANSION OF INPATIENT BEDS

##### 1. Review of Historic Demand

Upon substantial completion of the campus consolidation under the Hospital's previously approved DoN project, BMC's licensed medical/surgical inpatient bed capacity reduced from 332 in 2013 to 265 present day, a 67-bed reduction. Similarly, the Hospital's ICU bed capacity was reduced from 74 in 2013 to 63 present day, an 11-bed reduction. Such bed reductions were the result of two factors: (1) volume projections for inpatient demand were lower during that period; and (2) the new inpatient beds established on the Menino Campus were single-bedded rooms in accordance with DPH requirements. However, as noted above, alongside substantial completion of the project, changes in the health care environment have impacted BMC's patient volumes, stressing the Hospital's current infrastructure and demonstrating that the Hospital requires additional inpatient services to meet the needs of its patient panel.

BMC’s high inpatient bed volume is evidenced by its annual visit volume, as well as the annual number of patients seeking inpatient care at the Hospital. Table 10 outlines these data for the Hospital’s medical/surgical inpatient and ICU service lines:

| Table 10: BMC Inpatient Bed Volume |                  |        |                 |        |
|------------------------------------|------------------|--------|-----------------|--------|
|                                    | Medical/Surgical |        | ICU             |        |
| Year                               | Unique Patients  | Visits | Unique Patients | Visits |
| FY19                               | 11,719           | 16,129 | 3,751           | 4,401  |
| FY20                               | 10,541           | 14,504 | 3,291           | 3,808  |
| FY21                               | 11,002           | 14,757 | 3,403           | 3,920  |
| FY22 YTD                           | 2,970            | 3,389  | 895             | 964    |

As shown in the table, despite reduced demand in FY20 during the height of the COVID-19 pandemic, annual patient and visit volume for BMC’s medical/surgical and ICU services has remained high over the last three fiscal years. In FY19, there were 11,719 unique patients for 16,129 medical/surgical inpatient visits, and 3,751 unique patients for 4,401 ICU visits. Like many hospitals across the state and nation, in FY20, BMC experienced a drop in utilization for non-COVID-19 care due to multiple factors including state and federal guidance intended to maintain needed hospital bed capacity and reduce infection transmission, patient hesitancy to receive in-person care, and the shift in care to telehealth.<sup>32</sup> With specific regard to its inpatient bed volume, the Hospital experienced 10% decreases in both its number of medical/surgical patients and visits, and 12% and 13% decreases in its number of ICU patients and visits, respectively. Notwithstanding periods of renewed hospital avoidance during COVID-19 surges since FY20, data for FY21 – which show a 4% increase in medical/surgical patients, a 2% increase in medical/surgical visits, and a 3% increase in both ICU patients and visits compared to FY21 – and preliminary data for FY22 suggest that Hospital operations and patient and visit volumes are returning to pre-pandemic levels and will continue to increase in future years.

Additionally, the Hospital has experienced increases in utilization and acuity across its medical/surgical and ICU inpatient populations since FY19. Specifically, as outlined in Table 11, from FY19 to FY21, medical/surgical inpatient discharges rose 0.2%, medical/surgical inpatient acuity levels rose 4.8% and, resultantly, the Hospital’s medical/surgical inpatient case mix index (“CMI”) increased 5.1%. Consistent with such increases, over this same period, average length of stay (“ALOS”) and patient days increased, and bed occupancy rates remained at 90%, above the industry standard optimal occupancy rate of approximately 80-85%.<sup>33</sup> Similar trends were also noted among the Hospital’s ICU inpatient population; between FY19 and FY21, ICU discharges remained relatively consistent, acuity levels rose 6.2%, the ICU CMI increased 10.4%, ALOS increased 21.3%, and ICU bed occupancy rates remained high at approximately 83%, notably above the industry standard optimal ICU occupancy rate of 70-75%.<sup>34</sup>

<sup>32</sup> COMMONWEALTH OF MASSACHUSETTS HEALTH POLICY COMMISSION, IMPACT OF COVID-19 ON THE MASSACHUSETTS HEALTH CARE SYSTEM: INTERIM REPORT (Apr. 2021), available at <https://www.mass.gov/doc/impact-of-covid-19-on-the-massachusetts-health-care-system-interim-report/download>.

<sup>33</sup> Ravaghi et al., *Models and methods for determining the optimal number of beds in hospitals and regions: a systematic scoping review*, 20 BMC HEALTH SERVICES RESEARCH 186 (2020), available at <https://bmchealthservres.biomedcentral.com/articles/10.1186/s12913-020-5023-z>.

<sup>34</sup> Tierney & Conroy, *Optimal occupancy in the ICU: a literature review*, 27 AUST. CRIT. CARE 77 (2014), available at <https://pubmed.ncbi.nlm.nih.gov/24373914/#:~:text=Issues%20pertaining%20to%20the%20utility,were%20around%2070-75%25>.

| Table 11: BMC Inpatient Bed Historical Utilization (COVID-19 and Non-COVID-19) |                                    |        |        |                       |        |        |
|--|------------------------------------|--------|--------|-----------------------|--------|--------|
|  | Medical/Surgical <sup>35, 36</sup> |        |        | ICU <sup>37, 38</sup> |        |        |
|  | FY19                               | FY20   | FY21   | FY19                  | FY20   | FY21   |
| <b>Discharges</b>  | 13,662                             | 12,761 | 13,683 | 4,118                 | 3,757  | 3,959  |
| <b>Case Weight</b>   | 21,647                             | 20,350 | 22,695 | 12,278                | 11,853 | 13,040 |
| <b>CMI</b>   | 1.58                               | 1.59   | 1.66   | 2.98                  | 3.15   | 3.29   |
| <b>ALOS</b>  | 4.70                               | 4.94   | 5.15   | 10.11                 | 11.31  | 12.26  |
| <b>Occupancy</b>   | 90%                                | 83%    | 90%    | 83%                   | 69%    | 83%    |

Significantly, the Applicant notes that these trends, while partially attributable to/impacted by the COVID-19 pandemic, exist even when controlling for COVID-19 cases. Non-COVID-19 inpatient bed historical utilization is outlined in Table 12. As detailed in the table, despite slight decreases in discharges and case weight among non-COVID-19 medical/surgical and ICU patients between FY19 and FY21 (with such decreases presumably being due to increases in COVID-19 patients occupying medical/surgical and ICU beds, as well as hospital avoidance practices among non-COVID-19 patients due to the COVID-19 pandemic), CMI and ALOS increased across the non-COVID-19 medical/surgical and ICU panels during this time period and occupancy rates remained relatively stable and high.

<sup>35</sup> The Applicant notes that the discharge, case weight, CMI, and ALOS metrics provided herein are based on medical/surgical discharges. However, to provide the most accurate understanding of BMC's occupancy rates, the occupancy data provided herein are based on midnight census reporting, which also includes observation patients and bedded outpatients who occupy a medical/surgical bed but are not reflected as inpatient medical/surgical discharges.

<sup>36</sup> The Applicant highlights that BMC's existing number of operating medical/surgical beds is higher than its existing number of licensed medical/surgical beds. While the Hospital is currently licensed for 265 medical/surgical beds, it also currently utilizes alternate space (e.g., Code Yellow beds and other acute inpatient care COVID-19 surge spaces) to provide medical/surgical inpatient care to its patients pursuant to guidance from the Department. Given that patients receive medical/surgical care in these beds, the Applicant has included these beds and patients in its calculations to provide the most accurate understanding of BMC's medical/surgical inpatient utilization rates. Specifically, the calculations provided herein are based on a total of 294 operating medical/surgical beds in FY19, 323 in FY20, and 328 in FY21.

<sup>37</sup> The Applicant notes that the discharge, case weight, CMI, and ALOS metrics provided herein are based on ICU discharges. However, to provide the most accurate understanding of BMC's occupancy rates, the occupancy data provided herein are based on census days, which is lower as it accounts for time that patients spend in different levels of care (e.g., medical/surgical, step-down, ICU, etc.).

<sup>38</sup> The Applicant highlights that BMC's number of operating ICU beds changed between FY19-FY21 and at times was higher than its number of licensed ICU beds. While the Hospital is currently licensed for 63 ICU beds, in FY20 and FY21, it also utilized alternate space (e.g., acute inpatient care COVID-19 surge spaces) to provide ICU care to its patients pursuant to guidance from the Department. Given that patients received ICU care in these beds, the Applicant has included these beds and patients in its calculations to provide the most accurate understanding of BMC's ICU utilization rates. Specifically, the calculations provided herein are based on a total of 63 operating ICU beds in FY19, 75 operating ICU beds in FY20, and 63 ICU operating beds + a limited time operation of an additional 7 ICU beds in FY21. With regard to FY21, the Applicant notes that BMC operated its 7 additional COVID-19 surge beds for approximately 45 days. Given limitations in the Department's Change in Service Form, the Applicant is not able to include these 7 beds in its reporting without inaccurately skewing the Hospital's existing ICU occupancy rate (i.e., the Change in Service Form does not allow the Applicant to account for the limited time period that the 7 additional beds were in operation and inaccurately drives the Hospital's existing ICU occupancy rate down to 76%). Accordingly, the Applicant has not included these 7 beds in its Change in Service Form reporting. However, to provide the most accurate understanding of BMC's ICU utilization rates, the Applicant has included these 7 beds in its calculations herein; Table 12 properly accounts for the operation of these 7 beds for approximately 45 days in FY21 and accurately illustrates the Hospital's ICU occupancy rate of 83% in FY21.

| Table 12: BMC Inpatient Bed Historical Utilization (Non-COVID-19 ONLY) |                                    |        |        |                   |        |        |
|--|------------------------------------|--------|--------|-------------------|--------|--------|
|  | Medical/Surgical <sup>39, 40</sup> |        |        | ICU <sup>41</sup> |        |        |
|  | FY19                               | FY20   | FY21   | FY19              | FY20   | FY21   |
| <b>Discharges</b>  | 13,662                             | 11,818 | 12,322 | 4,118             | 3,467  | 3,569  |
| <b>Case Weight</b>   | 21,647                             | 18,741 | 20,292 | 12,278            | 10,502 | 11,636 |
| <b>CMI</b>   | 1.58                               | 1.59   | 1.65   | 2.98              | 3.03   | 3.26   |
| <b>ALOS</b>  | 4.70                               | 4.83   | 5.02   | 10.11             | 10.66  | 11.85  |
| <b>Occupancy</b>   | 90%                                | 85%    | 91%    | 83%               | 80%    | 83%    |

Factors that typically contribute to increases in utilization include a high incidence of older patients and a vulnerable patient population. Both of these factors are detailed in the Hospital's patient panel data. As outlined in Factor F1.a.i, patients 65+ account for 36.5% of BMC's medical/surgical patient panel and 40.2% of its ICU patient panel. Furthermore, the majority of communities that BMC serves are Boston census tracts that are federally-designated medically underserved populations, many of which experience a high percentage of patients impacted by homelessness and SUDs. Table 13 demonstrates the impact of these factors. The table shows that although patients 65+ account for greater than one-third of BMC's inpatient bed panel discharges, experience greater ALOS, and represent a higher acuity as compared with other age cohorts within the panel, utilization and acuity are nonetheless high among all age groups within the panel. Such consistently high rates among all age groups are reflective of BMC's status as New England's largest safety net hospital serving the area's most vulnerable patient population and further illustrate the need for the Proposed Project.

| Table 13: BMC Inpatient Bed Historical Utilization by Age (COVID-19 and Non-COVID-19) |               |               |               |              |              |              |                     |             |             |
|---|---------------|---------------|---------------|--------------|--------------|--------------|---------------------|-------------|-------------|
|   | Discharges    |               |               | ALOS         |              |              | Average Case Weight |             |             |
|   | FY19          | FY20          | FY21          | FY19         | FY20         | FY21         | FY19                | FY20        | FY21        |
| <b>Medical/Surgical</b>   |               |               |               |              |              |              |                     |             |             |
| <b>0-64</b>   | 9,059         | 8,408         | 8,763         | 4.45         | 4.52         | 4.71         | 1.57                | 1.57        | 1.65        |
| <b>65+</b>  | 4,603         | 4,353         | 4,920         | 5.19         | 5.75         | 5.92         | 1.61                | 1.64        | 1.67        |
| <b>Total</b>  | <b>13,662</b> | <b>12,761</b> | <b>13,683</b> | <b>4.70</b>  | <b>4.94</b>  | <b>5.15</b>  | <b>1.58</b>         | <b>1.59</b> | <b>1.66</b> |
| <b>ICU</b>  |               |               |               |              |              |              |                     |             |             |
| <b>0-64</b>   | 2,519         | 2,365         | 2,403         | 9.91         | 10.99        | 12.03        | 2.88                | 3.03        | 3.19        |
| <b>65+</b>  | 1,599         | 1,392         | 1,556         | 10.44        | 11.85        | 12.60        | 3.14                | 3.37        | 3.46        |
| <b>Total</b>  | <b>4,118</b>  | <b>3,757</b>  | <b>3,959</b>  | <b>10.11</b> | <b>11.31</b> | <b>12.26</b> | <b>2.98</b>         | <b>3.15</b> | <b>3.29</b> |

<sup>39</sup> The Applicant notes that the discharge, case weight, CMI, and ALOS metrics provided herein are based on medical/surgical discharges. However, to provide the most accurate understanding of BMC's occupancy rates, the occupancy data provided herein are based on midnight census reporting, which also includes observation patients and bedded outpatients who occupy a medical/surgical bed but are not reflected as inpatient medical/surgical discharges.

<sup>40</sup> As noted above, BMC's existing number of operating medical/surgical beds is higher than its existing number of licensed medical/surgical beds. Controlling for COVID-19 patient cases/utilization of COVID-19 surge spaces, the Non-COVID-19 ONLY medical/surgical calculations provided herein are based on the following numbers of operating medical/surgical beds: 294 in FY19, 302 in FY20, and 306 in FY21.

<sup>41</sup> The Applicant notes that the discharge, case weight, CMI, and ALOS metrics provided herein are based on ICU discharges. However, to provide the most accurate understanding of BMC's occupancy rates, the occupancy data provided herein are based on census days, which is lower as it accounts for time that patients spend in different levels of care (e.g., medical/surgical, step-down, ICU, etc.).

## 2. Impacts Related to High Demand

The Applicant notes that the high inpatient bed utilization and occupancy rates detailed above not only impact access to inpatient care, but also impact ED throughput and operations. Studies show that high inpatient occupancy rates directly impact patient disposition time and contribute to longer length of stays in the ED and that ED boarding is partially caused by insufficient inpatient bed capacity.<sup>42</sup> When inpatient units are unable to admit new patients from the ED, these patients must board in the ED until a bed is available, causing a situation known as access block that contributes to ED overcrowding.<sup>43</sup> As more fully discussed in Factor F1.b.i, impacts associated with ED boarding and ED overcrowding include, but are not limited to: compromised clinical care, diminished health outcomes, and increased cases of mortality; decreased patient satisfaction; ambulance diversion and impaired access to emergency care; and higher overall health care costs.<sup>44</sup>

According to patient panel data, both the number of ED boarders and the average boarder hours at BMC increased over the last three fiscal years. The number of ED boarders increased by 12.5%, from 16,805 boarders in FY19 to 18,905 boarders in FY21, and the average boarder hours increased by 16.8%, from 4.9 hours in FY19 to 5.7 hours in FY21. However, like hospitals across the state and the nation, BMC experienced decreases in ED visits during this same period due to the COVID-19 pandemic (decrease of 3.8% between FY19 and FY21).<sup>45</sup> The simultaneous decrease in the number of patient visits to the ED and increase in the number of ED boarders and average ED boarder hours suggests that patients are spending more time waiting in the ED for an inpatient bed to become available. In other words, the data suggest that the increase in ED boarding is due to increased inpatient utilization as evidenced by the high occupancy rate described above.

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<sup>42</sup> Boyle et al., *Emergency Department Crowding: Time for Interventions and Policy Evaluations*, EMERG. MED. INT. 838610 (2012), available at <https://www.hindawi.com/journals/em/2012/838610/>; Forero, et al., *Access block and emergency department overcrowding*, 15 CRITICAL CARE 216 (2011), available at <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3219412/>; Hoot & Aronsky, *Systematic review of emergency department crowding: causes, effects, and solutions*, 52 ANN EMERG. MED. 126 (2008), available at <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7340358/>; D.M. Fatovich, *Access block causes emergency department overcrowding and ambulance diversion in Perth, Western Australia*, 22 EMERG. MED. J. 351 (2005), available at <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1726785/pdf/v022p00351.pdf>; Forster et al., *The Effect of Hospital Occupancy on Emergency Department Length of Stay and Patient Disposition*, 10 ACADEMIC EMERG. MED. 127 (2003), available at <https://onlinelibrary.wiley.com/doi/pdf/10.1197/aemj.10.2.127>.

<sup>43</sup> Boyle, et al., *supra* note 42; Forero, et al., *supra* note 42; Hoot & Aronsky, *supra* note 42; D.M. Fatovich, *supra* note 42; Forster et al., *supra* note 42.

<sup>44</sup> Morley et al., *Emergency Department Crowding: A Systematic Review of Causes, Consequences and Solutions*, 13 PLOS ONE 1 (2018), available at <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6117060/>; Sonis, et al., *Emergency Department Patient Experience*, 5 J. PATIENT EXPERIENCE 101 (2018), available at <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6022944/>; Bernstein, et al., *The Effect of Emergency Department Crowding on Clinically Oriented Outcomes*, 16 ACADEMIC EMERG. MED. 1 (2008), available at <https://onlinelibrary.wiley.com/doi/full/10.1111/j.1553-2712.2008.00295.x>; D.M. Fatovich, *Entry overload, emergency department overcrowding, and ambulance bypass*, 20 EMERG. MED. J. 406 (2003), available at <http://emj.bmj.com/content/emered/20/5/406.full.pdf>; Jeffrey Davis, *Emergency Department "Boarding" At Seemingly All-Time High Levels*, AMERICAN COLLEGE OF EMERG. PHYSICIANS, <https://www.acep.org/federal-advocacy/federal-advocacy-overview/regs--eggs/regs--eggs-articles/regs--eggs---august-26-2021/> (last visited Jul. 20, 2022).

<sup>45</sup> COMMONWEALTH OF MASSACHUSETTS HEALTH POLICY COMMISSION, *supra* note 32.

| Table 14: BMC ED Metrics (Adult Only) |        |        |        |
|---------------------------------------|--------|--------|--------|
|                                       | FY19   | FY20   | FY21   |
| Total Visits                          | 87,542 | 83,159 | 84,241 |
| Boarders                              | 16,805 | 17,162 | 18,905 |
| Average Boarding Hours                | 4.9    | 4.8    | 5.7    |

Commensurate with increases in ED boarding, BMC has also seen an increase in utilization of its alternate care spaces (e.g., Code Yellow instances and other acute inpatient care COVID-19 surge spaces) from FY19-FY21 due to high inpatient occupancy rates as well as the COVID-19 pandemic, as detailed in Tables 11 and 12. The additional inpatient beds that are included in the Proposed Project are expected to help address ED boarding and overcrowding, as well as the utilization of alternate care spaces at the Hospital by allowing patients who need to be admitted from the ED to be moved to a licensed inpatient bed more quickly.

### 3. Projected Demand and Meeting Future Needs through the Proposed Project

Finally, the Applicant highlights the need for BMC to expand its inpatient bed capacity to meet the projected growth in inpatient demand. Continued growth among BMC’s patient panel is supported by population growth estimates provided by the University of Massachusetts’ Donahue Institute (“UMDI”), a public service, research, and economic organization that contracts with the Secretary of the Commonwealth of Massachusetts to produce population projections for Massachusetts geographies for use in both public and private planning initiatives. According to data provided by UMDI, the Massachusetts statewide population is projected to grow a total of 6.4% from 2020 through 2040, and the Greater Boston region, which is home to the large majority of BMC’s medical/surgical and ICU patients, is expected to experience an increase of 14.2% in its overall population in the 2020 to 2040 period.<sup>46</sup>

An analysis of UMDI’s projections shows that the growth in the Commonwealth and the Greater Boston region’s population is segmented by age sector, that modest growth is attributable to residents ages 0-64, and that the highest percentage of the state and the region’s population growth is attributable to residents ages 65+.<sup>47</sup> For instance, in the Greater Boston region, between 2020 and 2040, the 0-64 age cohort is projected to grow 9.6% and the 65+ age cohort is expected to grow 40.7%.<sup>48</sup> Utilization and acuity rates are high across all age cohorts within BMC’s inpatient bed patient panel due to the vulnerable population the Hospital serves, with patients 65+ generally experiencing longer lengths of stay and representing a higher acuity as compared with other age cohorts within BMC’s inpatient bed patient panel. In consideration of these factors, as well as the anticipated growth in surgical cases discussed further below, the Applicant expects continued utilization growth as the Greater Boston population that BMC serves continues to grow and age. Table 15 below provides projected inpatient volume and utilization for the Hospital following implementation of the Proposed Project.

<sup>46</sup> *UMDI-DOT Vintage 2018 – EXCEL Age/Sex Details*, MASSACHUSETTS POPULATION ESTIMATES PROGRAM, UMASS DONAHUE INSTITUTE, [http://pep.donahue-institute.org/publications/AgeSexDetails\\_UMDI-DOT\\_V2018.xlsx](http://pep.donahue-institute.org/publications/AgeSexDetails_UMDI-DOT_V2018.xlsx).

<sup>47</sup> *Id.*

<sup>48</sup> *Id.*

| Table 15: BMC Inpatient Bed Projected Demand and Utilization |        |        |        |        |        |
|--|--------|--------|--------|--------|--------|
|  | FY24   | FY25   | FY26   | FY27   | FY28   |
| <b>Medical/Surgical Beds<sup>49, 50</sup></b>                |        |        |        |        |        |
| Unique Patients  | 13,144 | 13,776 | 14,015 | 14,015 | 14,015 |
| Visits   | 17,821 | 18,542 | 18,815 | 18,815 | 18,815 |
| Discharges   | 15,072 | 15,674 | 15,901 | 15,901 | 15,901 |
| Case Weight  | 24,868 | 25,861 | 26,237 | 26,237 | 26,237 |
| CMI  | 1.65   | 1.65   | 1.65   | 1.65   | 1.65   |
| ALOS   | 5.28   | 5.33   | 5.34   | 5.34   | 5.34   |
| Occupancy  | 83.4%  | 86.1%  | 87.1%  | 87.1%  | 87.1%  |
| <b>ICU Beds<sup>51</sup></b>                                 |        |        |        |        |        |
| Unique Patients  | 3,948  | 4,105  | 4,114  | 4,114  | 4,114  |
| Visits   | 4,327  | 4,497  | 4,506  | 4,506  | 4,506  |
| Discharges   | 4,046  | 4,204  | 4,213  | 4,213  | 4,213  |
| Case Weight  | 13,191 | 13,706 | 13,734 | 13,734 | 13,734 |
| CMI  | 3.26   | 3.26   | 3.26   | 3.26   | 3.26   |
| ALOS   | 13.13  | 13.13  | 13.13  | 13.13  | 13.13  |
| Occupancy  | 79.4%  | 85.0%  | 85.2%  | 85.2%  | 85.2%  |
| <b>Combined Beds</b>   |        |        |        |        |        |
| Unique Patients  | 17,092 | 17,882 | 18,129 | 18,129 | 18,129 |
| Visits   | 22,148 | 23,039 | 23,321 | 23,321 | 23,321 |
| Discharges   | 19,118 | 19,878 | 20,114 | 20,114 | 20,114 |
| Case Weight  | 38,059 | 39,567 | 39,970 | 39,970 | 39,970 |
| CMI  | 1.99   | 1.99   | 1.99   | 1.99   | 1.99   |
| ALOS   | 6.95   | 6.98   | 6.97   | 6.97   | 6.97   |
| Occupancy  | 82.8%  | 85.9%  | 86.8%  | 86.8%  | 86.8%  |

As shown in Table 15, implementation of the Proposed Project is anticipated to help curtail some of the Hospital's projected inpatient capacity constraints. Without the Proposed Project, inpatient utilization rates will continue to rise to unsustainable levels as patient volumes and acuity levels

<sup>49</sup> The Applicant notes that the discharge, case weight, CMI, and ALOS projections provided herein are based on projected medical/surgical discharges. However, to provide the most accurate understanding of BMC's occupancy rates, the occupancy projections provided herein are based on projected midnight census reporting, which also includes observation patients and bedded outpatients who occupy a medical/surgical bed but are not reflected as inpatient medical/surgical discharges.

<sup>50</sup> Through the Proposed Project, the Applicant seeks to increase BMC's licensed medical/surgical capacity by 60 beds, for a total new licensed medical/surgical capacity of 325 beds. The Applicant anticipates that this addition of beds will help curtail some of the Hospital's projected inpatient capacity constraints and will allow the Hospital to decrease utilization of some of its alternate spaces (e.g., Code Yellow beds). Additionally, the Applicant notes that the Hospital will vacate its COVID-19 surge spaces pursuant to the timeline outlined within the Department's *Updated Guidance Regarding Implementation of Alternate Acute Inpatient Care Space*. Accordingly, the Applicant anticipates that BMC's change in operating medical/surgical beds will be less than its change in licensed medical/surgical beds (i.e., less than 60 beds) and that its projected occupancy rate for its operating medical/surgical beds will be higher than the 87% provided herein. However, given the unpredictable nature of the COVID-19 pandemic, the fluid status of the Public Health Emergency, anticipated further extensions in the authorized use of alternate acute inpatient care space, and projected increases in BMC's medical/surgical patient panel, the Hospital is uncertain at this time as to the exact number of alternate beds it will vacate and when. Given this uncertainty, the Applicant has provided the projections data in Table 15 to reflect the proposed addition of 60 licensed medical/surgical beds only.

<sup>51</sup> The Applicant notes that the discharge, case weight, CMI, and ALOS projections provided herein are based on projected ICU discharges. However, to provide the most accurate understanding of BMC's occupancy rates, the occupancy projections provided herein are based on projected census days, which is lower as it accounts for time that patients are projected to spend in different levels of care (e.g., medical/surgical, step-down, ICU, etc.).

continue to increase. Hospital throughput will continue to be negatively impacted, and patients will continue to face increased wait times and delays in diagnosis and treatment. Through the Proposed Project, the Applicant seeks to help alleviate these issues. The Proposed Project will ensure timely access to high-quality medical/surgical and ICU inpatient services as well as improve ED throughput and operating efficiency, which will in turn increase patient satisfaction and health outcomes. Accordingly, the Applicant proposes to expand inpatient capacity through the addition of sixty (60) medical/surgical inpatient beds and ten (10) ICU beds at BMC.

**B. NEED FOR EXPANSION OF INPATIENT OR SUITE**

**1. Review of Historic Demand**

The Applicant has identified a need for additional inpatient OR capacity at BMC in addition and in relation to the need for additional inpatient beds. The Applicant seeks to add five (5) new inpatient ORs to its existing inventory of eighteen (18), for a new total of twenty-three (23) inpatient ORs at the Hospital. The need for additional inpatient ORs is evidenced by the Hospital's annual inpatient OR patient and visit volumes. Table 16 outlines these data, which provide that, similar to the Hospital's inpatient bed services, annual patient and visit volume for BMC's inpatient surgical services has remained high over the last three fiscal years despite periods of reduced demand due to the COVID-19 pandemic.

| Table 16: BMC Inpatient Surgical Patients and Visits |                 |        |
|--|-----------------|--------|
| Year   | Unique Patients | Visits |
| FY19   | 4,741           | 5,105  |
| FY20   | 4,114           | 4,434  |
| FY21   | 4,703           | 5,104  |
| FY22 YTD   | 1,184           | 1,211  |

Moreover, Table 17 illustrates the Hospital's historical inpatient surgical case demand with a breakdown by service line. As the data show, the Hospital has experienced a continued and steady demand for its surgical services over the last three fiscal years, notwithstanding increased hospital avoidance and reduced demand due to the COVID-19 pandemic.

| Table 17: BMC Inpatient Surgical Cases |       |       |       |          |
|--|-------|-------|-------|----------|
| Service Line                           | FY19  | FY20  | FY21  | FY22 YTD |
| Cardiothoracic <sup>52</sup>           | 118   | 87    | 151   | 38       |
| General <sup>53</sup>                  | 1,594 | 1,445 | 1,753 | 392      |
| Genitourinary                          | 256   | 193   | 185   | 50       |
| Neurosurgery                           | 385   | 379   | 371   | 84       |
| OB/GYN                                 | 268   | 249   | 286   | 74       |
| Ophthalmology                          | 14    | 12    | 16    | 3        |
| Oral <sup>54</sup>                     | 386   | 316   | 349   | 102      |
| Orthopedics                            | 1,686 | 1,296 | 1,508 | 376      |
| Otolaryngology                         | 271   | 223   | 264   | 40       |
| Pediatrics                             | 41    | 23    | 24    | 5        |

<sup>52</sup> Service specialties included within Cardiothoracic service line are: General – Cardiac and Cardiology.

<sup>53</sup> Service specialties included within General service line are: General – Bariatric, General – Breast, General – Cardiac, General – Gastrointestinal, General – Oncology, General – Pediatric, General – Trauma, and Pulmonary.

<sup>54</sup> Service specialties included within Oral service line are: Oral and Maxillofacial Surgery and Otolaryngology.

|                         |              |              |              |              |
|-------------------------|--------------|--------------|--------------|--------------|
| Plastics                | 57           | 91           | 90           | 28           |
| Podiatry                | 308          | 319          | 251          | 78           |
| Thoracic                | 217          | 182          | 185          | 20           |
| Transplant              | 68           | 57           | 59           | 9            |
| Vascular                | 316          | 284          | 342          | 75           |
| Cardiac Catheterization | 28           | 30           | 31           | 7            |
| <b>Total</b>            | <b>6,013</b> | <b>5,186</b> | <b>5,865</b> | <b>1,381</b> |

As a result of such high demand, BMC’s inpatient ORs are operating at/above benchmark capacity.<sup>55</sup> For example, Table 18 shows utilization data for a representative period from October 2020 through June 2021. These data provide that BMC’s operating capacity was at/above benchmark capacity 5 out of 9 months in FY20, and that the 4 months below benchmark capacity were during a COVID-19 surge period.

| <b>Table 18: BMC Inpatient OR Utilization (Target = 80%)</b> |                            |
|--|----------------------------|
| <b>Month</b>   | <b>OR Utilization Rate</b> |
| October 2020   | 83%                        |
| November 2020  | 80%                        |
| December 2020  | 73%                        |
| January 2021   | 66%                        |
| February 2021  | 70%                        |
| March 2021   | 77%                        |
| April 2021   | 80%                        |
| May 2021   | 81%                        |
| June 2021  | 83%                        |

Months in gray represent COVID-19 surge period.

## 2. Projected Demand and Meeting Future Needs through the Proposed Project

The Hospital anticipates that demand for surgical services will continue to grow into the future. Table 19 illustrates the future year projections for such volume.

| <b>Table 19: BMC Projected Inpatient Surgical Cases</b> |             |             |             |             |
|---|-------------|-------------|-------------|-------------|
| <b>FY24</b>   | <b>FY25</b> | <b>FY26</b> | <b>FY27</b> | <b>FY28</b> |
| 6,571   | 7,331       | 7,567       | 7,567       | 7,567       |

This projected demand is based on several factors including historic trends, a growing and aging population, and proposed arrangements for additional surgical staff to provide greater access to services. With regard to population growth and age trends, the Applicant notes that the projected growth in inpatient surgical volume is largely attributable to the anticipated increase in the number of Greater Boston residents, particularly those within the 65+ age cohort, in the coming years. To this point, the Applicant reiterates that data provided by UMDI suggest that between 2020 and 2040, the Greater Boston region is expected to experience a 9.6% increase in residents ages 0-64 and a 40.7% increase in residents ages 65+. As the Greater Boston population grows, the Applicant anticipates that demand for surgical services will grow as well. In particular, the increase in older adult patients is expected to significantly drive demand, as the surgical procedures offered

<sup>55</sup> Most industry sources indicate that a common benchmark utilization target is 80%, which is that used by the Hospital.

by the Hospital are often necessary to treat conditions that have high incidence rates related to aging (e.g., cardiovascular, neurological, etc.).

Based on these factors, the Applicant projects that inpatient surgical volume will grow to approximately 7,567 cases by FY26. To meet this projected demand and ease the strain on the Hospital's current inpatient ORs, the Applicant proposes the addition of five (5) additional inpatient ORs rooms, as well as related pre- and post-operative/PACU space, including sixteen (16) new pre- and post-operative/PACU beds. This expansion will allow for timely access to high-quality surgical services in New England's largest safety net hospital, which will precipitate higher patient satisfaction and improved patient outcomes.

### C. NEED FOR OTHER PROJECT COMPONENTS

Finally, the Applicant proposes various other construction and renovation projects at BMC, as detailed above. These project components are necessary to accommodate the proposed inpatient expansion projects, support campus infrastructure reorganization efforts, and improve existing services, facilities, and patient experience and wayfinding at the Hospital. These additional projects are included in this Application as the Hospital's combined foreseeable capital expenditures for FY22 exceed the inpatient minimum capital expenditure.

#### F1.a.iii Competition:

**Provide evidence that the Proposed Project will compete on the basis of price, total medical expenses, provider costs, and other recognized measures of health care spending. When responding to this question, please consider Factor 4, Financial Feasibility and Reasonableness of Costs.**

The Proposed Project competes on the basis of price, TME, provider costs, and other recognized measures of health care spending by addressing BMC's current capacity constraints and providing timely access to services for all patients, including the Hospital's large under-resourced patient population. Through the expansion of inpatient bed and surgical capacity, BMC will reduce overcrowding in its ED as well as create operational efficiencies throughout the Hospital. There are positive financial and clinical impacts associated with providing timely access to care and moving patients from the resource-intensive ED to the inpatient setting.

Research provides that ED boarding has a number of negative impacts on patient care and hospital operations. ED boarding prevents incoming patients from being treated in a timely manner, leads to increased rates of "left without being seen," and increases the rate of patients leaving against medical advice, a course of action taken by some patients frustrated by long wait times. The boarding of patients in the ED exacerbates certain medical conditions, especially for those under-resourced patients who may have increased co-morbidities when seeking care, as well as increases the ALOS and definitive treatment. All of these outcomes in turn are associated with increased costs.<sup>56</sup> In 2017, Schreyer and Martin reviewed the cost of ED boarding and found that maintaining an admitted patient in an ED bed costs a hospital twice as much as an inpatient bed when accounting for personnel and other resource costs.<sup>57</sup> A more recent study conducted in 2020 found a strong correlation between measures of ED crowding, such as ED boarding and

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<sup>56</sup> Hoot & Aronsky, *supra* note 42; Bernstein, et al., *supra* note 44; Olshaker. *Managing emergency department overcrowding*, 27 EMERG. MED. CLIN. NORTH AMERICA 593 (2009), available at <https://www.sciencedirect.com/science/article/abs/pii/S0733862709000716?via%3Dihub>.

<sup>57</sup> Schreyer & Martin, *The Economics of an Admissions Holding Unit*, 18 WEST J. EMERG. MED. 553 (2017), available at <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5468058/>.

risk-adjusted hospital spending, leading the authors to call for improved access to care and better patient flow.<sup>58</sup> BMC will reduce overall ED boarding by increasing inpatient bed and surgical capacity, positively impacting measures of health care spending as well as overall clinical quality outcomes for patients and satisfaction for providers and patients.

Moreover, as discussed in Factor F1.b.1, peer-reviewed literature details that surgical delays impact patient health outcomes as well as hospital resources and provider satisfaction. While the actual financial costs of surgical delays are challenging to analyze, one study approximated that it is about \$20 per minute of delay, based on 2016 data.<sup>59</sup> Again, timely access to care impacts both quality and cost measures.

The Proposed Project also competes on the basis of recognized measures of health care spending by allowing BMC to extrapolate upon successful population health management and value-based reimbursement successes – by screening and assisting more patients with costs associated with the social drivers of health. A report from the American Hospital Association provides that socioeconomic factors are responsible for approximately 40% of a patient's health, while access to care and overall quality care account for only 20%.<sup>60</sup> Consequently, by addressing patients' SDoH needs, providers can significantly reduce health care costs. Examples of programs that reduce health care costs overall include addressing food insecurity through available food resource programs and lower-cost grocery stores, providing access to affordable housing, and creating transportation programs that make accessing health care and other social support services easier.<sup>61</sup>

For many years, BMC has been a leader in Massachusetts by integrating SDoH programming into its clinical models and ensuring that patients' health care and SDoH needs are addressed. The Hospital has invested in a diverse group of community partnerships throughout its various targeted neighborhoods. Some of these investments include: \$1 million for a no-interest loan and a \$400,000 operating subsidy to support a new, Good Food Markets in a new housing development in Roxbury; \$1 million for a stabilization fund that will provide grants to community-based organizations to help families avoid eviction in and around Boston; and \$1 million to Pine Street Inn, Boston Health Care for the Homeless Program, and other community partners to create a housing stabilization program for individuals with complex medical problems, including SUDs. The Proposed Project will allow BMC to screen additional patients for SDoHs and further invest in social programming, ultimately leading to reductions in health care costs.

Finally, the Proposed Project will compete on recognized measures of health care spending as it is designed to conservatively increase inpatient bed and OR capacity by prioritizing BMC's existing space and infrastructure through small additions and interior renovations and relocations rather than building anew. By renovating its current physical plant, the Hospital will be able to use existing resources reducing the overall costs of the Proposed Project and ensuring its financial

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<sup>58</sup> Baloescu, et al., *The cost of waiting: Association of ED boarding with hospitalization costs*, 40 AMERICAN J. EMERG. MED. 169 (2021).

<sup>59</sup> Van Winkle, et al., *Operating Room Delays: Meaningful Use in Electronic Health Record*, COMPUTERS, INFORMATICS, NURSING (2016), available at [https://nursing.duke.edu/sites/default/files/vanwinkle\\_article.pdf](https://nursing.duke.edu/sites/default/files/vanwinkle_article.pdf).

<sup>60</sup> *Social Determinants of Health*, AMERICAN HOSPITAL ASSOCIATION, <https://www.aha.org/social-determinants-health/populationcommunity-health/community-partnerships>; LaPointe, *How Addressing Social Determinants of Health Cuts Healthcare Costs*, REVCYCLE INTELLIGENCE: VALUE BASED CARE, <https://revcycleintelligence.com/news/how-addressing-social-determinants-of-health-cuts-healthcare-costs> (last visited Jul. 20, 2022).

<sup>61</sup> LaPointe, *supra* note 60.

feasibility. Accordingly, the Proposed Project is reasonable and competes on the basis of recognized measures of health care spending.

**F1.b.i Public Health Value/Evidence-Based:**

**Provide information on the evidence-base for the Proposed Project. That is, how does the Proposed Project address the Need that Applicant has identified.**

Through the Proposed Project, the Applicant seeks to address inpatient capacity constraints and related demands at BMC due to challenges inherent in BMC's historical physical campus layout that have been exacerbated by recent changes in the health care environment and increased patient volume. The Proposed Project is designed to implement strategic space modifications to meet the growing demand for inpatient services, positively impact ED throughput and operations, increase patient satisfaction and health outcomes, and ensure timely access to New England's largest safety net hospital. Factors F1.a.ii and F1.a.iii describe how the various Proposed Project components will contribute to these goals and meet the Applicant's patient panel need in a cost-effective manner. As detailed herein, the Proposed Project components also are supported by evidence-based literature that illustrates the essential role that safety net hospitals, like BMC, play in the health care system and details the importance of adequate inpatient bed and surgical capacity on hospital operations and patient satisfaction and outcomes.

**A. IMPORTANCE OF SAFETY NET HOSPITALS, INCLUDING BMC**

BMC and other safety net hospitals play an essential role in the United States and the Massachusetts health care systems by providing indispensable care to low-income and vulnerable populations, including the uninsured and individuals with Medicaid as well as populations facing health inequities, such as racial and ethnic minorities. Despite the significant reduction in uninsurance levels in Massachusetts that occurred with health care reform, the demand for care at safety net facilities continues to rise.<sup>62</sup> Most safety net patients do not view these facilities as providers of last resort; rather, they prefer the types of care that are offered there and use the facilities willingly.<sup>63</sup> Being that BMC and other safety net hospitals are anticipated to continue to play a disproportionately large role in providing inpatient, emergency, and ambulatory care to the area's most under-resourced patients into the future, it is essential to achieving the objectives of equitable care that such hospitals have the resources and depth of services necessary to provide such disadvantaged patients with timely access to high-quality care that does not jeopardize patient outcomes.<sup>64</sup> The Proposed Project seeks to facilitate these goals.

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<sup>62</sup> Lasser, et al., *Massachusetts Health Reform's Effect on Hospitals' Racial Mix of Patients and on Patients' Use of Safety-net Hospitals*, 54 MEDICAL CARE 827 (2016), available at <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4989238/>; Ku, et al., *Safety-Net Providers After Health Care Reform: Lessons From Massachusetts*, 8 ARCH INTERN. MED. 1379 (2011), available at <https://jamanetwork.com/journals/jamainternalmedicine/fullarticle/1105879>; Mohan, et al., *The health of safety net hospitals following Massachusetts health care reform: changes in volume, revenue, costs, and operating margins from 2006 to 2009*, 43 INT. J. HEALTH SERV. 321 (2013), available at <https://pubmed.ncbi.nlm.nih.gov/23821908/>.

<sup>63</sup> Lasser, et al., *supra* note 62; Ku, et al., *supra* note 62; Mohan, et al., *supra* note 62.

<sup>64</sup> Lasser, et al., *supra* note 62; Ku, et al., *supra* note 62; Mohan, et al., *supra* note 62; Kim, et al., *The Importance of Safety-Net Hospitals in Emergency General Surgery*, J. GASTROINTESTINAL SURGERY (2018), available at [https://www.researchgate.net/profile/Young-Kim-122/publication/326565167\\_The\\_Importance\\_of\\_Safety-Net\\_Hospitals\\_in\\_Emergency\\_General\\_Surgery/links/5b6300f30f7e9bc79a762ac1/The-Importance-of-Safety-Net-Hospitals-in-Emergency-General-Surgery.pdf](https://www.researchgate.net/profile/Young-Kim-122/publication/326565167_The_Importance_of_Safety-Net_Hospitals_in_Emergency_General_Surgery/links/5b6300f30f7e9bc79a762ac1/The-Importance-of-Safety-Net-Hospitals-in-Emergency-General-Surgery.pdf).

## B. EVIDENCE SUPPORTING THE PROPOSED INPATIENT BED EXPANSION

The major component of the Applicant's Proposed Project is the expansion of inpatient bed capacity by sixty (60) additional medical/surgical beds and ten (10) additional ICU beds. In addition to being an effective approach to treating various conditions, generally speaking, an adequate supply of inpatient beds is also an important way to combat patient flow issues, such as ED boarding and ED crowding.<sup>65</sup> For BMC, an adequate supply of inpatient beds is necessary to combat such issues.

To this point, the Applicant notes that ED boarding and ED crowding are caused by multiple factors, including "input" and "output" factors.<sup>66</sup> Input factors include the volume, types, and acuity of patients.<sup>67</sup> As discussed in Factor F1.a.ii, BMC has experienced high volumes of inpatients, as well increases in utilization, acuity, age, and vulnerability across its medical/surgical and ICU inpatient populations since FY19, all of which impact hospital capacity. Being that projections indicate that these input factors will continue to be impactful into the future, output solutions are needed to help resolve ED throughput and operational challenges at BMC.

With regard to output, several studies indicate that access block, i.e., delays in admission of patients to hospital inpatient beds from EDs due to lack of inpatient beds, is the single most important cause of ED boarding and crowding.<sup>68</sup> Significantly, such crowding is generally accepted as a reason for decreased efficiency and quality of care, and has also been linked to significant patient harm, including morbidity and mortality related to consequential delays of treatment for both high- and low-acuity patients, ambulance diversion, increased adverse events, preventable errors, staff burnout, higher costs, and decreased patient satisfaction.<sup>69</sup> To improve ED performance, the evidence-based literature asserts that steps need to be taken to reduce access block and improve patient flow.<sup>70</sup> Specifically, expansion of functional inpatient capacity is necessary to improve output and reduce ED boarding and crowding.<sup>71</sup> In accordance with this well-established solution, the Applicant proposes to expand its inpatient capacity by seventy (70) beds.

## C. EVIDENCE SUPPORTING THE PROPOSED INPATIENT OR EXPANSION

The other major component of the Applicant's Proposed Project is the expansion of inpatient OR capacity by five (5) additional inpatient ORs and additional pre- and post-operative/PACU space. The evidence-based literature supports these additions both by discussing benchmark utilization for inpatient ORs and describing the impacts of exceeding such benchmarks. With regard to benchmark utilization, most industry sources indicate that a common target is 80%, which is that used by the Hospital.<sup>72</sup> When utilization exceeds this benchmark, the risk of scheduled outpatient

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<sup>65</sup> Boyle, et al., *supra* note 42.

<sup>66</sup> Boyle, et al., *supra* note 42.

<sup>67</sup> Boyle, et al., *supra* note 42.

<sup>68</sup> Boyle, et al., *supra* note 42; Forero, et al., *supra* note 42; Hoot & Aronsky, *supra* note 42; D.M. Fatovich, *supra* note 42; Forster et al., *supra* note 42.

<sup>69</sup> Forero, et al., *supra* note 42; Sonis, et al., *supra* note 44; Bernstein, et al., *supra* note 44; Kelen, et al., *Emergency Department Crowding: The Canary in the Health Care System*, NEJM CATALYST (2021), available at <https://catalyst.nejm.org/doi/full/10.1056/CAT.21.0217>.

<sup>70</sup> Boyle, et al., *supra* note 42; Forero, et al., *supra* note 42; Kelen, et al., *supra* note 69.

<sup>71</sup> Boyle, et al., *supra* note 42; Forero, et al., *supra* note 42; Kelen, et al., *supra* note 69.

<sup>72</sup> Hosseini & Taaffe, *Allocating operating room block time using historical caseload variability*, HEALTH CARE MANAGEMENT SCIENCE (2015), available at [https://www.researchgate.net/publication/260485339\\_Allocating\\_operating\\_room\\_block\\_time\\_using\\_historical\\_caseload\\_variability](https://www.researchgate.net/publication/260485339_Allocating_operating_room_block_time_using_historical_caseload_variability); *What is Surgical Block Utilization?*, CASE CTRL (2021), <https://blog.casectrl.com/what-is-surgical-block->

procedures being delayed or moved due to emergency surgeries that take longer than expected increases substantially.

To this point, the literature details that surgical delays have real impacts on patient health outcomes, as well as hospital resources and provider satisfaction and collaboration.<sup>73</sup> In terms of hospital operations, delays pose a barrier to optimal patient flow, affect interprofessional teamwork across medical disciplines, and result in increased costs.<sup>74</sup> While the actual financial costs of surgical delays are difficult to determine due to varying factors such as administrative overhead, type of surgery, reasons for delay, and regional costs, an estimate of cost is about \$20 per minute of delay, based on 2016 data.<sup>75</sup>

For patients, delays raise anxiety levels, negatively impact satisfaction, and ultimately place patients at risk.<sup>76</sup> Progression is a key feature of surgical diseases, and delays in treatment result in worse outcomes and higher mortality across a broad spectrum of diseases.<sup>77</sup> For example, for certain cancers, advancement to later stages can occur in as little as a matter of weeks, often well within projected delays of elective surgical procedures, and more advanced disease at the time of surgery may result in increasingly morbid operations associated with higher costs.<sup>78</sup> Even the deferral of procedures traditionally considered low-acuity, such as cataract surgery, joint replacements, or bariatric cases, have material implications through reduced activity, mobility, and quality of life for patients.<sup>79</sup>

Moreover, certain socioeconomic groups are already disadvantaged with regard to receipt of timely surgical treatment, and delays exacerbate the challenges these vulnerable groups face.<sup>80</sup> Many patients struggle to find time off work, secure childcare, and obtain transportation to and from the hospital.<sup>81</sup> Delays result in these at-risk patients being more difficult to reach and facing more challenges in advocating for themselves, and ultimately have a negative impact on equitable access to surgical care.<sup>82</sup> These consequences are particularly significant with regard to BMC, which is New England's largest safety net hospital and serves the area's most vulnerable patient population.

In consideration of these impacts, and the fact that BMC's inpatient ORs are already operating at/above benchmark capacity, the Applicant proposes implementation of the Proposed Project.

**F1.b.ii Public Health Value/Outcome-Oriented:**

**Describe the impact of the Proposed Project and how the Applicant will assess such impact. Provide projections demonstrating how the Proposed Project will improve health outcomes, quality of life, or health equity. Only measures that can be tracked and reported over time should be utilized.**

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utilization (last visited Jul. 20, 2022); Moshier & Ulep, *Key metrics to improve your operating room utilization*, PLANTE MORAN (2019), <https://www.plantemoran.com/explore-our-thinking/insight/2019/02/key-metrics-to-improve-your-operating-room-utilization> (last visited Jul. 20, 2022).

<sup>73</sup> Fu, et al., *The Consequences of Delaying Elective Surgery: Surgical Perspective*, 272 ANN. SURG. e79 (2020), available at <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7224620/>;

<sup>74</sup> Van Winkle, et al., *supra* note 59.

<sup>75</sup> Van Winkle, et al., *supra* note 59.

<sup>76</sup> Van Winkle, et al., *supra* note 59.

<sup>77</sup> Fu, et al., *supra* note 73.

<sup>78</sup> Fu, et al., *supra* note 73.

<sup>79</sup> Fu, et al., *supra* note 73.

<sup>80</sup> Fu, et al., *supra* note 73.

<sup>81</sup> Fu, et al., *supra* note 73.

<sup>82</sup> Fu, et al., *supra* note 73.

To assess the impact of the Proposed Project, the Applicant has developed the following outcome measures. The Applicant will report this information to the Department's DoN Program staff as part of its annual report required by 105 CMR 100.310(A)(12) following implementation of the Proposed Project.

- 1. Patient Experience and Satisfaction:** Patients that have positive care experiences are more likely to seek additional treatment when necessary. BMC collects patient experience and satisfaction data via the Hospital Consumer Assessment of Healthcare Providers and Systems ("HCAHPS") survey, which is administered to recently discharged inpatients. The HCAHPS survey focuses on aspects of the hospital experience that patients have said are important to them to have an optimal stay, including but not limited to communication with doctors and nurses, responsiveness of Hospital staff, and cleanliness and quietness of the Hospital environment. Additionally, the HCAHPS survey asks patients to provide an overall rating of the Hospital and whether they would recommend it to family and friends. Due to the increased inpatient surgical and bed capacity as well as the increased number of private medical/surgical and ICU rooms, the Applicant anticipates that inpatients will report favorably on the Hospital environment and that overall inpatient experience and satisfaction ratings will improve.

**Measure:** The Applicant will collect and provide data from the HCAHPS survey specific to the Hospital environment as well as overall rating and likelihood to recommend.

**Projections:** Given that the Proposed Project will not be implemented for several years, the Applicant will provide baseline measures and three years of projections one year following implementation of the Proposed Project.

- 2. ALOS in the ED:** This measure reviews the amount of time a patient must wait in the ED for an inpatient bed prior to being admitted to BMC. Due to increased inpatient bed capacity, the Applicant anticipates that ALOS in the Hospital's ED will be reduced.

**Measure:** This measure will collect and provide data based on the following calculation: the difference between the arrival date/time and the ED departure date/time for all ED patients admitted to an inpatient bed.

**Projections:** Given that the Proposed Project will not be implemented for several years, the Applicant will provide baseline measures and three years of projections one year following implementation of the Proposed Project.

- 3. Hospital Acquired Pressure Injuries ("HAPI"):** The Applicant will review the incidence of HAPI across BMC's inpatients. Given the proposed increase in inpatient capacity, the Applicant anticipates a reduction the incidence of HAPI due to a reduction in ED ALOS and an increase in receipt of timely care in the appropriate setting.

**Measure:** This measure will collect and provide data using the National Database of Nursing Quality Indicators measure on pressure injuries as follows: number of HAPI/total inpatient census. While the measure will be reported annually, it will show data by month.

**Projections:** Given that the Proposed Project will not be implemented for several years, the Applicant will provide baseline measures and three years of projections one year following implementation of the Proposed Project.

4. **Inpatient Surgical Wait Times:** This measure reviews the amount of time a patient must wait for surgery once it has been indicated. Due to increased inpatient OR capacity, the Applicant anticipates that wait times will be reduced.

**Measure:** This measure will collect and provide data based on the following calculation: the number of days from the date that the surgery is indicated to the scheduled surgery date.

**Projections:** Given that the Proposed Project will not be implemented for several years, the Applicant will provide baseline measures and three years of projections one year following implementation of the Proposed Project.

5. **Surgical Site Infection Rates:** This measure will monitor and evaluate the rate at which BMC's inpatient surgical patients develop surgical site infections and aims to reduce or eliminate such occurrences.

**Measure:** This measure will collect and provide data on the number of inpatients with a surgical site infection within thirty (30) days of surgery.

**Projections:** Given that the Proposed Project will not be implemented for several years, the Applicant will provide baseline measures and three years of projections one year following implementation of the Proposed Project.

F1.b.iii **Public Health Value/Health Equity-Focused:**

**For Proposed Projects addressing health inequities identified within the Applicant's description of the Proposed Project's need- base, please justify how the Proposed Project will reduce the health inequity, including the operational components (e.g. culturally competent staffing). For Proposed Projects not specifically addressing a health disparity or inequity, please provide information about specific actions the Applicant is and will take to ensure equal access to the health benefits created by the Proposed Project and how these actions will promote health equity.**

As outlined throughout this narrative, through the Proposed Project, the Applicant seeks to alleviate inpatient capacity constraints and related demands at the Hospital, ensure timely access to medical/surgical and ICU inpatient services, improve ED throughput and operating efficiency, and increase patient satisfaction and health outcomes. In order to achieve these goals, BMC is further dedicated to addressing deep health inequities that exist among the Hospital's patients and ensuring BMC's sustainability as an academic safety net hospital providing exceptional care to Boston's under-resourced population. Details on BMC's essential role in the community and these efforts are detailed herein.

A. **SAFETY NET HOSPITAL**

As noted throughout this narrative, BMC is New England's largest safety net hospital, and as such, is dedicated to providing accessible care for everyone regardless of insurance status or ability to pay. The majority of communities that BMC serves are Boston census tracts that are

federally-designated medically underserved populations. As detailed in Factor F1.a.i, nearly 50% of BMC's patients receive insurance coverage through a public payer and another 2.7% receive free care or are covered under the HSN. Moreover, the panels for the specific components included within the Proposed Project show even higher percentages of patients who receive insurance coverage through a public payer – in FY21, BMC's medical/surgical public payer mix included 78% of all medical/surgical patients, BMC's ICU public payer mix included 79% of all ICU patients, and BMC's inpatient surgical public payer mix included 71.2% of all medical/surgical patients.

Notwithstanding widespread health reform efforts in the state from 2006 to 2008 which expanded access to public medical insurance, created a health insurance exchange for more affordable private insurance, and expanded access to care in non-safety net hospitals, research suggests that safety net hospitals like BMC remain an important and vital component of the health care system. Specifically, the research shows that the proportion of discharges among minority patients receiving inpatient care at minority-serving hospitals in Massachusetts increased after the implementation of health insurance reform measures which expanded access to care in non-safety net hospitals. Researchers point to several possible explanations for the increase in the proportion of minorities cared for at minority-serving hospitals in Massachusetts over the study period, including, but are not limited to "loyalty" of patients and access to services such as insurance assistance, interpretation, and intensive case management which are often unavailable at other facilities due to poor reimbursement rates.<sup>83</sup>

Interpretation and case management services are detailed below as well as in Factor F1.c. With regard to insurance assistance, the Applicant highlights the Hospital's Patient Financial Assistance Program. The Hospital, in collaboration with its CHC partners, provides high quality, accessible, medically necessary services without cost or at a reduced cost to eligible patients. Specifically, the Hospital helps uninsured and underinsured individuals apply for health coverage through a public assistance program or the Hospital's financial assistance program (including but not limited to MassHealth, the premium assistance payment program operated by the Health Connector, the Children's Medical Security Program, the HSN, and Medical Hardship). The Hospital does not charge patients deemed eligible under the financial assistance policy more than Amounts Generally Billed for emergency or other medically necessary care, and provides financial assistance to low-income uninsured and underinsured patients who are Massachusetts residents with incomes up to 300% of the federal poverty level.

Safety net hospitals like BMC are anticipated to continue to play a disproportionately large role in providing care to the area's most under-resourced patients into the future. It is therefore essential to achieving the objectives of equitable care that such hospitals have the resources and depth of services necessary to provide such disadvantaged patients with timely access to high-quality care that does not jeopardize patient outcomes.<sup>84</sup> The Proposed Project seeks to facilitate these goals by increasing access to high-quality inpatient services for all of BMC's patients.

#### B. #123EQUITY PLEDGE CAMPAIGN

BMC also participates in the American Hospital Association's #123Equity Pledge Campaign. Launched in 2015, this Campaign builds on the efforts of the National Call to Action to Eliminate Health Care Disparities (a joint effort of the American Hospital Association, American College of Healthcare Executives, Association of American Medical Colleges, Catholic Health Association

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<sup>83</sup> Lasser, et al., *supra* note 62; Ku, et al., *supra* note 62; Mohan, et al., *supra* note 62.

<sup>84</sup> Lasser, et al., *supra* note 62; Ku, et al., *supra* note 62; Mohan, et al., *supra* note 62; Kim, et al., *supra* note 64.

of the United States and America's Essential Hospitals) and asks hospital and health system leaders to begin taking action to accelerate progress on the following areas: (1) increasing the collection and use of race, ethnicity, language preference and other socio-demographic data; (2) increasing cultural competency training; (3) increasing diversity in leadership and governance; and (4) improving and strengthening community partnerships. Examples of ways in which BMC has accelerated progress in these areas are addressed below in the discussion related to culturally appropriate care and language access.

### C. CULTURALLY APPROPRIATE CARE AND LANGUAGE ACCESS

The further ensure equal access to Hospital services, BMC has adopted the United States Department of Health and Human Services Office of Minority Health's Culturally and Linguistically Appropriate Services ("CLAS") standards. Specifically, BMC has supported the adoption of the CLAS standards in the following ways, as divided into the six categories provided in DPH's guide to CLAS, "*Making CLAS Happen: Six Areas for Action*":

- 1. Foster Cultural Competence:** The Hospital requires staff to complete various CLAS training programs, the objectives of which are to ensure effective use of interpreter services and CLAS standards. Additionally, in FY21, BMC's Interpreter Services Department ("ISD"), along with Pediatrics, created a tool called "The 10 and 10". This tool provides 10 tips on working with interpreters and 10 tips on working with multicultural patients. Providers at BMC use this tool to train staff on the use of interpreters and help them have a better understanding and respect of patient diversity. BMC will continue working to expand this tool for FY22 and beyond.
- 2. Build Community Partnerships:** BMC is deeply rooted in the Boston community and is committed to collaborating with community providers and organizations to improve the health and well-being of the vulnerable patient populations it serves. In addition to partnering with various CHCs to meet patients' health care needs in the communities where they live, BMC also has long-term relationships with many diverse community-based service organizations and offers a number of hospital-based programs and initiatives aimed at addressing health needs outside of the traditional medical model. Examples include, but are not limited to, investments in housing, food-related programs, programs related to careers in health care and education for youth, the Violence Intervention Advocacy Program, Elders Living at Home Program, Project TRUST, and StreetCred.

Moreover, the Applicant highlights the Hospital's Patient and Family Advisory Council ("PFAC"), its Community Advisory Board ("CAB"), and its membership in the Boston CHNA-CHIP Collaborative. As described in further detail in Factor F1.d, the Hospital's PFAC includes patients, families, and staff that are representative of the community served by BMC, and aims to improve operations across the System and achieve its mission for patient-centered and equitable care by inform decision-making and the development of programs, services, and strategic projects at the Hospital. Additionally, the CAB is comprised of diverse members that are representative of various sectors (i.e., local public health departments, municipalities, education, housing, social services, regional planning and transportation agencies, the private sector, community health centers, and community-based organizations) who strategically advise the Hospital on how best to use investments to catalyze change and leverage other city, state, federal and other philanthropic investments. With regard to the Boston CHNA-CHIP Collaborative, the Applicant notes that the group, comprised of various Boston health centers, community-

based organizations, hospitals, community residents, and the Boston Public Health Commission, seeks to achieve sustainable positive change in the health of Boston by collaborating with communities, sharing knowledge, aligning resources, and addressing root causes of health inequities.

Finally, the Applicant notes that it is one of BMC's Health Equity Accelerator (discussed further at Factor F1.b.iv below) priorities to build on the Hospital's existing community partnerships and initiatives and continue to invest in eliminating barriers and create paths for wealth-building in the communities it serves. This priority recognizes the fact that one of the root causes of health inequity is barriers to economic mobility. The largest effort of this kind at BMC is the Boston Opportunity System ("BOS") Collaborative, a partnership across multiple local organizations to create jobs and affordable housing. The BOS Collaborative functions as a deep place-based initiative of health equity work for the System and is integrated with other SDoH and workforce initiatives. BMC, as the backbone organization of the BOS Collaborative, will continue to work in the future with funding partners, community-based organizations, the City of Boston, and fellow anchor institutions to generate a powerful portfolio of work across pillars of housing-based initiatives, anchor institutions' investments, and economic mobility pathways targeting Boston's most disinvested neighborhoods.

- 3. Collect and Share Diversity Data:** BMC, like all of the Applicant's provider locations, utilizes Epic as its Electronic Health Record ("EHR"). Through Epic, the Hospital is able to collect detailed patient demographic data, including but not limited to gender, age, race/ethnicity, geographic origin, and language. All patients, including those utilizing the Hospital's inpatient services, are asked about their demographic data at the time of registration and such data are inputted into the patient's EHR, which is made centrally available across BMC's various locations to ensure coordination of care, appropriate care transitions, and the provision of high-quality care. Additionally, the Hospital tracks utilization of language and interpreter services, including, but not limited to, top languages engaged, utilization of telephonic and remote services, American Sign Language ("ASL") services performed, and details around any reported service issues. This information is reported on an annual basis to DPH's Office of Health Equity and, along with the patient demographic data, is also used to inform service and program offerings and promote health equity and culturally competent care at the Hospital and in the community.

As noted above, the Hospital also is a member of the Boston CHNA-CHIP Collaborative. As a member, the Hospital works with the other Collaborative members to conduct a joint, participatory community health needs assessment ("CHNA") for Boston every three (3) years discussing the social, economic, and health needs and assets in the community, and develop a collaborative community health improvement plan ("CHIP") to address the issues identified through the CHNA as top priority. All of these processes involve the collection and sharing of diversity data to meaningfully contribute to a healthy Boston with strong communities, connected residents and organizations, coordinated initiatives, and equitable opportunities for every individual to live a healthy life.

Finally, as discussed in further detail below, as BMC cared for COVID-19 patients throughout 2020 and into 2021, BMC researchers led a first-of-its-kind study that investigated the differential impact of COVID-19 on racial groups within the Hispanic community. This study highlighted not only that Hispanic groups as a whole have worse outcomes than non-Hispanic white individuals, but also that Hispanic Black individuals had the highest rates of comorbidities, admittance to the ICU, ventilation, and death due

to COVID-19. Analysis of the national data underscored that these disparities were not rooted in biology, but rather, reflect the systemic impacts of racism and inequity. In response to such data, BMC took urgent action to address the blatant racial inequities in new ways, including introducing new services (including home visits, telehealth, contact tracing, and other public health tools) and providing education on and access to vaccination for communities of color. Significantly, such data collection and responsive efforts served as a model for BMC's new Health Equity Accelerator, which is discussed in detail below at Factor F1.b.iv.

4. **Benchmark: Plan and Evaluate:** BMC's ISD, part of the Support Services Department, is responsible for facilitating effective communication between staff and patients at the Hospital. Specific details around interpreter services policies and procedures are provided below and explain the ways in which the ISD ensures language access for BMC's culturally and linguistically diverse patient panel. With regard to reviewing and assessing such services, the Applicant notes that the ISD collaborates with other departments and committees at the Hospital to evaluate and continually improve the provision of quality language services. Specifically, interpreter services are evaluated via statistical information received from phone/video vendors and the Hospital's internal dispatching system, internal provider surveys, quality improvement studies, feedback provided via email, and data from the Hospital's RL Incident Reporting System. BMC uses this information to hold itself and its vendors accountable for services provided, respond to complaints and brainstorm best steps forward to avoid similar issues in the future, analyze and update workflows as necessary, determine if new languages need to be added or if interpreters of certain languages need to be stationed in specific departments depending on volume and patient populations serviced, etc. The Hospital also works with the Department's Office of Health Equity each year to complete its Annual Report, evaluate interpretation and language access programs available at BMC, and ensure that such services and programs are meeting the needs of its patient population.

Additionally, the Applicant notes that BMC's mission of providing "exceptional care without exception" for its diverse patient population extends beyond language access. For instance, in accordance with such mission, BMC has deployed the Health Equity Accelerator. While additional detail around the Health Equity Accelerator is provided at Factor F1.b.iv, the Applicant highlights here that at its core the Accelerator is a tool for evaluating health injustice and transforming health care to deliver health justice and well-being among groups of different races and ethnicities; i.e., it is a tool for looking at how health care is delivered to people of different races, ethnicities, and cultures and planning ways to improve.

5. **Reflect and Respect Diversity:** At BMC, "being our best" means ensuring the Hospital is a place where every member of the community feels secure and welcome, that the contributions of all individuals are respected and celebrated, and that all voices are heard. The variety of perspectives, backgrounds, talents, and experiences that exist at BMC make the Hospital uniquely capable of providing exceptional care without exception. Based on data from 2021, BMC's staff reflected diversity in the following ways:
  - 75% self-identified as female and 25% as male;
  - 48% self-identified as White, 28% as Black/African American, 11% as Asian, 10% as Hispanic/Latino, and 3% as two or more races;
  - 7% of employees were 18-24, 35% were 25-34, 22% were 35-44, 17% were 45-54, 15% were 55-64, and 4% were 65-74; and

- Data from the 2021 Press Ganey Survey diversity questions indicated that the Hospital exhibits organizational strength in the following areas: the organization values employees from different backgrounds, the organization demonstrates a commitment to workforce diversity, coworkers value individuals with different backgrounds, and management treats all employees equally regardless of their background.

BMC's "Culture Code" is one example of how the Hospital is taking targeted actions and measures to ensure that every employee views diversity, equity, and inclusion as part of the organizational DNA and, therefore, operates thoughtfully, considerately, and intentionally. The Culture Code brings to life BMC's core value of "Many Faces Create Our Greatness" by distilling large and seemingly abstract diversity, equity, and inclusion concepts into five (5) elements: (1) See The Other Person (S.T.O.P.); (2) Find your superpower and appreciate the superpowers of others; (3) Missteps happen, so can growth; (4) Make it a 5-star hello; and (5) We stand together. Other initiatives include, but are not limited to, the following: The Glossary for Culture Transformation; Transgender Taskforce; Pathways: A Leadership Acceleration Program; Graduate Medical Education Diversity & Inclusion Council; and the Pharmacy Department All-In Initiative.

- 6. Ensure Language Access:** BMC is committed to reducing linguistic barriers for limited-English proficiency ("LEP") and deaf and hard of hearing ("DHH") patients seeking care at BMC. Being that greater than one-quarter of BMC's patients do not speak English as a primary language, and as part of its dedication to serving everyone, the Hospital offers all medical care and services in 263+ languages – sixteen (16) of which are available via in-person interpretation and 250+ of which can be facilitated otherwise – through its ISD program. One of the oldest and most extensive interpreter services programs in the United States, BMC's ISD includes a team of approximately sixty (60) professional medical interpreters or language facilitators to help patients receive the care they need.

To facilitate effective communication between BMC staff members, patients, and family members, the Hospital has certain interpreter services policies and procedures in place. As outlined in these policies and procedures, BMC's ISD provides, at no cost to patients, professional medical interpreters (ISD staff and contracted freelance interpreters) who possess the necessary language and interpreting skills to competently interpret between providers and LEP and DHH patients at BMC. The role of the interpreter is to provide accurate and impartial interpretation to enable the provider and patient to effectively communicate, removing any language barrier and ensuring equal access to quality care. This includes providing necessary equipment to the visually, speech and hearing impaired. ISD provides these services 24 hours per day and 7 days per week including holidays. If additional resources are needed, authorized bilingual staff, as well as professional telephonic and video interpreters, can also be utilized when available.

Process-wise, registration staff at BMC identify a patient's preferred language spoken information when discussing health care issues and preferred language when reading health care related materials and documents, and the Licensed Independent Practitioner and admitting nurse or patient access representative review the preferred spoken and written language during the admission assessment process. If a patient accepts the services of an interpreter, the following procedures are followed:

- Requesting a spoken language face-to-face interpreter: All spoken languages face-to-face interpreter requests are submitted through BMC's online system, ID-QUEUE.

- Telephone interpretation: Telephone interpretation is available at all times in all inpatient and outpatient areas. All callers may place the call to the vendor (Pacific Interpreters or Language Line Services) directly using the dual handset phones. If additional phones are needed at any location, a request can be made with the ITS helpdesk by calling or by submitting an online ticket.
- Requesting an ASL Interpreter, Tactile interpreter (services for deaf and blind patient), or Certified Deaf Interpreter: During normal business hours, these interpreters can be reached by calling the ISD. After regular business hours or on weekends or holidays, Operator Services can assist in paging the ISD supervisor who will coordinate with the respective department. If no ASL interpreter is available, the on-call supervisor will recommend the usage of the Video Interpreting Unit when appropriate. One-hundred (100) Video Interpreting Units, for communicating in ASL, are available in the ED and various other departments throughout BMC.
- To obtain equipment for DHH patients: During normal business hours, equipment can be accessed by calling the ISD. After regular business hours or on weekends or holidays, Operator Services can assist in paging the ISD supervisor who will coordinate with the respective department. Telecommunications devices for the deaf include TTY/TDD, mobile phone for text messaging and email, and amplified telephones.
- Resources for visually impaired: Telephones with Braille Keys are available in all patient areas. A Braille translation of the Patient's Rights and Responsibilities is available through the ISD and can be requested during regular business hours by calling the ISD or after regular business hours or on weekends or holidays by calling the Operator Services.

Similar to what occurs today at BMC, upon implementation of the Proposed Project, interpreter and translation services will be arranged for all inpatient and surgical patients in need in accordance with these policies.

**F1.b.iv Provide additional information to demonstrate that the Proposed Project will result in improved health outcomes and quality of life of the Applicant's existing Patient Panel, while providing reasonable assurances of health equity.**

BMC is deeply committed to its mission of providing "exceptional care without exception" for its diverse patient population. To this end, the Proposed Project is an example of how BMC seeks to carry out this pursuit by providing patients with timely access to care, thereby improving clinical outcomes and ensuring whole-person treatment. Part of providing holistic care is addressing both the physical needs of a patient, as well as understanding any social drivers that may impact their health, as well as health disparities that may cause gaps in their care.

In 2021, BMC launched its Health Equity Accelerator with "the vision of transforming health care to deliver health justice and well-being. BMC is reimagining a new approach to accelerate its journey toward health equity and address core issues associated with traditional methodologies. Those involved in the accelerator have found that, to understand and address drivers of racial inequities, [one must] challenge conventional wisdom in multiple ways: (1) revisit conclusions derived from standard statistical analyses; (2) adopt a mindset that if you do not find an inequity, you need to look harder; (3) seek novel insights through primary research with the appropriate mix of patients; and (4) engage with community members to achieve both insights and impact. The BMC accelerator addresses these fundamental issues through focused and multidisciplinary

teams that are resourced to be dynamic, to break through convention, and to do things differently.”<sup>85</sup>

Through the Health Equity Accelerator, care teams are seeking to understand how a health system perpetuates health inequities – by looking internally to determine where inequities are present in the patient population, understand the associated drivers, and take accountability.<sup>86</sup> All patients will benefit from this work – as the Hospital seeks to ensure that all patients receive the care and services that they need in the appropriate setting and by a diverse staff.

**F1.c Provide evidence that the Proposed Project will operate efficiently and effectively by furthering and improving continuity and coordination of care for the Applicant's Patient Panel, including, how the Proposed Project will create or ensure appropriate linkages to patients' primary care services.**

To ensure continuity and coordination of care for the Applicant’s patient panel, BMC staff will continue existing population health management processes following implementation of the Proposed Project. These include, but are not limited to, discharge and readmissions programming, Complex Care Management (“CCM”) programming, and screening protocols. Details regarding these programs and processes are provided below.

**A. DISCHARGE AND READMISSIONS PROGRAMMING**

BMC offers various discharge interventions to help link patients to needed services, prevent unnecessary readmissions, and improve health outcomes. Care management team members at BMC coordinate care and provide discharge planning for patients in the Hospital and community. BMC’s nurses, social workers, and other health care professionals work as a team to implement a safe discharge plan and provide patients and families with a range of services, including but not limited to: advocating for the needs of patients and families in the community, providing access to community resources, helping patients and families cope with the emotional impact of illness, negotiating with insurance and managed care companies, assisting in explanation of Durable Power of Attorney for health care and living wills, procuring health care equipment, and coordinating home care services and/or care at skilled nursing and rehabilitation facilities, outpatient clinics, and other locations. All such services are offered with the goal of reducing hospitalization and ED visits and ensuring the right amount of care and services in the appropriate setting, particularly for BMC’s vulnerable patients, by guiding them as they follow their individualized discharge plan.

Recognizing that discharge and readmissions work is particularly challenging in a safety net environment, the Hospital is dedicated to the following targeted priority discharge interventions for FY22 and beyond:

- 1. Post-Discharge Services Bundle:** Recognizing that patients with 7–14-day post hospital discharge follow-up have lower readmission rates, this intervention focuses on providing post hospital discharge follow-up appointments and follow-up phone calls for all patients regardless of risk for readmission and primary care site. Specifically, BMC staff proactively schedule follow-up appointments 48 hours prior to discharge; for any patient with a BMC

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<sup>85</sup> Mendez-Escobar, et al. *Health Equity Accelerator: A Health System’s Approach – Boston Medical Center’s Health Equity Accelerator Aims to Eliminate Barriers to Health Equity*, NEW ENGLAND J. MED. CATALYST (2022), available at <https://catalyst.nejm.org/doi/full/10.1056/CAT.22.0115>.

<sup>86</sup> *Id.*

primary care physician who is discharged without follow-up, the Central Discharge Team attempts to contact the patient and negotiate follow-up. Pertinent to the Proposed Project, the Central Discharge Team has partnered with inpatient and ambulatory staff to strategize the workflow and expand the intervention to cover all inpatients and those patients discharged from the ED. With follow-up appointment scheduling rates continuing to improve, the Hospital plans to further enhance this intervention by partnering with external primary care physician sites and ambulatory clinic leaders to explore direct scheduling and improve appointment compliance.

- 2. General Internal Medicine ("GIM") Post-Discharge Clinic:** The GIM Post-Discharge Clinic is led by a multi-disciplinary team, including dedicated nurses coordinating pre- or post-visit care, a dedicated pharmacy liaison completing medication-fill history for patients scheduled into the clinic, staff performing no-show outreach and rescheduling, and doctors completing in-person and telehealth visits. The criteria to be seen within the GIM Post-Discharge Clinic are as follows: patient discharged within 14 days to home with services or community; moderate or above readmission risk; and either no primary care physician and wishes to be seen or is currently seen by a GIM primary care physician. Patients seen by the GIM Post-Discharge Clinic have exhibited lower risk-adjusted readmission rates than patients without GIM follow up, and BMC has further enhanced compliance among patients using telehealth; this is now primarily a telemedicine model (80% telemedicine and 20% in person). Following implementation of the Proposed Project, patients utilizing BMC's expanded inpatient services who are moderate to high readmission risk will have access to the clinic.
- 3. Monthly Review Process for Medicare Readmissions:** This proposed new standardized Medicare readmissions review process will facilitate identifying drivers and themes of admissions. Specifically, a multi-disciplinary team spanning the spectrum of care at the Hospital, including the Central Discharge Team, pharmacy staff, and inpatient, outpatient and ED staff, will work together to utilize a newly revised tool to review patients discharged, audit medication and follow-up appointment adherence, and identify potential drivers of readmission.
- 4. Hospital Admission Reduction Program ("HARP"):** This is a 30–60-day transitional care management program for patients with Medicare that spans the inpatient and outpatient settings. It is targeted at moderate to high utilizer patients who are 65+ and are covered by Medicare FFS or the Medicare Shared Savings Program. The goal of HARP is to reduce 30-day readmissions and support BMC's patients after hospital discharge. Launched in May 2022, the program identifies patients while they are admitted to BMC and follows them post-discharge into the community with a goal of proactively reaching out to patients during a vulnerable period to reduce readmissions by catching clinical decompensation in the immediate post-discharge period. Through HARP, the Hospital seeks to reduce readmissions by 20-25% in this cohort, leading to an improvement in the Hospital's overall readmissions rate. Following implementation of the Proposed Project, patients utilizing BMC's expanded inpatient services who are moderate to high utilizers, 65+, and covered by Medicare will have access to HARP.
- 5. Disease Specific Programs:** For certain diseases, the Hospital has implemented specific discharge programs. Currently, there are specific programs available for Chronic Obstructive Pulmonary Disease ("COPD") and heart failure patients. The Hospital will continue to work to identify other disease groups that may benefit from specific, targeted discharge programs and implement such programs accordingly.

## B. CCM PROGRAMMING

The Hospital also offers a CCM program for its ACO patients. Administered by the Population Health Services division, the CCM program at BMC is a community-facing program that provides intensive care management services for patients presenting with complex medical, mental health, and social needs (i.e., patients presenting with chronic medical conditions, behavioral health/SUD, or barriers related to SDoH). The primary goal of the CCM program is to establish patients with ambulatory care and community-based supports to achieve patient-identified goals, improve health related outcomes, and reduce avoidable hospital utilization. Through collaboration, the CCM program coordinates care, addresses social barriers, and engages patients as active participants in their care, striving to create a responsive healing environment with dignity and respect for the individuals and communities BMC serves.

The CCM program's core team are multi-disciplinary and based in practice and community settings, with customized supports for people with behavioral health conditions and housing needs. Specifically, CCM staff are nurses, community wellness advocates, pharmacists, housing specialists, and social workers who are based in the clinical setting, integrated with primary and inpatient care, and collaborate with other providers, home health, community agencies and others to support patients with their goals. Success in the program depends heavily on relationships with local teams and resources; community-based supports include shelter and housing supports, local site care management, community partners, social service organizations, in-home services, specialty care, and domestic violence resources.

CCM addresses the diverse set of needs that BMC's high-risk patients face across the spectrum of care, as follows:

- Longitudinal Care, including: catalogue and address psychosocial and clinical needs; focus on primary care/specialty service engagement; and promote self-efficacy and chronic disease self-management;
- Transitional Care, including: update and address any changes to care plan after discharge; interventions to lower readmission risk; and alert and obtain input from primary care physician and key providers around transition of care; and
- Urgent Access, including expedited nursing evaluation/contact; engagement of primary care physician/key providers for urgent questions; and protocols for deployment of urgent behavioral health/SDoH resources.

Through close partnership with groups, strong analytics, and close clinical oversight, impact data show that the CCM program helps patients manage their health and reduces unnecessary inpatient utilization for enrolled members. Following implementation of the Proposed Project, the Applicant will continue to offer this CCM programming to patients, thereby ensuring continued provision of high-quality care management beyond the Hospital's walls.

## C. SCREENING PROTOCOLS

Finally, the Applicant highlights BMC's SDoH screening protocols. In 2018, BMC implemented THRIVE, an EHR-based SDoH screening and referral program, which strives to understand social needs impacting patients' health, improve patient care by communicating social needs to care teams, provide patients with information on hospital-based and community resources that can mitigate their social needs, and partner with community-based organizations to eliminate systemic barriers that prevent patients from thriving. In order to achieve these goals, the THRIVE screening protocol involves the following operational components: screen for SDoH, capture responses as standard ICD-10 visit diagnosis codes in the EHR, and provide patients with resource referral

guides to help address unmet social needs for which they desire help. The following eight (8) domains of potentially unmet SDoH needs are currently included in the THRIVE screener: housing and food insecurity, inability to afford medications, utilities or transportation, need for employment or education, and difficulty taking care of children or other family members. When a patient requests assistance with an unmet need, referral guides are automatically printed with information about resources available to them both at BMC and in the community, and the EHR also prompts the provider to address any issues raised by the patient in the screener during the visit. The Hospital is working to further improve THRIVE to ensure a closed loop; THRIVE 2.0 will go a step further and allow the Hospital to track the status of a patient referral and follow-up to ensure requested assistance is obtained.

**F1.d Provide evidence of consultation, both prior to and after the Filing Date, with all Government Agencies with relevant licensure, certification, or other regulatory oversight of the Applicant or the Proposed Project.**

In planning and designing the Proposed Project, the Applicant sought input from a variety of stakeholders, including but not limited to, Hospital leadership, clinical staff, patients and families, and community members that may be impacted by or have an interest in the Proposed Project. Details regarding these engagement efforts are described in Factor F1.e.i below. In addition to these efforts, the Applicant also conducted a formal consultative process with individuals at various regulatory agencies with relevant licensure, certification, and other regulatory oversight of the Applicant and the Proposed Project. Specifically, the following agencies and individuals are some of those consulted regarding the Proposed Project:

- Massachusetts Executive Office of Health and Human Services
- DPH, including, but not limited to: Lara Szent-Gyorgyi, Former Director, DoN Program; Elizabeth Kelly, Interim Director, DoN Program; Lynn Conover, Analyst, DoN Program; Rebecca Rodman, Esq., General Counsel; Jennica Allen, Manager of Community Engagement Practices, Division of Community Health Planning and Engagement; Elizabeth Maffei, Program Manager, Division of Community Health Planning and Engagement; and Daniel Gent, Project Engineer & Plan Review Manager, Division of Health Care Facility Licensure and Certification
- Massachusetts Office of Attorney General
- HPC
- Center for Health Information and Analysis
- The Centers for Medicare & Medicaid Services
- MassHealth
- Regulatory agencies consulted as part of the City of Boston's required Article 80 review processes for the Hospital's Institutional Master Plan ("IMP") (further details provided in Factor F1.e.i below)

**F1.e.i Process for Determining Need/Evidence of Community Engagement: For assistance in responding to this portion of the Application, Applicant is encouraged to review *Community Engagement Standards for Community Health Planning Guideline*. With respect to the existing Patient Panel, please describe the process through which Applicant determined the need for the Proposed Project.**

As outlined throughout this narrative, the Applicant has historically undertaken a measured approach to campus growth and development, working continuously to right-size BMC's campus to match the ever-evolving health care landscape and ensure the Hospital's sustainability as an

academic medical center providing exceptional care to its patient panel. Such an approach was foundational in the design and completion of BMC's previously approved DoN, which focused on consolidating the Hospital's two clinical campuses to create a new clinical core at its Menino Campus. Today, the Applicant remains committed to a dedicated approach of responding to clinical trends and patient needs through careful resource and site planning.

Following its campus consolidation efforts, BMC has experienced patient volume growth, as well as several other changes in the health care environment, that together have had a direct impact on the space the Hospital requires to deliver the services needed by its patients. BMC's inpatient admissions, visits, and utilization rates reflect these current health care trends and demonstrate that BMC's patient population requires more services. As a result, BMC initiated a robust multi-year strategic planning process to determine how to most effectively meet the needs of its patients for increased access to high-quality services while upholding its commitment to measured campus growth and sustainability and its primary urban design objective of maintaining a cohesive medical campus thoughtfully integrated into the surrounding urban fabric and neighborhoods. This planning process was iterative and included ongoing interactions among BMC leadership, including senior administration, the Applicant's and the Hospital's Boards of Directors and Trustees, and clinical leaders, as well as regulatory agencies and local stakeholders to develop, evaluate, and refine various project options. After careful evaluation, the Proposed Project was found to be the best option, as it was determined to be the most cost-effective approach to meeting patient needs and improving overall efficiencies in the delivery of care while supporting the Applicant's strategic, operational, and clinical goals when compared with alternatives.

In addition to engagement that occurred during the planning process, to ensure appropriate community engagement once the Proposed Project's overall design was determined, the Applicant also sought to inform and solicit feedback from community members, patients, family members, and staff that may be impacted by or have an interest in the Proposed Project. Specifically, the Applicant's engagement efforts focused on soliciting feedback on the need for the Proposed Project as well as the design details, layout, and community-related benefits in order to maximize the Hospital's ability to meet its patient panel demand, provide superior patient satisfaction, promote high-quality outcomes, and support the Greater Boston community of which BMC is part.

Engagement efforts are described in detail below.

#### A. REGULATORY AGENCY MEETINGS

Recognizing that a broad range of input is valuable in the planning of a project, as a first step in the engagement process, the Applicant presented at a number of regulatory agency meetings, many of which were open to the public. These regulatory agency meetings were held as part of the City of Boston's required Article 80 review processes for the Hospital's IMP. Accordingly, while these meetings provided the opportunity for engagement around the Proposed Project, they also covered a larger scale of work, certain components of which are outside the scope of this DoN Application.

As an overview, the Applicant met with members of the Boston Planning and Development Agency ("BPDA") throughout the planning process, including the BPDA Task Force designated for the BMC IMP, and also held meetings with the Boston Civic Design Commission ("BCDC"), the Boston Transportation Department, representatives of the South End Landmarks District Commission, and the Boston Zoning Commission. Specifically, these meetings included, but were not limited to, the following:

- BPDA Task Force Meeting #1 – November 18, 2019
- BPDA City Agency Scoping Session – December 6, 2019
- BPDA Task Force Meeting #2 and Public Meeting – December 11, 2019
- BCDC Presentation – January 14, 2020
- Boston Transportation Department Presentation – February 20, 2020
- South End Landmarks District Commission Staff Meeting – February 27, 2020
- BCDC Presentation – September 7, 2021
- BPDA Meeting – January 29, 2021
- BPDA Task Force Meeting #3 and Public Meeting – May 12, 2021
- BPDA City Agency Scoping Session – May 13, 2021
- Boston Zoning Commission Public Hearing – October 13, 2021

The Applicant remained committed to an open and inclusive process during the course of these strategic planning meetings and continuously sought input and responded to questions from community representatives and the public regarding the Proposed Project's need, goals and objectives, components, and high-level design. Such input was carefully assessed and thoughtfully incorporated into revised plans for the Proposed Project. Key revisions incorporated from community stakeholder feedback received during these meetings included eliminating certain projects, changing the proposed use of select buildings/sites, and potentially acquiring other sites to support patient and community needs. Significantly, the resulting refined Proposed Project plan maintains an important focus on using facility resources in a way that rationalizes square footage and allows BMC to keep working towards reducing space and energy inefficiencies, eliminating overhead costs, and right-sizing its campus while continuing to better serve its patients and community.

#### B. ENGAGEMENT OF THE HOSPITAL'S CAB

Following completion of the above-described IMP processes and in contemplation of preparing its DoN Application for the Proposed Project, the Applicant sought to engage community members, patients, families, and staff around the Proposed Project need, design details, components and layout, and community-related benefits. The BMC CAB was the first group that the Applicant engaged in this course.

The BMC CAB was established to strategically advise the Hospital on how best to use investments to catalyze change and leverage other city, state, federal and other philanthropic investments. In the context of DoN, the Hospital's CAB provides oversight and advises on community engagement as well as the Community Health Initiative ("CHI") processes and priorities. Specifically, the CAB, which is comprised of eleven (11) diverse members who meet the required constituencies designated by the Department for a DoN CHI (i.e., represent local public health departments, municipalities, education, housing, social services, regional planning and transportation agencies, the private sector, community health centers, and community-based organizations), is tasked with the following general responsibilities:

- Ensuring appropriate engagement with residents and community partners from targeted communities around the DoN and the related CHI;
- Determining the health priorities and strategies for CHI funding based upon the needs identified in the local CHNA processes, ensuring that all health priorities and strategies are aligned with the Department's Health Priorities, and reporting selection of health priorities and strategies to DPH;
- Reviewing and providing input to the Hospital on its overall community health needs agenda; and

- Providing oversight of the evaluation of CHI-funded projects and reporting to the Department on the DoN CHI.

The CHNA/CHIP Self-Assessment Form included at Appendix 5B includes a full membership list of the CAB.

Based on these responsibilities, leadership determined it was appropriate to engage the CAB with respect to Proposed Project. Accordingly, on December 6, 2021, Megan Sandel, MD MPH, Co-Director of BMC's GROW Clinic and Co-Chair of the Hospital's DoN CHI CAB, met with the CAB members to present an overview of the Proposed Project and related CHI processes. Follow-up correspondence also was sent to CAB members between December 2021 and July 2022 to provide updates on timeline. These communications also provided updates on the Proposed Project design and need, highlighting the need to implement strategic space modifications to accommodate increases in inpatient volume, positively impact ED throughput and operation, continue centralization of services and ideal adjacencies, increase patient satisfaction and health outcomes, and ensure timely access to New England's largest safety net hospital. To-date, overall feedback from CAB members was positive with no concerns voiced.

### C. COMMUNITY MEETINGS

The Applicant also sought to engage patients, staff, community members, and local neighborhood stakeholders around the Proposed Project. Accordingly, the Applicant hosted two community meetings – one on January 11, 2022 and the other on January 12, 2022. The meetings were publicized via flyers translated into the top three (3) primary languages within BMC's service area (English, Spanish, and Haitian Creole) and sent out through the Equity Partnership Network ListServe, as well as through CAB member and staff outreach to local resident and community members.<sup>87</sup> Moreover, the meetings were held over Zoom at different times of the day – one in the afternoon and one in the evening after normal business hours – to accommodate different schedules and promote increased participation.<sup>88</sup>

Largely attributable to the surge in COVID-19 cases due to the Omicron variant, meeting attendance was lower than anticipated. Nonetheless, a total of six (6) community members from various backgrounds representing several of BMC's service area cities and towns, as well as numerous staff members, participated in the meetings and provided the Applicant with the opportunity to engage and solicit feedback regarding the Proposed Project from local stakeholders. During the meetings, Bob Biggio, BMC's Senior Vice President of Facilities and Support Services, and Brendan Whelan, BMC's Senior Director of Design and Construction, provided an overview of the DoN process as well as a description of the Proposed Project design and need, and Megan Sandel, MD MPH, Co-Director of BMC's GROW Clinic and Co-Chair of the Hospital's DoN CHI CAB, and Petrina Martin Cherry, MBA, BMC's Vice President of Community Engagement and External Affairs, presented on the community benefit associated with the Proposed Project. The community members and local stakeholders that attended the meetings expressed support for the Proposed Project, in particular noting the need for additional inpatient capacity and emphasizing the importance of the associated community benefits. Overall,

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<sup>87</sup> The Applicant notes that distribution of the meeting notices via the Equity Partnership Network ListServe was determined to be the best option for informing community and staff members of the meetings given that the meetings were held during the January 2022 COVID-19 Omicron surge and certain clinical areas were less busy given the Hospital's protocols for the surge.

<sup>88</sup> The Applicant notes that the community meetings were held virtually over Zoom given concerns related to COVID-19.

feedback was very positive and attendees encouraged the Hospital to move forward with its Proposed Project.

#### D. ENGAGEMENT OF THE HOSPITAL'S PFAC

Finally, the Applicant engaged the Hospital's PFAC around the Proposed Project. Sponsored by the Hospital's Patient Experience Department, BMC's PFAC aims to improve operations across BMC Health System and achieve its mission for patient-centered and equitable care. In compliance with DPH's Hospital Licensure Regulations, BMC's PFAC is co-chaired by a staff member and a patient/family member, and at least 50% of PFAC members are current or former patients and/or family members and are representative of the community served by BMC. Specifically, BMC's PFAC is currently comprised of six (6) staff members and six (6) patient/family members. Moreover, BMC's PFAC leaders are committed to continuously recruiting new members with the goal of creating diverse and collaborative partnerships with BMC patients, families, and caregivers that are representative of BMC's diverse patient population, as well as with staff from different areas across BMC.

In terms of function, BMC's PFAC is dedicated to creating open and trusting partnerships and empowering its members to help achieve meaningful change and create accountability for BMC Health System. As a strong and transparent group, the PFAC follows and strives to fulfill BMC's three cornerstone values:

- (1) Build on Respect, Powered by Empathy – BMC's PFAC cares about the Hospital's patients, employees, and community, and is committed to doing right by them each and every day.
- (2) Move Mountains – Impossibility doesn't live here. Instead, BMC's PFAC is motivated by what can be and it will move mountains to make it happen.
- (3) Many Faces Create Our Greatness – Diversity is BMC's heart and soul and when it comes to inclusion, BMC's PFAC is all in.

In furtherance of its values and goals, the PFAC has regular meetings to discuss wide-ranging work across BMC. Input from the PFAC provides Hospital leadership with a better understanding of patient, family and staff experiences, perspectives, and insight, and PFAC recommendations inform decision-making and the development of programs, services, and strategic projects at the Hospital.

On January 20, 2022, Brendan Whelan, Senior Director of Design and Construction, met with the PFAC to present an overview of the Proposed Project.<sup>89</sup> The presentation included a summary of the DoN process as well as a description of the Proposed Project components, the patient panel need the Proposed Project is designed to address, and the associated public health value and community benefit. In total, 13 individuals attended the meeting, including 9 PFAC members (3 staff members and 6 patient/family members) and 4 guests. Following the presentation, PFAC members were given the opportunity to comment on the Proposed Project and ask questions of clinical and administrative leaders in attendance. There was a substantial dialogue amongst attendees and PFAC members asked important questions about the Proposed Project. Specifically, there was discussion around the Proposed Project design and how it will meet patient needs. In its support of the Proposed Project, PFAC members asked questions around accessibility, modernization, patient infrastructure needs, and signage. Hospital representatives expressed their belief that the Proposed Project will allow BMC to continue its dedicated approach to careful resource planning and measured campus development to sensitively maintain the

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<sup>89</sup> The Applicant notes that the PFAC meeting was held virtually over Zoom given concerns related to COVID-19.

integrity of the urban fabric and the surrounding neighborhoods while continuing to meet the growing patient panel need and the Hospital's mission to offer high quality patient care and sustain ever changing health care trends. Leadership also offered to keep PFAC members updated on the status of the Proposed Project.

**F1.e.ii Please provide evidence of sound Community Engagement and consultation throughout the development of the Proposed Project. A successful Applicant will, at a minimum, describe the process whereby the "Public Health Value" of the Proposed Project was considered, and will describe the Community Engagement process as it occurred and is occurring currently in, at least, the following contexts: Identification of Patient Panel Need; Design/selection of DoN Project in response to "Patient Panel" need; and Linking the Proposed Project to "Public Health Value".**

To ensure sound community engagement throughout the development of the Proposed Project, the Applicant and BMC took the actions detailed in Factor F1.e.i. For materials related to these activities, please refer to Appendix 3B, which includes copies of meeting agendas, minutes, presentations, etc. In addition, for transparency and to ensure appropriate awareness within the community regarding the Proposed Project, the Applicant published a legal notice associated with the Proposed Project in the *Boston Herald* on July 26, 2022 and also posted a copy of such legal notice prominently on the BMC website. Please refer to Appendix 8 for copies of the legal notices.

## **Factor 2: Health Priorities**

**F2.a Cost Containment: Using objective data, please describe, for each new or expanded service, how the Proposed Project will meaningfully contribute to the Commonwealth's goals for cost containment.**

The Commonwealth's goals for cost containment are focused on creating high-quality, low-cost care alternatives. To this end, the Health Policy Commission ("HPC") seeks to control health care spending while improving access and quality of care. The provision of timely care in an appropriate setting has proven to reduce mortality and morbidity for chronic conditions, which translates to better patient clinical outcomes and reduced costs.<sup>90</sup>

The Proposed Project will meet the noted goals in multiple ways. First, the creation of inpatient bed and surgical capacity will allow for more timely access to care, providing treatment in an appropriate setting. Through the implementation of inpatient bed and surgical resources, ED boarding will be reduced, and operational efficiencies will be created throughout the Hospital. A reduction of ED boarding leads to a lower length of stay, a reduction in the number of patients who leave without being seen or against medical advice, and overall, more timely definitive treatment, positively impacting clinical quality measures, while reducing costs. Second, the Proposed Project will allow for better patient flow, reducing constraints on overly taxed resources, such as ED providers and staff, and ensuring patients receive care in the appropriate therapeutic setting. Providing timely care in the proper setting reduces costs and increases patient and provider satisfaction, ultimately leading to improved quality metrics and reductions in the overall

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<sup>90</sup> *Chartbook on Access to Health Care, Elements of Access to Health Care: Timeliness*, AGENCY FOR HEALTHCARE RESEARCH AND QUALITY, <https://www.ahrq.gov/research/findings/nhqrdr/chartbooks/access/elements3.html> (last visited Jul. 20, 2022); Kaplan & Porter, *The Big Idea: How to Solve the Cost Crisis in Health Care*, HARVARD BUSINESS REVIEW (2011), <https://hbr.org/2011/09/how-to-solve-the-cost-crisis-in-health-care>.

cost of care. Third, and finally, the infrastructure renovations and upgrades that are part of the Proposed Project are an efficient way to maintain the Hospital's physical plant and ensure that care may be provided in a cost-effective setting. For these reasons, the Applicant asserts that the Proposed Project meets Massachusetts' goals for cost containment.

**F2.b Public Health Outcomes:**

**Describe, as relevant, for each new or expanded service, how the Proposed Project will improve public health outcomes.**

As more fully detailed throughout Factor 1, the Proposed Project will improve public health outcomes by improving access to inpatient services at BMC. Specifically, the Applicant anticipates that additional inpatient capacity will expand capacity to medical/surgical, ICU, and inpatient surgical services, and that such improved access will in turn positively impact patient flow and Hospital throughput across BMC and particularly in its ORs and ED. This will help to ensure the Hospital's sustainability as an academic safety net hospital providing exceptional care to its patient panel and will lead to improved public health outcomes for Greater Boston's vulnerable and underserved populations into the future.

**F2.c Delivery System Transformation:**

**Because the integration of social services and community-based expertise is central to goal of delivery system transformation, discuss how the needs of their patient panel have been assessed and linkages to social services organizations have been created and how the social determinants of health have been incorporated into care planning.**

BMC's goal is not only to treat disease, but also to understand and address its root causes. Research has shown that health is shaped by more than just quality health care; social and environmental factors known collectively as SDOHs (e.g., lack of employment, income, stable housing or food, limited education, etc.) also have an impact, contributing to chronic disease and mental health issues and creating barriers to accessing health care. In recognition of this, BMC has numerous processes and programs in place to ensure linkages to services beyond the traditional medical model to remediate gaps created by SDOHs, meet the unmet basic needs of the many diverse, vulnerable individuals it services, and improve health outcomes for its patients.

As discussed in Factor 1.c, BMC has integrated robust SDOH programming into its clinical models. Efforts around SDOH screening at the Hospital are aimed at understanding the social needs impacting patients' health, improving patient care by communicating social needs to care teams, partnering with community-based organizations to eliminate systemic barriers that prevent patients from thriving, and providing patients with information on hospital-based and community resources that can mitigate their social needs. Examples of hospital-based and community programs and resources that BMC connects its patients and families to include investments in housing, food-related programs, programs related to education, job training, and employment, programs and services that support financial wellness (e.g., programs that help people apply for health coverage, access no- or low-cost medications, obtain food and groceries, pay their utility bills, file tax returns and secure refunds, etc.), programs related to violence and building safer communities, and more.

**Factor 5: Relative Merit**

**F5.a.i Describe the process of analysis and the conclusion that the Proposed Project, on balance, is superior to alternative and substitute methods for meeting the**

**existing Patient Panel needs as those have been identified by the Applicant pursuant to 105 CMR 100.210(A)(1). When conducting this evaluation and articulating the relative merit determination, Applicant shall take into account, at a minimum, the quality, efficiency, and capital and operating costs of the Proposed Project relative to potential alternatives or substitutes, including alternative evidence-based strategies and public health interventions.**

**Proposal:** The Proposed Project involves the following: (A) construction and renovation to BMC's existing Yawkey Building to accommodate the addition of sixty (60) additional medical/surgical beds and ten (10) additional intensive care unit beds; (B) renovation of BMC's existing Menino Building to accommodate the addition of five (5) new inpatient ORs, as well as additional pre- and post-operative and PACU space; and (C) other construction and renovation projects at BMC's main campus to accommodate the proposed inpatient expansion projects, support campus infrastructure reorganization efforts, and improve existing services, facilities, and patient experience and wayfinding.

**Quality:** The Proposed Project will improve quality of care by expanding capacity of inpatient services at BMC. The Applicant anticipates that additional inpatient capacity will provide the Applicant's patient panel with improved access to medical/surgical, ICU, and inpatient surgical services, and that such improved access will in turn positively impact patient flow and Hospital throughput across BMC and particularly in its ORs and ED. Overall, these improvements will result in enhancements in health outcomes and quality of life for BMC's vulnerable patient panel, with specific examples detailed in Factor F1.b.ii. Moreover, in addition to supporting the inpatient expansion projects and, therefore, the improved quality outcomes detailed above, the other proposed construction and renovation projects at BMC's main campus also will result in improved quality by supporting campus reorganization and other efforts aimed at improving existing services, facilities, and patient experience and wayfinding at the Hospital.

**Efficiency:** As detailed throughout this narrative, the Proposed Project is designed to create additional inpatient capacity, which will help alleviate access and throughput concerns across the Hospital, ensure that patients receive care in the most appropriate setting, and, thereby, provide efficiencies in care and costs. Moreover, the Applicant anticipates that the other proposed construction and renovation projects will drive efficiency in patient care by supporting centralization of services, ideal complementary use adjacencies, and various campus improvements.

**Capital Expense:** There are capital expenses associated with the implementation of the Proposed Project. The total capital expenditure for the Proposed Project is \$121,239,760. However, as detailed further below, the Proposed Project represents the most cost-effective approach to addressing the needs of the Applicant's under-resourced patient panel and ensuring the Hospital's long-term ability to provide high-quality care and fulfill its role as New England's largest safety net hospital in an evolving health care environment. To this point, the Applicant notes that the Proposed Project design is the result of a robust multi-year IMP and was also informed by input from community members, patients, family members, and staff that may be impacted by or have an interest in the Proposed Project. Consistent with the Applicant's commitment to providing exceptional care without exception and BMC's distinct measured approach to campus growth, this design maximizes use of BMC's existing square footage with strategic renovations and additions, rather than building new, to address demand constraints and

allow the Hospital to both meet current patient panel needs and better serve its patient panel into the future.

**Operating Costs:** There are operating costs associated with the Proposed Project. The average incremental operating costs of the Proposed Project are anticipated to be approximately \$76,000,000.

### List alternative options for the Proposed Project

**Alternative Proposal #1:** The first alternative to the Proposed Project is to forego implementation of the Proposed Project and continue to operate BMC's main campus without any changes to existing inpatient capacity or the Hospital's existing facilities and services.

**Alternative Quality:** This alternative does not allow the Applicant to address the patient panel's need for additional inpatient services at BMC. Without the Proposed Project, inpatient utilization rates will continue to rise to unsustainable levels as patient volumes and acuity levels continue to increase, Hospital throughput will continue to be negatively impacted, and patients will continue to face increased wait times and delays in diagnosis and treatment. All of these factors will have a negative impact on patient's health outcomes and quality of life.

**Alternative Efficiency:** This alternative would be inefficient as it would not provide additional access to necessary inpatient services at BMC. Without additional inpatient capacity, throughput challenges at BMC will persist and the area's most vulnerable patients will continue to face long wait times as well as delays in diagnosis and treatment.

**Alternative Capital Expense:** This alternative would not be associated with any capital expenses. However, it would not address the need for additional inpatient capacity at BMC, and, therefore, quality outcomes, operational efficiencies, and cost containment measures anticipated to be achieved through the Proposed Project would not be realized.

**Alternative Operating Costs:** Although this alternative would not be associated with any operating costs, it would not address the need for additional inpatient capacity at BMC. Therefore, quality outcomes, operational efficiencies, and cost containment measures anticipated to be achieved through the Proposed Project would not be realized.

**Alternative Proposal #2:** The second alternative to the Proposed Project is to achieve additional inpatient capacity through construction of a new inpatient building on BMC's main campus.

**Alternative Quality:** This alternative would improve quality of care by expanding capacity of inpatient services at BMC. However, it would be associated with a longer timeline to implementation than the Proposed Project. Therefore, quality outcomes would not be achieved as soon as through the Proposed Project. Moreover, this alternative is associated with higher risk as well as significantly higher costs, as detailed below.

**Alternative Efficiency:** Like the Proposed Project, the Applicant anticipates that this alternative would result in improved efficiency by creating additional inpatient capacity and, thereby, helping to alleviate access and throughput concerns across the Hospital and ensure that patients receive care in the most appropriate setting. However, whereas the Proposed Project is designed to conservatively increase inpatient bed and OR capacity, this alternative would represent a more drastic approach with the addition of one-hundred (100) inpatient beds and more than eight (8) inpatient ORs. Accordingly, this alternative is associated with higher risk; if there is not significant patient panel volume growth to support this drastic increase in inpatient services, the Applicant anticipates potential cost inefficiencies.

**Alternative Capital Expense:** The capital expenses associated with this alternative would be significantly higher than those associated with the Proposed Project. Specifically, the Applicant anticipates that this alternative would result in a total capital expenditure of greater than \$450,000,000.

**Alternative Operating Costs:** There would be operating costs associated with this alternative. However, capital costs associated with this alternative were significantly higher than the Proposed Project. Accordingly, the Applicant did not move forward with an operating cost analysis for this alternative or pursue the option any further.