

**STAFF REPORT TO THE PUBLIC HEALTH COUNCIL
FOR A DETERMINATION OF NEED**

Applicant Name	BMC Health System, Inc.
Applicant Address	One Boston Medical Center Place, Boston, MA 02118
Filing Date	September 9, 2022
Type of DoN Application	Substantial Capital Expenditure
Total Value	\$121,239,760.00
Project Number	BMCHS-22080908-HE
Ten Taxpayer Groups (TTG)	Two
Community Health Initiative (CHI)	\$6,061,988.00
Staff Recommendation	Approval
Public Health Council	December 14, 2022

Project Summary and Regulatory Review

BMC Health System, Inc. (Applicant) submitted an Application for a Proposed Project at the Boston Medical Center Corporation (BMC, Hospital) that consists of three main components: 1) Construction and renovation to BMC’s existing Yawkey Building 5th and 6th floors to accommodate the addition of seventy (70) new inpatient beds, 2) Renovation of BMC’s existing Menino Building 2nd floor to accommodate the addition of five (5) new inpatient operating rooms (ORs); and 3) Other construction and renovation projects to support the inpatient expansion, campus infrastructure reorganization, and improve existing services, facilities, and patient experience. The Proposed Project’s total capital expenditure is \$121,239,760.00; the Community Health Initiatives (“CHI”) contribution is \$6,061,988.00.

This Proposed Project consists of a Substantial Capital Expenditure, which is reviewed under the DoN regulation 105 CMR 100.000. The Department must determine that need exists for a Proposed Project, on the basis of material in the record, where the Applicant makes a clear and convincing demonstration that the Proposed Project meets each Determination of Need Factor set forth within 105 CMR 100.210.

Two Tax Payer Groups (TTGs) formed, and at the request of one, the Department held a public hearing where all oral and written comments were received and summarized herein.

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Background: BMC Health System (Applicant) and Application Overview

The Applicant, BMC Health System, Inc. is a Massachusetts not-for-profit corporation, located at One Boston Medical Center Place, Boston, Massachusetts 02118. BMC Health System is an integrated health care system that 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 populations in the Boston metropolitan area and individuals throughout Greater Boston, Massachusetts, and beyond.

BMC Health System is the sole corporate member of each of the following four entities: Boston Medical Center Corporation, the site of the Proposed Project; Boston Medical Center Health Plan, Inc.; Cornerstone Health Solutions, LLC; and BMC Insurance Co., Ltd. of Vermont. All four provide a variety of services with BMC Health System providing governance and long-term strategic planning as well as budgetary and financial assistance, while overseeing operations.¹

Boston Medical Center (BMC, or Hospital) is a 514-bed urban academic medical center and is a safety net hospital,² that is the primary teaching affiliate for the Boston University School of Medicine. It provides specialty secondary and tertiary care for patients with complex medical needs and operates a Level I Adult, and Level II Pediatric trauma center, and also ambulatory care. With a focus on providing community-based, accessible care to under-resourced populations.³ 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, as well as the following community health center partners:⁴

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; and

¹ (1) Boston Medical Center Corporation- the site of the Proposed Project; (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.

² BMC 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.

³ As discussed further in this report, 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.

⁴ The Applicant provided demographic information on these centers separately. The information systems on these centers are not integrated with BMC’s system, and patients who receive care in multiple locations may be counted more than once and included in BMC’s Patient Panel demographic information. See Factor 1 Materials pages 5-10

<https://www.mass.gov/doc/factor-1-materials-pdf-boston-medical-center-hospitalclinic-substantial-capital-expenditure/download>

4. South Boston Community Health Center ("SBCHC"), including SBCHC's 386 West Broadway, 409 West Broadway, and 505 Congress Street locations.

Proposed Project

The Applicant's Proposed Project is at Boston Medical Center Corporation d/b/a Boston Medical Center (BMC or Hospital) The Proposed Project is for the following three main components:

1. 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; that includes supportive infrastructure elements such as 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.
2. 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; which involves relocation of the Hospital's existing 28-bed⁵ observation unit from the Menino Building 2nd floor to the Yawkey Building 5th floor, reduction of one existing inpatient general procedure room, and relocation of one existing negative pressure inpatient procedure room within the Menino Building 2nd floor;
3. Other construction and renovation projects that support campus infrastructure reorganization, and improve existing services, facilities, and overall patient experience including wayfinding at the Hospital, as follows:
 - 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.

The Applicant asserts the Proposed Project will help relieve overcrowding in the BMC ED, increase timely access to inpatient care, and provide cost containment through the provision of timely care in an appropriate setting; all of which the Applicant posits will reduce mortality and morbidity for chronic conditions, and will translate to better patient clinical quality outcomes and reduced costs.

⁵ This 28-bed relocation is not part of the 70-bed expansion.

Patient Panel ⁶

Of the four corporate entities, Boston Medical Center Corporation, the owner and operator of the 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 to determine the need for the Proposed Project.

Table 1 shows the unique number of patients served in fiscal years 2019 through 2021. Despite decreasing slightly in FY20 during the height of the COVID-19 pandemic, the Applicant notes that the patient panel increased by 31% overall between FY19 and FY21.

Table 1: Overview of Patient Panel, FY19-FY21

	FY19	FY20	FY21 ⁷	% Change FY 19-21
BMC Total Unique Patients	228,138	207,237	299,258	31%

The Applicant's demographic profile for the period covering FY19 through FY21 and preliminary data for FY22 demonstrate that BMC serves a diverse patient panel.

Table 2: BMC Patient Demographic Profile

BMC Demographic Data	FY 21	YTD FY 22 ⁸
Gender		
Female	55.1%	55.0%
Male	44.8%	44.3%
Other/Unknown	0.1%	0.1%
Age		
0-17	11.9%	14.6%
18-64	73.8%	70.9%
65+	14.2%	14.4%
Race/Ethnicity⁹		
American Indian/Alaska Native	0.3%	0.3%
Asian	5.6%	5.2%
Black/African American	29.3%	32.1%
Hispanic/Latino	12.0%	15.2%

⁶ As defined in 105 CMR 100.100, Patient Panel is the total of the individual patients regardless of payer, including those patients seen within an emergency department(s) if applicable, seen over the course of the most recent complete 36-month period by the Applicant or Holder.

⁷ BMC's FY is from 10/1 – 9/30. FY22 The Patient data YTD through 7/22 is 257,938 and is preliminary and subject to change. The unique patient/visit counts include COVID-19 vaccination patients/visits. The Hospital provided a greater number of COVID-19 vaccinations in FY21 compared to FY22 YTD. In FY21, the Hospital provided approximately 196K COVID-19 vaccinations during vaccine only visits, whereas FY22 YTD data show approximately 65K vaccine only visits.

⁸ BMC's FY is from 10/1 – 9/30. FY22 data is preliminary and subject to change.

⁹ 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.

Native Hawaiian/Pacific Islander	0.2%	0.2%
White/Caucasian	30.8%	24.8%
Other ¹⁰	21.8%	22.1%
Geographic Origin¹¹		
Dorchester	16.9%	18.4%
Boston	15.8%	15.7%
Roxbury	5.0%	5.9%
Brockton	3.1%	3.1%
Mattapan	3.1%	3.6%
Hyde Park	3.3%	3.4%
Revere	2.3%	2.2%
Quincy	2.6%	2.6%
Chelsea	1.8%	1.8%
Lynn	1.7%	1.8%
All Other	44.6%	41.6%

Staff notes the following observations about data from Tables 2 and 3:

- **Age:** Patients between the ages of 18-65 consistently represent approximately 70% of BMC’s patient panel.
- **Race/Ethnicity:** Patients self-identified as predominantly Black/African American (29.3% in FY21) and White/Caucasian (30.8% in FY21).
- **Patient Origin:** BMC patients mainly reside in the Boston/Greater Boston area, with nearly 60% of patients residing in the following 10 communities: Dorchester, Boston, Roxbury, Brockton, Mattapan, Hyde Park, Revere, Quincy, Chelsea, and Lynn.
- **ACO and Alternative Payment Method (APM) Contracts:** The percentage of BMC’s primary care lives covered by alternative payer mix (“APM”) and ACO contracts is 23.2%, based on FY21 data.
- **Payer Mix:** The largest portion of BMC’s patients have insurance through public payers; in FY21, BMC’s public payer mix declined from FY19. However, year to date, the percentage has risen to pre-pandemic levels.

Table 3: BMC APM/ACO Contract and Payer Mix Percentages

	FY21	FY22 YTD¹²
APM and ACO Contracts	23.2%	25.8%
Non-APM and Non-ACO Contracts	76.8%	74.2%
Commercial	40.6%	34.30%
<i>HMO/POS</i>	13.9%	11.40%
<i>PPO</i>	11.6%	9.40%

¹⁰ “Other” includes: Not Specified, Other, Declined - Not Available, and Unknown.

¹¹ 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).

¹² BMC’s FY is from 10/1 – 9/30. FY22 The Patient data YTD through 7/22

<i>Other</i> ¹³	15.1%	13.50%
Public (see corresponding notes)		
MassHealth	10.9%	12.9%
Managed Medicaid	24.6%	27.7%
Commercial Medicare	6.1%	6.5%
Medicare FFS	7.8%	6.9%
Free Care/HSN	2.7%	1.9%
All Other ¹⁴	7.4%	9.7%

Table 4 below presents patient information for project components of this DoN Application. Some highlights from the data include:

- **Race/Ethnicity:** The patient population for each component predominantly identifies as either Black/ African American or White Caucasian. 23.3% of the OR patient population identified as Hispanic/ Latino.
- **Payer Mix:** The percentage of Managed Medicaid is consistently the highest percentage among the three services represented.

Table 4: Overview of Patients for Services by Project Component, FY21

	MEDICAL/ SURGICAL	ICU	OR
GENDER			
Female	47%	39%	51%
Male/Other/Unknown ¹⁵	53%	61%	49%
RACE/ ETHNICITY			
American Indian/Alaska Native	0%	0%	0%
Asian	4%	4%	4%
Black/African American	38%	36%	32%
Hispanic/Latino	18%	13%	23%
White/Caucasian	34%	37%	37%
Other ¹⁶	6%	10%	5%
AGE¹⁷			
0-64	64%	60%	75%
65+	37%	40%	25%
PAYER MIX PERCENTAGES			

¹³ Note that the Applicant is not always able to readily isolate whether a Commercial plan is HMO/POS or PPO/Indemnity. In these instances, "Commercial – Other" has been provided an alternative category.

¹⁴ "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.

¹⁵ Includes: "Male" and "Other/Unknown" for confidentiality due to regulations related to data with counts <11.

¹⁶ "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.

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

Commercial ^{18,19}	18%	15%	25%
<i>HMO/POS</i>	6%	6%	8%
<i>PPO</i>	4%	4%	6%
<i>Other</i>	8%	5%	11%
MassHealth	13%	11%	15%
Managed Medicaid	24%	25%	28%
Commercial Medicare	19%	20%	12%
Medicare FFS	22%	23%	17%
Free Care/HSN	1%	–	–
All Other ²⁰	3%	6%	4%

Factor 1a: Patient Panel Need

In this section, staff assesses if the Applicant has sufficiently demonstrated need for the Proposed Project components by the Applicant’s Patient Panel. The two main components of the Proposed Project will be discussed separately, they are:

- Expansion of Inpatient Beds
- Expansion of Operating Room Suite
- Other Construction and Renovation Projects²¹

Expansion of Inpatient Beds

The Applicant attributes the need for additional inpatient beds to the following:

1. High Inpatient Utilization Creating Delays in Service Delivery and Backlogs
2. Projected increase in population including the aging population.

Following the consolidation of the two BMC campuses in 2013, BMC’s licensed medical/surgical inpatient beds and ICU bed were reduced by 67 beds and 11 beds respectively. Since then, the Applicant notes that BMC’s patient volumes have increased due to changes in the health care environment such as regulations and increasing acuity, patient population growth, COVID-19 pandemic, and participation in ACO’s.

1. High Inpatient Utilization Creating Delays in Service Delivery and Backlogs

¹⁸ “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.

¹⁹ Please note that in some instances, the Applicant is not able to readily isolate whether a Commercial plan is HMO/POS or PPO/Indemnity. In these instances, “Commercial – Other” has been provided an alternative category.

²⁰ 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.

²¹ The Applicant notes a third Project Component necessary to accommodate the proposed inpatient expansion projects, support campus infrastructure reorganization efforts

Increased utilization of the inpatient units is demonstrated by a number of interrelated metrics that include number of discharges, case-mix index (CMI), average length of stay (ALOS), bed occupancy rates, and patient days. Table 5 shows the Hospital’s data for both medical/surgical (M/S) inpatient units and ICU for FY 2019-2021.²²

For the M/S service, occupancy rates are ~90% with a slight dip during the pandemic, for non- COVID-19 patients, but above the industry standards of 80-85% being optimal occupancy rate.^a CMI and case weight are indicators of resource use and used to reflect severity of illness.²³ As a result of increasing CMI from 1.58 to 1.65, lengths of stay increased from 4.70 to 5.07 resulting in consistently high occupancy rates while treating fewer patients. Note, the number of discharges has not returned to pre-pandemic levels (2019) while in 2021 patient days exceeded the 2019 levels by 4%.

Similar trends occurred among BMC’s ICU patients. Between FY19 and FY21, 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%,^b while ICU discharges were lower, meaning fewer patients were treated.

Table 5: BMC Inpatient Bed Historical Utilization (Non-COVID-19 Only)

	Medical/Surgical ^{24,25}				ICU ²⁶			
	FY19	FY20	FY21	FY22 YTD ²⁷	FY19	FY20	FY21	FY22 YTD ²⁸
Discharges	13,662	11,818	12,322	9,189	4,118	3,467	3,569	2,619
Case Weight	21,647	18,741	20,292	15,232	12,278	10,502	11,636	8,044
CMI	1.58	1.59	1.65	1.66	2.98	3.03	3.26	3.07

²² Staff has used the non-COVID-19 data which demonstrates that these rates are not an anomaly due to the pandemic. The Applicant also provided data including COVID -19 patients that can be found at <https://www.mass.gov/doc/applicant-responses-appendix-b-pdf-boston-medical-center-hospitalclinic-substantial-capital-expenditure/download>

²³ The Centers for Medicare & Medicaid Services assigns a case weight to each Diagnostic Related Grouping. Through documentation and coding review, BMC assigns a DRG to each inpatient account. Total case weight which is the aggregate of all DRG case weights is used to determine Hospital reimbursement rates for Medicare and Medicaid patients and is also an indicator of patient acuity and severity, as generally higher acuity patients use more resources and will be assigned a DRG that has a proportionally higher case weight.

²⁴ The Applicant notes that the discharge, case weight, CMI, and ALOS metrics provided herein are based on medical/surgical discharges (i.e., based on discharge days). To provide the most accurate understanding of BMC’s occupancy rates, the occupancy data provided are based on midnight census reporting (i.e., patient days), which also includes observation patients and bedded outpatients who occupy a medical/surgical bed but are not reflected as inpatient medical/surgical discharges.

²⁵ 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 are based on the following numbers of operating medical/surgical beds: 294 in FY19, 302 in FY20, 306 in FY21, and 307 in FY22 YTD.

²⁶ The Applicant notes that the discharge, case weight, CMI, and ALOS metrics provided here are based on ICU discharges (i.e., based on discharge days). However, to provide the most accurate understanding of BMC’s occupancy rates, the occupancy data provided are based on census days (i.e., patient days), which is lower as it includes time patients spend in different levels of care (e.g., medical/surgical, step-down, ICU, etc.).

²⁷ BMC’s FY is from 10/1 – 9/30. FY22 The Patient data YTD through 7/22

²⁸ BMC’s FY is from 10/1 – 9/30. FY22 The Patient data YTD through 7/22

	Medical/Surgical ^{24,25}				ICU ²⁶			
	FY19	FY20	FY21	FY22 YTD ²⁷	FY19	FY20	FY21	FY22 YTD ²⁸
ALOS	4.70	4.83	5.02	5.72	10.11	10.66	11.85	12.57
Occupancy	90%	85%	91%	93%	83%	80%	83%	80%
Patient Days	96,983	94,170	101,218	86,892	19,060	18,406	19,133	15,350

The Applicant explains that the high inpatient bed utilization and occupancy rates detailed above not only impact access to inpatient medical and surgical care (as discussed further below), but also impact ED care delivery, throughput, and operations, and leads to patients leaving without being seen. The Applicant cited a study indicating that high inpatient occupancy rates directly impact ED crowding including patient disposition time, contribute to longer length of stays, and that some ED boarding is caused by insufficient inpatient bed capacity, referred to as “access block”.^c Further, reducing access block, through additional inpatient capacity, can decrease ED boarding, and improve inpatient flow.^d

Since a measure of timely ED care is patients who left without being seen (LWOBS), staff asked the Applicant for information regarding these patients. The most recent monthly data for ten months (from October 2021 through July 2022) shows an average of 12% (1,325) with wide monthly fluctuations ranging from a low of 11% to a high of 15%, while the statewide average is 2%. The Applicant has found that acuity does not differ significantly between patients that leave the ED versus those who stay.

Table 6: Patients Left Without Being Seen (LWOBS) October 2021 through July 2022

Month	Number of Patients LWOBS	Total ED Visits	% LWOBS
Oct-21	1,205	11,137	11%
Nov-21	1,290	10,837	12%
Dec-21	1,601	11,930	13%
Jan-22	1,445	10,083	14%
Feb-22	1,000	8,979	11%
Mar-22	1,198	11,122	11%
Apr-22	1,363	10,925	12%
May-22	1,352	11,483	12%
Jun-22	1,149	10,975	10%
Jul-22	1,645	11,157	15%
Total	13,248	108,628	12%

The Applicant provided supplemental data at staff’s request on 19- months of Medical/Surgical visits to the ED from January 2021 to July 2022.²⁹ Medical/Surgical visits account for 96% of all ED visits and

²⁹ See Responses to DoN questions <https://www.mass.gov/info-details/boston-medical-center-hospitalclinic-substantial-capital-expenditure>

about 10% of those M/S patients are admitted. As shown in Table 7 the Median number of hours that patients are waiting for a bed from the Physician decision to admit a patient to a M/S bed has doubled (from 2.3 to 4.6 hours) in that 19-month reporting period. During this wait patients are using ED resources such as staff and supplies. Moving patients to an inpatient unit will allow more patients to be treated in a timely manner in the ED and should reduce LWOBS.

Table 7: For M/S Patients- Time Spent in the ED from the Decision to Admit to an Inpatient Bed

Time in ED for Admitted M/S Patients	
Six month time-periods	Median time (Hours) from decision to admit to admission
Jan-June 2021	2.3
July-Dec 2021	4.5
Jan-June 2022	4.5
Jul-22	4.6

2. Projected Increase in the Population

The Hospital anticipates that demand for inpatient beds will grow from its current rate. Table 8 demonstrates that while utilization has historically been high among all age groups within the inpatient bed population, patients 65+ account for greater than one-third of BMC’s inpatient bed population discharges, experience greater ALOS, and represent a higher acuity as compared with other age cohorts within the panel.

Table 8: BMC Historical Bed Utilization by Age (Including COVID-19 Patients)

	Discharges			ALOS			Average Case Weight		
	FY19	FY20	FY21	FY19	FY20	FY21	FY19	FY20	FY21
Medical/Surgical									
0-64	9,059	8,408	8,763	4.45	4.52	4.71	1.57	1.57	1.65
65+	4,603	4,353	4,920	5.19	5.75	5.92	1.61	1.64	1.67
Total	13,66	12,761	13,683	4.70	4.94	5.15	1.58	1.59	1.66
ICU									
0-64	2,519	2,365	2,403	9.91	10.99	12.03	2.88	3.03	3.19
65+	1,599	1,392	1,556	10.44	11.85	12.60	3.14	3.37	3.46
Total	4,118	3,757	3,959	10.11	11.31	12.26	2.98	3.15	3.29

University of Massachusetts’ Donahue Institute (UMDI)³⁰, projects that the population of the Greater Boston region, home to the majority of BMC’s medical/surgical and ICU patients, is expected to increase 14.2% overall in the 2020 to 2040 period.^e When examined by age, the 0-64 age cohort is projected to grow 9.6% while the 65+ age cohort is expected to grow 40.7%.^f

Expansion of Operating Room Suite

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. The need for additional inpatient ORs is based on two factors:

1. High demand for surgical services
2. Projected increase in the general and aging population

1. High demand for surgical services

Similar to BMC’s inpatient bed statistics, 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, as seen in Table 9.

Table 9: BMC Unique Inpatient Surgical Patients, Hospital Stays, and Surgical Cases

Year	Unique Patients	Hospital Stays	Surgical Cases
FY19	4,741	5,105	6,013
FY20	4,114	4,434	5,186
FY21	4,703	5,104	5,865
FY22 YTD ³¹	3,556	3,781	4,483

As a result of increased demand, BMC’s inpatient ORs are operating at/above the Hospital’s benchmark capacity of 80%. Table 10 shows a recent 9-month period of monthly OR utilization rates that the Applicant describes as representative from October 2020 through June 2021 demonstrating that BMC’s operating capacity was at/above benchmark capacity 5 out of 9 months in FY20, whereby the 4 months below benchmark capacity were during a COVID-19 surge period.

³⁰ a public service, research, and economic organization that contracts with the Secretary of the Commonwealth of Massachusetts to produce population projections for Massachusetts for use in both public and private planning initiatives.

³¹ BMC’s FY is from 10/1 – 9/30. FY22 The Patient data YTD through 7/22

Table 10: Historical BMC Inpatient Operating Room Utilization

Month	OR Utilization Rate
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	

The Applicant asserts operating above ideal OR capacity can lead to delays in surgical procedures, impacts of which are examined in more depth in the Public Health Value section below.

2. Projected increase in the general and aging population

The Applicant anticipates that demand for surgical services will continue to grow in relation to population growth. As previously mentioned, the 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 the surgical procedures offered by BMC are often necessary to treat patients with age related conditions such as cardiovascular, orthopedic, and neurological diagnoses.

Projections: Medical/Surgical, ICU and Operating Rooms

The Applicant states that it determined the need for the Proposed Project based on the historical utilization metrics, including patient days, increased ED boarding, increased case weight, projected growth of its existing Patient Panel including growth of the population ages 65 and over. Staff asked for additional supporting information pertaining to methodologies used to arrive at their specific numbers of beds and OR's.

The Applicant responded that to arrive at the total number for net new inpatient beds required at BMC, it calculated demand from two sources – unmet surgical and unmet ED demand as well as the utilization metrics described herein.

To arrive at the bed-need related to unmet surgical demand the Applicant used market data,³² internal leakage data from BMC's Health Plans, and internal access data to "triangulate" where BMC's patients needed access to treatment. It then sought additional detail from BMC's clinical leaders to develop a

³² From the Advisory Board

list of priority surgical hires by specialty (e.g., neuro/spine within neurosurgery), and combining that list with BMC’s current surgical data, inclusive of acuity, the Applicant was able to estimate the surgical volume by specialty for each of the new hires.³³

Applying these calculations to each specialty to ensure that its bed estimates were as granular as possible, the Applicant determined the number of cases the Hospital could add if it were to address unmet patient demand, then looked at the proportion of existing BMC bed days by specialty that fell into each bed category (general medical/surgical, IMCU, and ICU). As a result of this process, it determined the number of each type of bed the Hospital would need and balanced that against the constraints of the existing campus.

Based on these calculations, the Applicant expects:

- 1,457 additional (annual) surgical cases (across the medical/surgical, IMCU, and ICU spectrum post-surgery);
- A total of 11,247 incremental patient days for these patients, including 8,521 patient days for general medical/surgical patients and 2,756 patient days for ICU patients; and
- A need for ~23.4 additional general medical/surgical and IMCU beds and ~7.5 additional ICU beds to accommodate these patients. (See Table 12)

Based on these factors, the Applicant projects that inpatient surgical volume will grow to approximately 7,567 cases by FY26. Table 11 illustrates the future year projections for such volume. Staff asked the applicant about these projections to which it responded:

“By Fiscal Year (“FY”) 2026, the Applicant anticipates that surgical volume will become more stabilized with a consistent trend of surgical cases. However, unforeseeable circumstances, such as changes in population growth, public health emergencies, changes in COVID-19 case rate stability, and other circumstances may impact this volume trend.”

Table 11: BMC Projected Total Inpatient Surgical Cases

FY24	FY25	FY26	FY27	FY28
6,571	7,331	7,567	7,567	7,567

To arrive at bed-need originating in the ED, the Applicant reviewed BMC’s ED volume and the proportion of patients who visit the ED LWOBS patients, and then calculated how many more patients the Hospital would need to see if it were to bring its LWOBS rate down to national averages and used internal research to extrapolate additional admissions from these patients. Performing these calculations, the Applicant finds there is latent demand for:

- 7,783 additional ED visits resulting in 1,557 additional admissions across the acuity spectrum assuming similar admit rate. These admissions then translate to:
- 11,409 bed days, of which 9,973 are general or IMCU medical/surgical and 1,436 are ICU; and
- ~27.3 additional general and IMCU medical/surgical beds and ~3.9 additional ICU beds. (See Table 12)

³³ Each surgical case results in X medical/surgical bed days, Y IMCU bed days, and Z ICU bed days.

Table 12: The Number and Type Additional Beds Needs as A Result of the Applicant’s Analysis

Service	Additional Inpatient Bed Type Needed		
	M/S ³⁴	ICU ³⁵	Total
Medical	27.32	3.93	31.26
Surgical	23.35	7.47	30.81
Total Beds	50.7	11.4	62.1

The Applicant adds that in addition to the above two calculations, the final number and types of beds the Hospital is requesting is also influenced by the physical layout of the existing campus. The Applicant states, “BMC is committed to a measured approach to campus design that prioritizes use of BMC’s existing square footage with strategic renovations and additions rather than building new.”³⁶ Consistent with this approach, the Hospital reviewed its current campus layout and determined that it could accommodate the needed inpatient beds in Table 12 through limited construction and renovation of the 5th and 6th floors of the existing Yawkey Building which would enable it to add 22 medical/surgical beds on the 5th floor and 38 medical/surgical beds and 10 ICU beds on the 6th floor, thereby maximizing existing space on to accommodate additional patient panel need.

Need for Other Project Components

The Applicant proposes various other construction and renovation projects at BMC, as detailed under project description. 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.

Analysis

Inpatient Bed Need: Staff has reviewed the information submitted by the Applicant in addition to searching the literature for recent bed need benchmarks or standards. The conclusion of one study was: “There are no specific norms for the required number of beds at hospital and regional levels...”⁹The study further notes that, “The internal hospital environment and regional conditions are also important to consider. For example, reduction in the average length of stay in university hospitals is unlikely, due to the complexity of diseases they treat and services they deliver” and that “It is important to note that some hospitals need overflow beds, due to the conditions and epidemiological characteristics of the region, in case of emergencies.”

³⁴ # Medical/Surgical beds calculated as follows:

- (a) # M/S Medical Beds = Projected M/S Medical Census Days / 365
- (b) # M/S Surgical Beds = Projected M/S Surgical Census Days / 365
- (c) # M/S Total Beds = Projected M/S Total Census Days / 365

³⁵ # ICU beds calculated as follows:

- (a) # ICU Medical Beds = Projected ICU Medical Census Days / 365
- (b) # ICU Surgical Beds = Projected ICU Surgical Census Days / 365
- (c) # ICU Total Beds = Projected ICU Total Census Days / 365

³⁶ <https://www.mass.gov/doc/applicant-responses-pdf-boston-medical-center-hospitalclinic-substantial-capital-expenditure/download>

Staff notes that BMC needs to have adequate capacity as it is an academic medical center that operates a Level I trauma center in a service area that is disproportionately affected by poverty, and issues related to social determinants of health (SDOH), as discussed further under health equity. As a result, Staff finds the Applicant has demonstrated sufficient need for additional inpatient beds to improve patient throughput and ensure patients receive care in the appropriate level of care, and to reduce the backlog in the ED. The expansion of inpatient beds is likely to alleviate the capacity constraints posed by a growing population in the Greater Boston area including the needs of the 65 and over age cohort providing more timely access to inpatient care and reducing ED overcrowding, patients LWOBs and boarding.

Inpatient OR Need: Staff finds that the Applicant has shown sufficient need for the expansion of the OR suite. This expansion will allow for timely access to surgical services, which will reduce the incidence of surgical delays and rescheduling. The expansion will also allow BMC to meet the needs of the projected growth in the Greater Boston population, particularly among the 65+ community.

Other Project Components: Staff inquired further about these projects and concurs with the Applicant that these project components are integral to the Proposed Project and necessary to accommodate the proposed inpatient expansion projects in that they will be needed as the inpatient project components are implemented. Further, staff notes that individually these projects would not be subject to DoN review as they are not DoN requires services or equipment but combined with the inpatient expansion project the minimum capital expenditure is exceeded.

Further, Staff inquired how the Applicant will ensure adequate staffing to ensure the success of the Proposed Project to meet the needs of its patient panel. The Hospital confirmed its commitment to investing in the healthcare workforce through recruitment efforts, by coordinating with educational training programs and by maintaining clinical teaching affiliations with educational institutions by providing clinical and technical rotations, residency and fellowship opportunities. In addition, BMC maintains affiliations with schools locally, across the country, and online to provide rotations for students, including nursing, social work, pharmacy, and others.³⁷

The Applicant highlights the following:

- BMC has a very competitive and highly regarded graduate RN residency program as well as unique programs for nurses who are transitioning from one area to another.
- BMC is the principal teaching affiliate of Boston University School of Medicine and is devoted to training future generations of healthcare professionals.
- BMC operates 61 residency training programs with 729 resident and fellowship positions.
- BMC is the sponsoring institution for 45 Accreditation Council for Graduate Medical Education accredited specialty and sub-specialty programs, participates in 4 pediatric programs sponsored by Boston Children's Hospital, one neurosurgery program sponsored by Beth Israel Deaconess Medical Center, 2 American Dental Association accredited programs, and one podiatric program accredited by the Council for Podiatric Medical Education. BMC is currently affiliated

³⁷ See Responses to DoN questions p. 8-9 <https://www.mass.gov/doc/applicant-responses-pdf-boston-medical-center-hospitalclinic-substantial-capital-expenditure/download>

with 33 participating institutions. In addition, BMC supports 26 active nonstandard programs, programs for which there is no accreditation available.

Staff finds that the Applicant has shown sufficient need for the expansion of the beds and ORs while also highlighting its strategies to address the need for staffing that the SEIU TTG is concerned about. This expansion will allow for timely access to services, which should reduce staff time spent patient holding and placement.

Factor 1: b) Public Health Value, Improved Health Outcomes and Quality of Life; Assurances of Health Equity

In this section staff will assess whether the Proposed Project adds measurable public health value in terms of improved health outcomes and quality of life for the Applicant's existing Patient Panel, while providing reasonable assurances of health equity.

Public Health Value, Health Outcomes, and Quality of Life

The Applicant asserts that the Proposed Project will help improve health outcomes and quality of life for the Patient Panel by expanding access to those services most needed by its Patient Panel. Proposed Project components are supported by evidence-based literature that illustrates the essential role that safety net hospitals play, and the impacts of adequate inpatient bed and surgical capacity have on hospital operations and patient satisfaction and outcomes.

1. Importance of Safety Net Hospitals, Including BMC

Safety net hospitals, including BMC, play an essential role in the United States and the Massachusetts health care systems by providing 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 un-insurance levels in Massachusetts that occurred with health care reform, studies show that following that legislation, the demand for care at safety net facilities continues to rise, and that 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.^h Given 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 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 so as to achieve the objectives of equitable care.ⁱ

2. The importance of Adequate Inpatient Capacity

The Applicant cited literature stating that delays in the delivery of care have 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.^j The Applicant asserts that the addition of inpatient beds is important to reduce harm caused by ED boarding and ED crowding^k by expediting ED

discharges. The Applicant posits that efficient access to inpatient bed will result in improved health outcomes through timely access to care.

3. The importance of Adequate OR Capacity

With regard to OR capacity, the Applicant noted literature suggesting that when utilization exceeds the industry standard benchmark of 80% capacity, the risk of scheduled outpatient procedures being delayed or moved due to emergency surgeries that take longer than expected increases.^l The Applicant cites several studies detailing the potential harm to patients as a result of surgical delays. Delays raise anxiety levels for patients, negatively impact satisfaction, and ultimately place patients at risk.^m 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.ⁿ Consequently, the Applicant asserts that additional OR capacity will reduce delays in accessing surgical treatments and result in improved health outcomes for the patient population.

The Applicant further stress the impacts on socioeconomic groups already disadvantaged with timely access to surgical treatment. Delays exacerbate the challenges these vulnerable groups face^o such as struggles to find time off work, secure childcare, and obtain transportation to and from the hospital;^p these delays result in difficulty reaching at-risk patients, patients having more challenges in advocating for themselves, and ultimately negatively impact equitable access to surgical care.^q Given that BMC, is New England's largest safety net hospital and serves the area's most vulnerable patient population, these consequences can be significant.

The Applicant has submitted measures to assess the outcomes of the Proposed Project by tracking Patient Satisfaction, Average Length of Stay (ALOS) in the ED, the instances of Hospital Acquired Pressure Injuries (HAPI), inpatient surgical waits, surgical site infection rates following the completion of the Proposed Project.

Analysis

Staff notes 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 continue to apply pressure on its hospital capacity.

Staff notes further that as a safety net hospital, this expansion likely will diminish delays in access for the most under-resourced patients and as a result, it is anticipated that BMC will be able to continue playing a significant role in providing emergency, inpatient, and ambulatory care to the area's most vulnerable patients into the future.^r As a result, the increase inpatient beds and operating rooms will improve access to timely treatment in the appropriate setting, which will improve outcomes and quality of life through an improved patient experience, reduced overcrowding and boarding in the ED, and reduced health risks associated with delayed treatment.

Staff finds that with the reporting measures in Appendix 1, the Applicant has sufficiently outlined a case for improved health outcomes and quality of life for its Patient Panel.

Health Equity and Social Determinants of Health (SDoH)

The Applicant affirms its commitment to health equity for all patients and states that through the Proposed Project, it will improve the accessibility of BMC's services for "the area's most under-resourced patients."³⁸ The Applicant characterized its health equity and SDoH focus as a structural part of BMC's operations, asserting that its existing programs and efforts will be advanced through the Proposed Project. It has described them in four distinct categories:

1. Safety Net Hospital
2. #123 Equity Pledge Campaign
3. Culturally Appropriate Care and Language Access
4. Health Equity Accelerator

1. Safety Net Hospital

As a Health Safety Net hospital, the majority of communities that BMC serves are Boston census tracts that are federally designated medically underserved populations. Research shows that after the implementation of health insurance reform measures which expanded access to care in non-safety net hospitals, the proportion of minority patient hospital discharges at minority-serving hospitals in Massachusetts increased. Researchers suggest several possible explanations for this increase over the study period including patient loyalty and access to such services as insurance assistance, interpretation, and intensive case management which are often unavailable at other facilities due to poor reimbursement rates.⁵

2. #123 Equity Pledge Campaign

BMC participates in the American Hospital Association's #123Equity Pledge Campaign³⁹, which strives "to eliminate health and health care disparities that exist for racially, ethnically and culturally diverse individuals and identifies area for leaders to focus on to ensure high-quality, equitable care for everyone." BMC notes examples accelerated progress in these areas through culturally appropriate care and language access, described in detail below.

3. Culturally Appropriate Care and Language Access

The Applicant states that they have adopted the Culturally and Linguistically Appropriate Service (CLAS) standards in six areas, as per DPH's guide to CLAS, many of which are connected with the #123Equity Pledge Campaign. These include Foster Cultural Competence, Build Community Partnerships, Collect and Share Diversity Data, Benchmark: Plan & Evaluate, Reflect and Respect Diversity, and Ensure Language Access.

The Applicant states that greater than one-quarter of BMC's patients do not speak English as a primary language. To address this need, the Applicant notes its efforts to reduce linguistic barriers for limited-English proficiency ("LEP") and deaf and hard of hearing ("DHH") patients seeking care through its Interpreter Services Department ("ISD"). The Hospital offers all medical care and services in 263+ languages (sixteen are available via in-person interpretation and 250+ facilitated are available via

³⁸ Boston Medical Application Narrative pp 2, 3, 19, 21,25, 26 <https://www.mass.gov/doc/application-and-narrative-pdf-boston-medical-center-hospitalclinic-substantial-capital-expenditure/download>

³⁹ The Campaign requires hospital leaders to accelerate progress in the following areas: (1) Increasing 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.

necessary equipment and remote access⁴⁰) 24 hours per day and 7 days per week including holidays and free of charge. The ISD includes a team of approximately sixty (60) professional medical interpreters⁴¹ or language facilitators to help patients receive the care they need by enabling the provider and patient to effectively communicate, thereby ensuring equal access to quality care. This includes providing necessary equipment to the visually, speech and hearing impaired.

4. Health Equity Accelerator

BMC launched its Health Equity Accelerator, a new approach to understand and address drivers of racial inequities, by (1) revisiting conclusions derived from standard statistical analyses; (2) adopting a mindset that if you do not find an inequity, you need to look harder; (3) seeking novel insights through primary research with the appropriate mix of patients; and (4) engaging with community members to achieve both insights and impact.^t 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.^u The Applicant states that patients benefit when all patients receive the care and services that they need in the appropriate setting and by a diverse staff.

Analysis

DoN staff assessed the Proposed Project's impact on equitable access to care. The Interpreter Services, SDoH screening, and campaigns/initiatives demonstrate BMC's commitment to promoting health equity.

As a standard condition of approval of the Proposed Project, as set out in DoN regulation 105 CMR 100.310, all Determination of Need Holders must provide a plan for approval by the Office of Health Equity for the development and improvement of language access and assistive services provided to individuals with disabilities, non-English speaking, Limited English Proficiency (LEP), and American Sign Language (ASL) patients.

Staff finds that with the standard conditions, the Applicant has sufficiently outlined a case for improved health outcomes and health equity.

Factor 1: c) Efficiency, Continuity of Care, Coordination of Care

Following implementation of the Proposed Project, BMC plans to continue its existing process for population health management to ensure efficiency in continuity and coordination of care. These processes have three components: A) discharge and readmissions programming, B) Complex Care Management ("CCM") programming, and C) Screening protocols.

1. Discharge and readmissions programming

The Applicant noted various discharge interventions that help link patients to needed services, prevent

⁴⁰ Equipment includes Video Interpreting Units for communicating in ASL, Telecommunications devices for the deaf include TTY/TDD, mobile phone for text messaging and email, and amplified telephones

⁴¹ 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

unnecessary readmissions and improve health outcomes. The Applicant has a post-discharge protocol where BMC staff proactively schedules follow-up appointments 48 hours prior to discharge. The Hospital's Central Discharge Team has partnered with inpatient and ambulatory staff to expand this intervention to cover all patients discharged from the ED and from inpatient services. The Applicant conducts a General Internal Medicine (GIM) Post-Discharge Clinic led by a multi-disciplinary team that performs no-show outreach and rescheduling; and in-person and telehealth visits. Patients seen by the GIM Post-Discharge Clinic have exhibited lower risk-adjusted readmission rates than patients without GIM follow up. Patients utilizing BMC's expanded inpatient services who are at moderate to high for readmission risk will have access to the clinic.

BMC's Hospital Admission Reduction Program ("HARP") focuses on reducing 30-day readmission rates among moderate to high utilizer patients who are 65+ and are covered by Medicare FFS or the Medicare Shared Savings Program by identifying patients while they are admitted and following them post-discharge into the community in order to catch clinical decompensation in the immediate post-discharge period. The Applicant also highlights Disease Specific Programs currently in place (Chronic Obstructive Pulmonary Disease and heart failure) with the aim to prevent readmission through patient education. These efforts are in addition to monthly review and analysis of Medicare readmissions to identify potential drivers of readmission.

2. Complex Care Management (CCM) Programming

BMC also offers a CCM program for its ACO patients. The CCM partners with community-based supports to coordinate care, address social barriers, and engage patients as active participants in their care. The primary goal of the CCM program is to establish ambulatory care and community-based supports for patients in order to achieve patient-identified goals, improve health related outcomes, and reduce avoidable hospital utilization. The program includes supports for behavioral health, housing needs, and domestic violence resources. The Hospital states that impact data show that the CCM program helps patients manage their health and reduces unnecessary inpatient utilization for enrolled members.

3. Screening Protocols

The Applicant notes that they implemented SDoH screening protocols beginning in 2018 using its Tool for Health & Resilience In Vulnerable Environments (THRIVE), an Electronic Health Record (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. The Applicant currently has plans to enhance the THRIVE process by tracking the status of a patient referral and follow-up to ensure requested assistance is obtained.

Analysis

Staff finds that the Applicant's care coordination and discharge processes will contribute positively to continuity, and coordination of care and thereby improve efficiency through established pre-discharge planning protocols, appointment scheduling and no-show follow-up and tracking of community-based care. With programs for patient follow-up and analysis of the reasons for readmission, an environment for ongoing adaptability to patient needs and process improvement based on those needs has shown

positive outcomes. Staff finds that the Applicant has sufficiently described meaningful programs to demonstrate it has met the requirements of Factor 1c).

Factor 1: d) Consultation

The Applicant has provided evidence of consultation, both prior to and after the Filing Date, with all government agencies that have licensure, certification or other regulatory oversight, which has been done and will not be addressed further in this report.

Factor 1: e) Evidence of Sound Community Engagement through the Patient Panel

The Department's Guideline for community engagement defines "community" as the Patient Panel and requires that, at minimum, the Applicant must "consult" with groups representative of the Applicant's Patient Panel. Regulations state that efforts in such consultation should consist of "engaging community coalitions statistically representative of the Patient Panel."

The Applicant detailed its efforts to engage patients, staff, community members, and local neighborhood stakeholders by hosting two community meetings held over Zoom in January 2022 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. Feedback was very positive, and attendees encouraged the Applicant to move forward with its Proposed Project.

In addition to the meetings noted above, the Applicant engaged in multi-year strategic planning process that included group meetings with many community organizations and stakeholders.⁴²

The Applicant's meetings with the above organizations largely consisted of BMC representatives presenting an overview 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. Attendees conveyed support of the Proposed Project and asked questions about accessibility, modernization, patient infrastructure needs, and signage.

Analysis

The various stakeholder and community engagement panels expressed general support for the Proposed Project. Staff finds that the Applicant engaged a broad array of community coalitions and held multiple meetings and has therefore addressed the community engagement standard for Consult in the planning phase of the Proposed Project. As a result of the above analysis, Staff finds that the Applicant has met the provisions of Factor 1(e).

Factor 1: f) Competition on Price, Total Medical Expenses (TME), Costs and Other Measures of Health Care Spending

The Applicant asserts that the Proposed Project will compete based on price, total medical expenses (TME), provider costs, and other recognized measures of health care spending by addressing BMC's

⁴² Boston Planning and Development Agency (BPDA); Boston Civic Design Commission (BCDC), Boston Transportation Department, South End Landmarks District Commission, Boston Zoning Commission; BMC Community Advisory Board (CAB); BMC Patient and Family Action Council (PFAC)

current capacity constraints and providing timely access to services for all patients. Further, the Applicant notes the positive financial and clinical impacts associated with providing timely access to care from minimizing patient boarding in the ED and minimizing surgical delays, to investing in SDoH programming and conservatively investing on expansion and infrastructure to maximize existing resources.

Reducing the Backlog in the ED

The Applicant cites studies demonstrating financial and clinical impacts associated with providing timely versus delayed access to care and moving patients from the resource-intensive ED to the inpatient setting. 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. Ed patients boarding exacerbates certain medical conditions and co-morbidities and increases ALOS from delays in definitive treatment. All of these outcomes are associated with increased costs.^y A 2017 study by Schreyer and Martin 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.^w Also, a 2020 study found a strong correlation between such measures of ED crowding as ED boarding and risk-adjusted hospital spending which lead the authors to call for improved access to care and better patient flow.^x

Reducing Delays for Surgery

The Applicant notes that insufficient surgical capacity may lead to delays in surgical procedures. While the actual financial costs of surgical delays are challenging to analyze, one study approximated that it is costs about \$20 per minute of delay, based on 2016 data.^y Consequently, by increasing capacity, cost should be reduced due to a decline in delays and wait-times at BMC.

Investing in SDoH Programming

By addressing patients’ SDoH needs, providers can significantly reduce health care costs. The Applicant cites a report from the American Hospital Association that states that socioeconomic factors are responsible for nearly 40% of a patient’s health, while access to care and overall quality care account for 20%.² Consequently, through the Proposed Project BMC can build upon its current successes in population health management and value-based reimbursement by screening for and assisting more patients with SDOH needs and costs should be reduced. 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.^{aa}

BMC has been integrating SDoH programming into its clinical models and has invested in a diverse group of community partnerships throughout its various targeted neighborhoods including: \$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.

Conservative Investment in Expansion and Renovation

The Applicant adds that the Proposed Project is designed to conservatively increase inpatient bed and OR capacity by maximizing BMC’s existing resources, space and infrastructure through small new additions, interior renovations and relocations. By choosing to primarily renovate its current physical plant, rather than to construct a large new addition, the Hospital will be able to ensure its financial feasibility by limiting overall costs of the Proposed Project.

Analysis

Cost containment on a statewide level is impacted through pricing, which is a function of what providers charge payers, what payers agree to pay, and which services are rendered. While payment contracts between providers and Medicare and Medicaid are relatively transparent, those between individual providers and commercial payers are confidential.^{bb} As a result, staff cannot assess how BMC’s contracts with payers.

Staff was able to compare the relative price of BMC to the other hospitals in its AMC cohort, as determined by the Center for Health Information and Analysis for the top three commercial insurers in Massachusetts, Blue Cross Blue Shield, Harvard Pilgrim Health Care, and Tufts Health Plan. Among all three plans BMCs relative price compared to the five other AMCs was the lowest of the second to lowest. (See Table 13) The Prices highlighted in grey below represent the lowest price provider relative to the other AMCs for each insurer. Prices at BMC are the lowest of the six AMCs for two out of the three insurers.

Table 13: AMC Relative Price Comparison Among the Top Three Commercial Payors^{cc}

	Tufts Health Plan	Harvard Pilgrim Health Care	Blue Cross Blue Shield of MA
Academic Medical Center			
Brigham and Women’s Hospital	1.53	1.25	1.33
Massachusetts General Hospital	1.48	1.24	1.33
UMass Memorial Medical Center*	1.41	1.33	1.14
Tufts Medical Center*	1.23	1.12	1.06
Beth Israel Deaconess Medical Center	1.17	1.26	1.20
Boston Medical Center*	1	1.16	1.03
*High Public Paying Hospital			

Staff find that the Proposed Project has the potential to decrease spending through reducing delays in access to care, and accelerating diagnosis and treatment, and improving efficiencies. As described herein, Staff finds that the Applicant described four distinct means whereby the Proposed Project will likely compete on the basis of price, TME, provider costs and other recognized measures of health care spending. Staff further notes that by providing adequate capacity at a lower cost provider, BMC, can reduce costs by minimizing diversions to other higher cost AMC providers.

As a result of the above analysis, Staff finds that the Applicant has met the provisions of Factor 1(f).

Factor 2: Cost containment, Improved Public Health Outcomes and Delivery System Transformation

For Factor 2, the Applicant must demonstrate that the Proposed Project will meaningfully contribute to the Commonwealth's goals for cost containment, improved public health outcomes, and delivery system transformation beyond the Patient Panel.

Cost Containment

The Applicant asserts that the Proposed Project meets cost containment goals in three ways. First, the creation of inpatient bed and surgical capacity will allow for more timely access to care, providing treatment in an appropriate setting. This will allow for a reduction in ED boarding, which leads to a shorter length of stay, a reduction in patients who leave without being seen or against medical advice, and more importantly a timely diagnosis and start of treatment; these in turn positively impact 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 cost of care.

Third, the limited new construction and 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.

Improved Public Health Outcomes

The Applicant anticipates that ability to treat more patients through additional inpatient capacity will expand access to services encompassed in this Application. Such improved access will, in turn, positively impact patient flow and Hospital throughput across BMC, particularly in its ORs and ED. As a result of the Proposed Project, the Hospital's sustainability as an academic safety net hospital will be ensured and, the Applicant asserts, this will lead to improved public health outcomes for Greater Boston's vulnerable and underserved populations into the future.

Delivery System Transformation

As previously examined in Factors 1b), c) and f), BMC has numerous processes and programs in place to ensure linkages to services beyond the traditional medical model to remediate gaps created by SDoHs and improve health outcomes for its patients. BMC has integrated SDoH programming into its screening process with the aim of 1) understanding the social needs impacting patients' health, 2) improving patient care by communicating social needs to care teams, 3) partnering with community-based organizations to eliminate systemic barriers that prevent patients from thriving, and 4) providing patients with information on hospital-based and community resources that can mitigate their social needs. The Applicant provided examples of patient linkages to community programs and resources, which include investments in housing, food-related programs, programs related to education, job

training, employment, programs and services that support financial wellness (e.g., programs that help people apply for health insurance coverage, access no- or low-cost medications, obtain food and groceries, pay their utility bills, file tax returns and secure refunds, etc.), and programs related to building safer communities.

Factor 2 Analysis

For the Proposed Project, cost savings are achieved through efficient, timely access to necessary services in the appropriate setting. The Applicant anticipates that the reductions in ED overcrowding and in length of stay will lead to improvements in health outcomes and patient satisfaction.

BMC is a Disproportionate Share Hospital (DSH) as designated by the Federal Government, and a high-public payer (HPP) hospital as designated by CHIA, and as such is an important provider of access for patients in greater Boston relying on government-sponsored insurance programs. Reporting on the Massachusetts health care system shows that a higher mix of public-payer patients is associated with lower commercial relative prices.^{dd,ee,ff} Additionally, providers that are federally designated as DSHs receive high volumes of publicly insured patients and simultaneously receive lower reimbursement rates from commercial insurers.^{gg} Therefore, maintaining access to the high level of tertiary care health care services for its patient panel is paramount to their ability to access other programs related to SDOH.

Central to the goal of Delivery System Transformation is the integration of social services and community-based expertise. The Applicant has described multiple programs targeting its service area population and has incorporated screenings for SDoH into their electronic health record and actively use the data to direct its investment into community resources that assist with patient's needs. Further, as an MassHealth ACO, the Applicant is subject to requirements regarding SDoH and patient population health needs.

The Health Policy Commission recently performed an analysis of the likely impact of the BMC Proposed Project which staff reviewed. The HPC notes that the spending impacts from hospital expansions are largely driven by variations among providers in commercial prices. It therefore looked at the cost impact of the diversions of commercially insured patients from other providers to BMC. It concluded that *"The proposed expansion of BMC is likely to decrease annual commercial spending by approximately \$1.8M to \$2.2M due to low inpatient pricing and commercial payer mix."*^{hh}

As a result of information provided by the Applicant and additional analysis, staff finds that the Applicant has demonstrated that the Proposed Project has met Factor 2.

Factor 3: Relevant Licensure/Oversight Compliance

The Applicant has provided evidence of compliance and good standing with federal, state and local laws and regulations and will not be addressed further in this report.

Factor 4: Demonstration of Sufficient Funds as Supported by an Independent CPA Analysis

Under Factor 4, the Applicant must demonstrate that it has sufficient funds available for capital and operating costs necessary to support the Proposed Project without negative effects or consequences to the existing patient panel. Documentation sufficient to make such finding must be supported by an analysis by an independent CPA.

The scope of the analysis included review of the audited Financial Statements of BMC Health System, Inc. for the years ended 2020 and 2019, Schedule of Estimated Total Capital Expenditure, the five-year financial projections and income statements prepared by BMC Health System, Inc. including detailed assumptions and supporting documentation for the fiscal years 2022 through 2036, and relevant background information from hospital website and literature. The review included analysis of key metrics that fall into three categories: profitability, liquidity, and solvency.⁴³

Revenues

The only revenue category on which the proposed capital project would have an impact is net patient service revenue (NPSR) which the CPA analyzed from Fiscal Year 2023 through Fiscal Year 2027. The first year in which revenue is present for the Proposed Project is FY 2024. The incremental revenue from the proposed capital project represents approximately 0.703% (less than 8 tenths of 1%) of BMC's operating revenue in FY 2024, and approximately 1.32% of BMC's operating revenue in FY 2027. The CPA's opinion is that revenue growth projected by Management reflects a reasonable estimation based primarily on historical operations.

Operating Expenses

The CPA analyzed each of the categorized operating expenses for reasonableness and feasibility as it relates to the projected revenue items. In order to determine the reasonableness of the Projections for the fiscal years 2023 through 2027, the operating expense review was based on the actual operating results for the years ended 2020 and 2021 at BMC. Based upon analysis of the projected results from 2023 through 2027, the proposed capital project would represent approximately 0.641% (about 6 tenths of 1%) of BMC's operating expenses beginning in FY2024 to 1.13% in FY 2027. The CPA's opinion that the growth in operating expenses projected by Management is reasonable.

Non-operating Gains/Expenses and Other Changes in Net Assets

The items in these categories relate to investment account activity (realized and unrealized) and pension plan funded status. Because these items are unpredictable, nonrecurring, or dependent upon market fluctuations, the nonoperating activity was analyzed in aggregate by comparing them to historical data. Accordingly, it is CPA's opinion that the pro-forma nonoperating gains/expenses and other changes in net assets are reasonable.

⁴³ Profitability metrics, such as EBIDA, EBIDA Margin, Operating Margin, Total Margin, and Debt Service Coverage Ratio are used to assist in the evaluation of management performance in how efficiently resources are utilized. Liquidity metrics, such as Unrestricted Cash Days on Hand and Unrestricted Cash to Debt, measure the quality and adequacy of assets to meet current obligations as they come due. Solvency metrics, such as Debt to Capitalization, Total Assets and Total Net Assets, measure the company's ability to service debt obligations.

Capital Expenditures and Cash Flows

The CPA reviewed historical capital expenditures and cash flows in order to determine whether BMC anticipated reinvesting sufficient funds for technological upgrades and property, plant and equipment and whether the cash flow would be able to support that reinvestment. Current and projected capital projects and loan financing obligations included within the Projections and the impact of those projected expenditures on BMC's cash flow were considered. It is CPA's the opinion that the pro-forma capital expenditures and resulting impact on BMC Health System, Inc.'s cash flows are reasonable.

Since the impact of the proposed capital projects at the Hospital represents a relatively insignificant portion of the operating revenues (approximately 1.3%) and financial position (approximately 2.7%) of BMC Health System, Inc., the Projections are not likely to result in insufficient funds available for capital and ongoing operating costs necessary to support the proposed projects.

As a result of its analysis the CPA concluded the following:

Based upon my review of the Projections and relevant supporting documentation, I determined the projects and continued operating surplus are reasonable and are based upon feasible financial assumptions. Therefore, the proposed capital projects at the Hospital are financially feasible and within the financial capability of BMC Health System, Inc.

Factor 4 Analysis

Staff is satisfied with the CPA's analysis of the Proposed Project's projections. As a result of information provided by the Applicant and additional analysis, staff finds that the Applicant has demonstrated that the Proposed Project has met Factor 4.

Factor 5: Assessment of the Proposed Project's Relative Merit

The Applicant considered and rejected two alternatives to the Proposed Project. 1) continue with the Status Quo and 2) to construct a new tower housing 100-beds and 8 new ORs.

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. However, because of the need, quality, and efficiency concerns, this option was dismissed because it would not provide sufficient space to meet the patient panel's needs for additional inpatient beds and operating room services at as shown by the rising utilization rates, patient volumes and acuity levels. 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 for the patient population including the area's most vulnerable patients.

The second alternative to the Proposed Project is to increase inpatient capacity through construction of a new inpatient building on BMC's main campus that would add one hundred (100) inpatient beds and more than eight (8) inpatient ORs. While this alternative would provide increased access through more capacity, positive patient outcomes and improved efficiencies, this alternative was rejected because of a longer implementation timeline, delayed realization of quality outcomes, and a significantly higher total capital expenditure (~\$450,000,000).

As a result of the above considerations, the Applicant asserts that relative to potential alternatives the Proposed Project was superior in terms of quality, efficiency, and capital and operating costs and that the Proposed Project is the only option that can allow the Applicant to improve the current demands on the system.

Factor 5 Analysis

Staff finds that the Applicant has appropriately considered the quality, efficiency, and capital and operating costs of the Proposed Project and recognizes that there are no feasible alternatives. As a result of information provided by the Applicant and additional analysis, staff finds that the Applicant has demonstrated that the Proposed Project has met Factor 5.

Factor 6: Fulfillment of DPH Community-based Health Initiatives Guideline— Overall Application

Summary and relevant background and context for this application: This is a DoN project that will result in a Tier 3 Community-based Health Initiative (CHI). The Applicant, Boston Medical Center (BMC), engaged in a new, collaborative process in fulfilling its CHI requirement. BMC participated in the Boston, city-wide collaborative Community Health Needs Assessment (CHNA) and Implementation Strategy or Community Health Improvement Plan (CHIP) process. Coordinating with the larger CHNA/CHIP Collaborative, the Applicant utilized multilingual community-wide surveys, focus groups, and in person convenings to obtain community input, and further analyzed data from institution-specific priority Boston communities.

To fulfill Factor 6 requirements, the Applicant submitted a CHI Narrative, Self-Assessment and Addendum, Stakeholder Assessments, a Community Engagement Plan and Addendum, and the 2019 Community Health Needs Assessment (CHNA) and 2019-2022 Implementation Strategy from the regional Collaborative. BMC's next CHNA will be released in October 2022 and will further inform the Applicant's investment strategies for the CHI funds associated with this application.

The Community Health Needs Assessment was released by the Applicant in 2019 provided a summary of socio-demographic data, community assets, and highlights of health outcome information. Developed through data collection and analysis methods, the CHNA was conducted in collaboration with community organizations, health centers, hospitals and the Boston Public Health Commission. Key findings included: housing affordability; food insecurity; transportation; healthcare access and utilization; chronic disease; mental health; substance use; violence and trauma; maternal and child health; sexual health; environmental health; education; employment and workforce development; income and financial security; social environment; green space and the built environment; and obesity, nutrition and physical activity. The Applicant used these findings to develop multi-year **Implementation Strategy/CHIP** that built upon the engagement work conducted by the regional Collaborative.

The Applicant's 2022 CHNA will employ similar strategies for engagement, while connecting with more specific priority areas (e.g., housing, financial stability, behavioral health, and accessing services) and populations (e.g., low-wage workers, older adults, LGBTQ youth, etc.) identified in the 2019-2022 Implementation Strategy. Using the upcoming CHNA, the Applicant will engage its CHI Advisory Board (CAB) to select priorities and identify strategies for implementation with the funds associated with this proposed project.

The Self-Assessment and Addendum provided a summary of community engagement processes and socio-demographic information, data and highlights related to topics and themes of community needs related to the existing CHNA and Implementation Strategy. Through data analysis, surveys, and key informant gatherings, the Applicant and other partners participating in the city-wide CHNA/CHIP Collaborative identified the key priorities and strategies. Additionally, the Applicant worked with its CAB to conduct supplementary analysis in its priority neighborhoods. The Addendum provides plans for engaging the community at large as part of the 2022 CHNA.

Stakeholder Assessments are required. In this case, the CHNA process preceded the formation of the current CAB. When the 2022 CHNA is reported to the Department, the Applicant will also share more information on community and the roles of the CAB members (e.g., their personal participation and role).

The Community Engagement Plan and addendum provided background information for, and explanation of existing CHNA/ planning processes. These elements focused on the 2019 and 2022 CHNA processes for Boston, as well as the supplementary engagement in the priority neighborhoods. Levels of engagement in all activity areas were identified.

The CHI Narrative provided background and overview information for the CHI processes. The narrative also outlines advisory duties for the advisory and allocation committees, and planned use of funding for evaluation and administrative activities. Additionally, the narrative outlines prior DoN related CHI work and new engagement strategies for the upcoming 2022 CHNA. The narrative concludes with CHI funds breakdown and the anticipated timeline for CHI activities.

The timeline, RFP processes, and use of evaluation and administrative funds are all appropriate and in line with CHI planning guidelines. In the 2019 CHNA, the Applicant highlights Social Determinants of Health issues, and should do the same in the 2022 CHNA to ensure selection of strategies that meet Health Priority Guideline principles. This will help the Applicant to focus on the priority areas in the upcoming final assessment that allow for implementation at the root cause level. In the existing Implementation Strategy, these areas are housing, financial stability, behavioral health, and accessing services. The Applicant will work with its robust CAB to select priorities and approve implementation strategies. DPH staff have determined that if the Applicant agrees to address community conditions and root causes while engaging in ongoing work with their CAB, CHI investment will align appropriately with the Health Priorities Guideline. The Applicant will also have additional touchpoints with DPH staff to share lessons learned and the final 2022 CHNA to ensure sound processes for planning and implementation work moving forward.

The anticipated timeline for CHI activities includes a meeting of the CHI Advisory Board two months post approval, identifying the Health Priorities Strategies 5 months post approval, releasing an RFP to

support transparent investment fix to six months later, with funding disbursed about ten months thereafter. With the administrative funds, the applicant's early plans are to develop and disseminate communication materials and support participation through meeting promotion and engagement barrier reduction activities.

Summary Analysis: As a result of information provided by the Applicant and additional analysis, staff finds that with the conditions outlined below, and the ongoing communication on items outlined above, the Applicant will have demonstrated that the Proposed Project has met Factor 6.

Public Comments on the Application and Ten Taxpayer Groups

Per the DoN Regulation, any person, and any Ten Taxpayer group (TTG),⁴⁴ may provide written or oral comment during the first 30 days following the Filing Date of an Application, or during the first ten days after a public hearing. In addition, per the DoN Regulation, any TTG, may participate in the review of an Application for Determination of Need.

A TTG representing Mass General Brigham, Inc. (MGB) registered in connection with the Proposed Project. It requested a public hearing and requested that the Department require an Independent Cost Analysis to provide information as to whether the Proposed Project is consistent with the Commonwealth's Cost Containment Goals.

At the MGB TTG's request a Public Hearing was held on October 28, 2022. Seven people provided oral comments, all in support of the project⁴⁵ (Five represented the Applicant and two represented different unions.) MGB provided no oral testimony at the hearing or written comments during the comment period.

Following the Public Hearing during the post-hearing 10-day regulatory timeframe, an additional TTG formed representing Service Employees International Union (SEIU). SEIU was supportive of the project in terms of its potential to reduce backlogs for surgery and in the ED, however it asked that the Department require a Staffing and Retention Plan prior to project consideration by the PHC.⁴⁶

During the 10-day post-hearing comment period, in addition to the SEIU TTG formation and comment three additional comments of support were received, one representing the Applicant, and two elected officials including Mayor of Boston, Michelle Wu, and Representing the U.S. 7th Congressional District of Massachusetts, Ayanna Pressley.⁴⁷

⁴⁴ A TTG can register with the Department at any time during the first 30 days following the Filing Date of an Application, or during the first ten days after a public hearing held pursuant to 105 CMR 100.445. All TTG member information can be found on the DoN website. <https://www.mass.gov/info-details/boston-medical-center-hospitalclinic-substantial-capital-expenditure#ten-taxpayer-groups->

⁴⁵ A transcript of all testimony can be found on the DoN website. <https://www.mass.gov/info-details/boston-medical-center-hospitalclinic-substantial-capital-expenditure>.

⁴⁶ TTG information can be viewed on the DoN website. <https://www.mass.gov/info-details/boston-medical-center-hospitalclinic-substantial-capital-expenditure>.

⁴⁷All comments can be viewed on the DoN website. <https://www.mass.gov/info-details/boston-medical-center-hospitalclinic-substantial-capital-expenditure>.

Staff has extracted a sample of quotes related to the factors from the oral testimony and includes them in Appendix II.

Findings and Recommendations

Based upon a review of the materials submitted and with the addition of certain conditions, set out below and imposed pursuant to 105 CMR 100.360(A), the Department finds that the Applicant has met each DoN factor and recommends approval of this Application for Determination of Need.

Conditions to the DoN

1. Of the total required CHI contribution of \$6,061,988
 - a. \$1,485,187.06 will be directed to the CHI Statewide Initiative
 - b. \$4,455,561.18 will be dedicated to local approaches to the DoN Health Priorities
 - c. \$121,239.76 will be designated as the administrative fee.
2. To comply with the Holder's obligation to contribute to the Statewide CHI Initiative, the Holder must submit a check for \$1,485,187.06 to Health Resources in Action (the fiscal agent for the CHI Statewide Initiative).
 - i. The Holder must submit the funds to HRiA within 30 days from the date of the Notice of Approval.
 - ii. The Holder must promptly notify DPH (CHI contact staff) when the payment has been made.

Payment should be sent to:
Health Resources in Action, Inc., (HRiA)
2 Boylston Street, 4th Floor
Boston, MA 02116
Attn: Ms. Bora Toro

Appendix I: Measures for Annual Reporting

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. For all measures, the Applicant will provide to the program a baseline upon implementation of each project component, along with updated projections, which the program will use for comparison with the annual data submitted.

- 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.

Appendix II

Factor 1a)

Michelle Wu Mayor of Boston:

“As a safety net hospital that serves a patient population largely reliant on Medicaid and Medicare for coverage, BMC plays an integral role in the city’s, and region’s, healthcare system. This proposal responds to a documented increase in demand for the services being proposed... BMC is also the busiest provider of trauma and emergency services in the region, offering services that work in close coordination with Boston EMS to provide life-saving care to our most critical patients.

Ayanna Pressley Representing the U.S. 7th Congressional District of Massachusetts:

“Despite its status as a renowned Hospital providing exceptional care without exception, capacity constraints at BMC threaten its ability to meet its patient panel demand and support the Greater Boston community. In fact, with medical/surgical occupancy rates greater than 90%, intensive care unit (“ICU”) occupancy rates greater than 80%, inpatient operating rooms (“ORs”) often operating above 80%, and an Emergency Department (“ED”) that is significantly backlogged and overcrowded, the Hospital’s need for additional inpatient space is critical...”

Dana Alas Vice President BMC & Community 1199SEIU, MA Division:

“We share the applicant’s belief that the proposed project would improve BMCs ability to accommodate increasing patient volume, to offer cost-effective care, and to contribute to statewide cost containment by ensuring timely and equitable access to services in appropriate settings. Accordingly, we generally support the application and the proposed project. However, **we are concerned about BMC’s ability to fully staff the proposed 70 new inpatient beds and the 5 new operating rooms.**”

Kate Walsh President and CEO at Boston Medical Center (BMC) Health System:

- "...[D]espite periods of reduced demand due to the COVID-19 pandemic, we’ve experienced unrelenting increases in utilization and acuity across our medical/surgical and ICU inpatient populations, as well as steady demand for surgical and other procedural services. Our midnight medical/surgical occupancy rates are greater than 90%, which means that our day/evening bed capacity is totally maxed out. And our role as the region’s leading trauma provider is imperiled by our ICU occupancy rates and OR utilization rates, both of which are routinely above 80%. These high utilization and occupancy rates not only impact access to inpatient care, but also have an impact on the 130,000 people who visit our Emergency Department every year. Bed capacity gridlock ‘upstairs’ significantly limits ED throughput because so many patients are waiting for inpatient beds that we have had to open inpatient beds in our Emergency Department to help combat extended wait times and improve access to care."
- “Given our high incidence of older and vulnerable patients, demand for surgical procedures at BMC is expected to continue to increase as we are the provider of choice for the uninsured and MassHealth patients who need specialized surgical services, such as kidney transplant, cardiac valve repair in the setting of opioid use disorder, cancer treatment and other tertiary services. These services are best provided to low-income patients at our Hospital because of the social

supports we wrap around our patients, such as pharmacy, our therapeutic food pantry, transportation and translator services, and so much more.”

- "To meet this demand, the Proposed Project is necessary. Without the Proposed Project, our Hospital will, quite simply, be unable to meet its mission."
- "We know that not every answer to our patients’ challenges can be addressed by the Hospital expansion, but this Proposed Project codifies and expands capacity that we need today and it’s largely in our existing physical footprint."

David McAneny, MD Chief Medical Officer and Senior Vice President of Medical Affairs BMC:

- "For context, I would like to provide a brief history of patient volume on our campus. Starting in 2010, BMC experienced a decrease in inpatient volume. In 2014, in order to be effective stewards of health care resources, we submitted a plan to the Department of Public Health to consolidate our two inpatient pavilions into one upgraded facility on our Menino Campus. That proposal was approved by DPH. The project resulted in a decrease in our campus’s total approved square footage and licensed capacity and was very successful in helping the Hospital meet the state’s expressed goals for cost-containment and high-quality care. . . . But our story took a bit of a turn. Despite the investments that we made to implement this plan, BMC subsequently experienced significant patient growth and increased utilization, straining our current infrastructure and resources."

Nancy Gaden, DNP, RN Senior Vice President and Chief Nursing Officer at BMC:

- "In my role as Chief Nursing Officer, I experience the real-life implications of our capacity challenges day-in and day-out. Providers, staff, patients, and family members alike are frustrated by long wait times and Emergency Department boarding. Patients experience discomfort; family members worry that the wait will impact their loved one’s care; and providers and staff are exhausted from managing the overcrowded Emergency Department and are upset for their patients. This is not the kind of care we are committed to giving at BMC."
- "Preliminary data for 2022 further showed that the median time from E.D. arrival to E.D. departure for admitted medical/surgical Emergency Department patients have grown from 7 hours in January to 12 1/2 hours in July, 2022."
- "We have thoughtfully examined and assessed where we need to grow to be able to serve our patients. We have opened alternate inpatient care spaces in recent years, including our Code Yellow and COVID-19 surge spaces, to help offset the high demand we have experienced but these are temporary fixes only. Continued utilization of the beds in these alternate spaces is insufficient and unsustainable as a long-term solution to meet the Medical Center’s patient demand. We – and our patients – require the additional licensed inpatient spaces requested in our Determination of Need application to meet the needs of our patients now and into the future."

Factors 1f) and 2

Ayanna Pressley Representing the U.S. 7th Congressional District of Massachusetts:

BMC's Proposed Project is impressive. It represents a thoughtful and innovative approach to addressing patient needs in a cost-effective manner without jeopardizing quality care. The Hospital has a long history of supporting our community, and particularly the most vulnerable among us,..."

Dana Alas Vice President BMC & Community, 1199SEIU, MA Division:

"We share the applicant's belief that the proposed project would improve BMCs ability to accommodate increasing patient volume, to offer cost-effective care, and to contribute to statewide cost containment by ensuring timely and equitable access to services in appropriate settings. Accordingly, we generally support the application and the proposed project. However, **we are concerned about BMC's ability to fully staff the proposed 70 new inpatient beds and the 5 new operating rooms.**"

Terri Newsom Chief Financial Officer BMC:

- "..., the impact of BMC's DoN was discussed at the Health Policy Commission's Market Oversight and Transparency Committee meeting earlier this month with the group noting the impact of provider cost variation on the overall market, deeming this Proposed Project as one that will decrease annual commercial spending given pricing and commercial payer mix."

Factors 1b), 2, and 6

Petrina Martin Cherry Vice President of Community Engagement and External Affairs, BMC:

- "BMC has been driven by a commitment to provide exceptional health care to all in need regardless of insurance status or ability to pay; what we call "exceptional care without exception." The Hospital is one of the busiest trauma and emergency services centers and the largest safety-net hospital in New England. Moreover, the Hospital is a leader in SDOH programming and health equity initiatives, ...
- Examples of hospital-based and community programs and resources that we connect our 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, programs related to violence and building safer communities, and more)."

Kate Walsh:

- "Additionally, the Proposed Project will allow BMC to build 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."
- "We have proudly served this community for over 100 years. This Proposed Project allows us to expand capacity in a cost-efficient, clinically effective, safe and respectful manner, and most important, allows us to honor our promise of "Exceptional Care. Without Exception" for our region."

Thea James, MD, MBA, VP of Mission, Associate CMO BMC:

- "BMC's inpatient expansion also will generate a contribution of more than \$6 million in community health initiatives and, therefore, will be instrumental in helping to address social determinants of health challenges and health equity issues that impact residents across the Commonwealth.
- As an academic medical center and health system, as well as an anchor institution for our local community, we are acutely aware of the power that we hold to impact the health of our patients and community given our role not just as a health care provider, but also as a mission-driven organization, an employer, a purchaser of goods and services, and an investor. Given these roles, BMC's goal is not only to treat disease, but also to understand and address its root causes. Social and environmental factors known collectively as the social determinants of health contribute to chronic disease and mental health issues creating barriers to accessing health care... In recognition of these factors, BMC has numerous processes and programs in place to ensure linkages to services beyond the traditional medical model to remediate gaps created by the social determinants of health and improve health outcomes for its patients. Community Health Initiatives implemented via this DoN will allow BMC to further these efforts."

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