

APPENDIX 2:
DoN NARRATIVE

APPENDIX 2A:

DoN NARRATIVE – PROPOSED PROJECT DESCRIPTION

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

A. PROPOSED PROJECT COMPONENTS

BMC Health System, Inc. ("Applicant", "BMC Health System", or "System"), with a principal office located at One Boston Medical Center Place, Boston, Massachusetts 02118, is filing a Notice of Determination of Need ("DoN") ("Application") with the Massachusetts Department of Public Health ("Department" or "DPH") for a change in service by Boston Medical Center Corporation d/b/a Boston Medical Center ("BMC" or "Hospital") located at One Boston Medical Center Place, Boston, Massachusetts 02118. Specifically, this Application requests approval for the addition of one (1) 1.5 Tesla ("1.5T") magnetic resonance imaging ("MRI") unit at BMC's main hospital campus ("Proposed Project").

B. OVERVIEW OF THE APPLICANT AND HOSPITAL

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

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

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

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

As discussed in detail throughout this Application, the Proposed Project seeks to address the unique needs of BMC's patient panel through the acquisition of one (1) new 1.5T MRI unit at the Hospital's main campus. Currently, BMC is authorized to provide MRI services to its patients via three (3) MRI units at its main hospital campus – one (1) 1.5T MRI unit and two (2) 3T MRI units. Accordingly, the Proposed Project will increase BMC's total licensed MRI capacity to four (4) MRI units.

The request for implementation of the Proposed Project is based on a comprehensive assessment of BMC's ability to provide accessible MRI services to its patients now and into the future. As radiology has recovered to normal patient volumes through the COVID-19 pandemic, capacity and access concerns have surfaced in MRI operations at BMC. Specifically, historical patient panel and scan volume data indicate that demand currently surpasses target utilization at BMC, with all three (3) existing MRI units operating at greater than 90% capacity and patients facing long wait times for services despite extended operating hours. Moreover, the Applicant anticipates that demand for BMC's MRI services will continue to grow in the future as the population ages, the prevalence of chronic disease across the Hospital's under-resourced patient panel increases, and the Hospital implements its approved DoN Project # BMCHS-22080908-HE for expansion of its inpatient services. In consideration of these factors, the Applicant seeks to add the fourth MRI unit at BMC's main hospital campus to increase operating capacity, alleviate wait times, and ensure that BMC's patient panel has timely access to high-quality MRI services that are necessary for detecting and treating a variety of conditions and enhancing clinical outcomes.

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

Finally, the Applicant notes that the Proposed Project will compete on the basis of price, total medical expenses ("TME"), provider costs, and other recognized measures of health care spending, and will meaningfully contribute to Massachusetts' goals for cost containment by ensuring timely and equitable access to high-quality MRI services. As noted above and described in detail throughout this Application, high demand for MRI services at BMC has led to capacity constraints and increased wait times that, without intervention, are projected to grow into the future. Studies indicate that such constraints and long wait times result in negative health outcomes due to delays in diagnosis and treatment. Through the expansion of MRI capacity at the Hospital, the Applicant aims to provide timely access to MRI services, thereby reducing barriers to accessing care, creating operational efficiencies, improving health outcomes, and reducing costs. Moreover, the Applicant notes that imaging services provided on the new MRI unit will be reimbursed at the same rate as imaging services provided on the existing MRI units at the Hospital, which is particularly significant in recognition of the fact that BMC is a lower-cost provider as compared with the other hospitals in its AMC cohort, and, therefore, will not negatively impact the cost growth benchmark set for the Commonwealth.

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

APPENDIX 2B:

DON NARRATIVE – PROPOSED PROJECT FACTORS

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

F1.a.i Patient Panel:

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

A. OVERVIEW OF PATIENT PANEL SELECTION

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

B. OVERVIEW OF BMC'S PATIENT PANEL

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

In addition to its main hospital campus, BMC also offers services to patients through various hospital satellites (including its new inpatient satellite known as BMC Brockton Behavioral Health Center ("BBHC"), which opened in October 2022 and offers inpatient psychiatry services), as well as school-based health centers and physician group locations. With regard to its physician groups, BMC operates Boston University Affiliated Physicians, Inc. ("BUAP"), a non-profit corporation that employs physicians in Boston to provide health care services, perform medical and clinical research, and provide health and medical education programs. Additionally, BMC operates Faculty Practice Foundation, Inc., d/b/a Boston University Medical Group ("BUMG"),² a

¹ BMC Health System is currently comprised of the following four corporate affiliates:

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

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

² BUMG is jointly owned and operated by Boston Medical Center Corporation and the Boston University Chobanian & Avedisian School of Medicine.

non-profit integrated multi-specialty academic group practice that represents over 880 physicians, non-physician clinicians, educators, and researchers across 18 clinical departments at BMC and coordinates the delivery of managed care services by its physician organizations known as faculty practice plans (“FPPs”). BMC also partners with various community health centers (“CHCs”) to meet patients’ health care needs in the communities where they live, and participates with such CHCs and other provider organizations as part of the Boston Accountable Care Organization (“BACO”). Together, with its affiliates and CHC partners, BMC provides an integrated system of health care delivery to ensure that vulnerable and underserved populations in the Boston metropolitan area have access to coordinated, high-quality, and cost-effective primary, specialty, and tertiary care that meets individual patients’ needs and preferences.

C. PATIENT PANEL DATA

1. BMC’s Overall Patient Panel³

As outlined in Table 1, utilization data for the 36-month period covering FY20 through FY22 and preliminary data for FY23 year-to-date (“YTD”) demonstrate that BMC serves a large and diverse patient panel. Despite decreasing slightly between FY21 and FY22 primarily due to factors attributable to the COVID-19 pandemic⁴, BMC’s patient panel increased overall during the three-year period between FY20 and FY22, from 207,237 patients and 977,488 encounters in FY20 to 278,408 patients and 1,223,890 encounters in FY22. Significantly, the Applicant notes that the Hospital experienced increases in its patient panel over this time period even after accounting for utilization attributed solely to COVID-19 testing and vaccinations.⁵

³ Please note that BMC’s patient panel does not include utilization of patient care services at the following locations:

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

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

⁴ BMC experienced a decrease in patients, visits, and discharges for several months in FY22 due to multiple factors. Specifically, in response to the COVID-19 Omicron surge, BMC, like many hospitals across the state, was subject to guidance mandating the reduction of non-essential, non-urgent surgical procedures and, therefore, experienced a decline in elective surgical inpatient care for a portion of FY22. Additionally, the Hospital experienced increases in COVID-19 patients requiring a higher level of inpatient care and longer lengths of stay as well as increases in acute non-COVID-19 patients during this time. These factors, as well as others (e.g., statewide staffing shortages, a decrease in COVID-19 vaccines as compared to earlier years, etc.), contribute to the data outlined in Table 1, which shows lower rates of patients and visits as compared to FY21, but nonetheless higher rates of patients and visits overall between FY20-FY22.

⁵ The unique patient/visit counts outlined in Table 1 include COVID-19 vaccination patients/visits. In FY21, the Hospital provided approximately 196K COVID-19 vaccinations during vaccine only visits. In FY22, the Hospital provided approximately 68K COVID-19 vaccinations during vaccine only visits. After accounting for these data, BMC’s patient panel visits in FY22 still represent an increase from FY20.

With regard to gender, BMC's patient panel consists of approximately 55.6% females and 44.4% males based on FY22 data, with gender unknown for less than 0.02% of the patient population. In terms of age, the majority of BMC's patient panel is between the ages of 18-64 (71.3% in FY22). However, there are also a substantial number of patients that are 0-17 years of age (14.7% in FY22) and 65+ (14% in FY22). Race/ethnicity data as self-reported by BMC patients indicate that BMC's panel is comprised of a mix of races. Specifically, in FY22, the predominant races served by BMC were Black/African American (31.9%) and White/Caucasian (25%). Additionally, patients self-identified as Hispanic/Latino (15.8%), Asian (4.9%), American Indian/Alaska Native (0.3%), Native Hawaiian/Pacific Islander (0.1%), and Other (21.9%). Finally, geographic origin demographics show that BMC patients mainly reside in the Boston/Greater Boston area, with nearly 60% of patients residing in the following ten (10) communities: Dorchester, Boston, Roxbury, Brockton, Mattapan, Hyde Park, Revere, Quincy, Chelsea, and Lynn.

Table 1: BMC Patient Panel Demographics								
Demographic	FY20		FY21		FY22		FY23 YTD ⁶	
	Count	%	Count	%	Count	%	Count	%
BMC Total Unique Patients	207,237		299,258		278,408		177,685	
Gender								
Female	115,932	55.9%	164,952	55.1%	154,683	55.6%	102,078	57.4%
Male	91,146	44.0%	134,146	44.8%	123,673	44.4%	75,515	42.5%
Other/Unknown	159	0.1%	160	0.1%	52	0.02%	92	0.1%
Age								
0-17	30,702	14.8%	35,705	11.9%	40,787	14.7%	26,470	14.9%
18-64	145,970	70.4%	220,976	73.8%	198,388	71.3%	122,205	68.8%
65+	30,534	14.7%	42,548	14.2%	39,043	14.0%	28,856	16.2%
Unknown	31	0.01%	29	0.01%	190	0.1%	154	0.1%
Race/Ethnicity⁷								
American Indian/Alaska Native	766	0.4%	980	0.3%	927	0.3%	587	0.3%
Asian	9,395	4.5%	16,756	5.6%	13,665	4.9%	8,043	4.5%
Black/African American	71,748	34.6%	87,615	29.3%	88,795	31.9%	62,025	34.9%
Hispanic/Latino	25,105	12.1%	35,856	12.0%	44,126	15.8%	32,947	18.5%
Native Hawaiian/Pacific Islander	384	0.2%	650	0.2%	193	0.1%	585	0.3%
White/Caucasian	54,311	26.2%	92,034	30.8%	69,672	25.0%	42,869	24.1%
Other ⁸	45,528	22.0%	65,367	21.8%	61,030	21.9%	30,629	17.2%
Geographic Origin⁹								
Dorchester	38,661	18.7%	50,673	16.9%	51,985	18.7%	32,933	18.5%
Boston	28,539	13.8%	47,193	15.8%	43,486	15.6%	25,938	14.6%
Roxbury	11,990	5.8%	14,882	5.0%	12,745	4.6%	8,368	4.7%
Brockton	8,035	3.9%	9,239	3.1%	9,716	3.5%	6,986	3.9%

⁶ BMC's FY is from 10/1 – 9/30. FY23 data are provided YTD through 3/2023 and, therefore, are subject to change. Accordingly, caution should be exercised in utilizing these data for purposes of annual comparisons. Please note that FY23 data are inclusive of patients seen at BBHC, which opened in October 2022.

⁷ Race/ethnicity data are 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.

⁸ "Other" includes: Not Specified, Other, Declined - Not Available, and Unknown.

⁹ 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).

Mattapan	6,909	3.3%	9,139	3.1%	9,773	3.5%	6,068	3.4%
Hyde Park	6,293	3.0%	9,730	3.3%	8,904	3.2%	5,475	3.1%
Revere	5,984	2.9%	6,794	2.3%	7,494	2.7%	5,251	3.0%
Quincy	5,673	2.7%	7,759	2.6%	7,700	2.8%	4,949	2.8%
Chelsea	4,875	2.4%	5,259	1.8%	5,806	2.1%	4,077	2.3%
Lynn	4,775	2.3%	5,081	1.7%	5,848	2.1%	4,030	2.3%
All Other	85,503	41.3%	133,509	44.6%	114,951	41.3%	73,610	41.4%
BMC Total Patient Visits	977,488		1,378,548		1,223,890		579,737	

In addition to the demographics outlined in Table 1, the payer mix for BMC's patient panel for the last three fiscal years is outlined in Table 2. As shown in the table, the percentage of BMC's primary care lives covered by alternative payer mix ("APM") and ACO contracts is 29%, based on FY22 data. The table also shows that the largest portion of BMC's patients receive insurance coverage through a public payer; in FY22, BMC's public payer mix included nearly 55% of all patients. Additionally, commercially insured patients represented 33.9% of BMC's patient panel and free care and health safety net ("HSN") patients represented 2.3%. Remaining patients (9.1%) were covered by some other form of insurance.

Table 2: BMC APM/ACO and Payer Mix Percentages				
	FY20	FY21	FY22	FY23 YTD ¹⁰
APM Contract Percentages (for any system-affiliated Primary Care Physicians)				
APM and ACO Contracts	26.2%	23.2%	29.0%	32.7%
Non-APM and Non-ACO Contracts	73.8%	76.8%	71.0%	67.3%
Payer Mix Percentages				
Commercial ¹¹	34.5%	40.6%	33.9%	29.4%
HMO/POS	10.4%	13.9%	11.4%	9.4%
PPO	8.8%	11.6%	9.3%	8.1%
Other ¹²	15.3%	15.1%	13.1%	11.9%
MassHealth	13.6%	10.9%	13.5%	15.5%
Managed Medicaid	28.3%	24.6%	27.8%	32.5%
Commercial Medicare	6.5%	6.1%	6.5%	8.7%
Medicare Fee-for-Service	9.3%	7.8%	6.9%	7.3%
Free Care/HSN	4.4%	2.7%	2.3%	1.7%
All Other ¹³	3.4%	7.4%	9.1%	4.9%

2. MRI Patient Panel

The Proposed Project will increase access to MRI services through the addition of one (1) additional 1.5T MRI unit at BMC's main hospital campus. Accordingly, in addition to reviewing the

¹⁰ BMC's FY is from 10/1 – 9/30. FY23 data are provided YTD through 3/2023 and, therefore, are subject to change. Accordingly, caution should be exercised in utilizing these data for purposes of annual comparisons. Please note that FY23 data are inclusive of patients seen at BBHC, which opened in October 2022.

¹¹ "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.

¹² Please note that in some instances, the Applicant is not able to easily isolate whether a Commercial plan is HMO/POS or PPO/Indemnity. In these instances, in an effort to offer a complete payer mix for the patient panel, "Commercial – Other" has been provided an alternative category.

¹³ "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.

demographic data for the Hospital overall, the Applicant also conducted a focused review of its patient panel's historical MRI demographic profile to determine the need for the Proposed Project.

The demographic profile outlined in Table 3 below illustrates that BMC's MRI patient panel is largely reflective of the Hospital's panel overall in terms of gender, age, race/ethnicity, and geographic origin. As outlined in Table 3, in FY22:

- 60% of the Hospital's MRI patients were female and 40% were male;
- The majority (72.5%) of BMC's MRI patients were ages 18-64, followed by a substantial percentage of patients ages 65+ (24.5%), and a subsequently smaller percentage of patients ages 0-17 (3.0%);
- With respect to race and ethnicity, the data which are self-reported by patients provide that BMC's MRI patient panel is reflective of the Hospital's commitment to provide equitable care to a diverse patient population. As outlined in Table 3, in FY22, MRI patients self-identified as follows: 34.9% as Black/African American, 25.4% as White/Caucasian, 21% as Hispanic/Latino, 4.4% as Asian, 0.3% as American Indian/Alaska Native, 0.3% as Native Hawaiian/Pacific Islander, and 13.7% as Other or declined to respond; and
- Geographic origin demographics indicate that BMC's MRI patients mainly reside in the Boston/Greater Boston area, similar to the Hospital's panel overall.

Table 3: BMC MRI Patient Panel Demographics								
	FY20		FY21		FY22		FY23 YTD ¹⁴	
	Count	%	Count	%	Count	%	Count	%
Total Unique MRI Patients	12,020		14,817		15,449		8,991	
Gender								
Female	6,944	57.8%	8,829	59.6%	9,276	60.0%	5,470	60.8%
Male/Other/Unknown ¹⁵	5,076	42.2%	5,988	40.4%	6,173	40.0%	3,521	39.2%
Age								
0-17	448	3.7%	439	3.0%	456	3.0%	278	3.1%
18-64	8,913	74.2%	11,079	74.8%	11,200	72.5%	6,594	73.3%
65+/Unknown ¹⁶	2,659	22.1%	3,299	22.3%	3,793	24.5%	2,119	23.6%
Race/Ethnicity¹⁷								
American Indian/Alaska Native	45	0.4%	58	0.4%	53	0.3%	34	0.4%
Asian	423	3.5%	582	3.9%	677	4.4%	394	4.4%
Black/African American	4,059	33.8%	5,023	33.9%	5,385	34.9%	3,230	35.9%
Hispanic/Latino	2,057	17.1%	2,666	18.0%	3,251	21.0%	2,022	22.5%
Native Hawaiian/Pacific Islander	24	0.2%	26	0.2%	44	0.3%	28	0.3%
White/Caucasian	3,455	28.7%	4,163	28.1%	3,928	25.4%	2,121	23.6%
Other ¹⁸	1,957	16.3%	2,299	15.5%	2,111	13.7%	1,162	12.9%
Geographic Origin¹⁹								
Dorchester	2,091	17.4%	2,572	17.4%	2,794	18.1%	1,612	17.9%

¹⁴ BMC's FY is from 10/1 – 9/30. FY23 data are provided YTD through 3/2023 and, therefore, are subject to change. Accordingly, caution should be exercised in utilizing these data for purposes of annual comparisons.

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

¹⁶ Includes: "65+" and "Unknown" for confidentiality due to regulations related to data with counts <11.

¹⁷ Race/ethnicity data are 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.

¹⁸ "Other" includes: Not Specified, Other, Declined - Not Available, and Unknown.

¹⁹ 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); Revere (02151); Chelsea (02150); Mattapan (02126); Quincy (02169 – 02171, 02269); Lynn (01901 – 01905); and Hyde Park (02136).

Boston	1,681	14.0%	2,042	13.8%	2,127	13.8%	1,223	13.6%
Roxbury	551	4.6%	673	4.5%	725	4.7%	430	4.8%
Brockton	470	3.9%	589	4.0%	602	3.9%	397	4.4%
Revere	448	3.7%	577	3.9%	557	3.6%	364	4.0%
Chelsea	369	3.1%	401	2.7%	422	2.7%	243	2.7%
Mattapan	361	3.0%	439	3.0%	519	3.4%	303	3.4%
Quincy	349	2.9%	432	2.9%	474	3.1%	241	2.7%
Lynn	316	2.6%	385	2.6%	447	2.9%	273	3.0%
Hyde Park	303	2.5%	387	2.6%	417	2.7%	255	2.8%
All Other	5,081	42.3%	6,320	42.7%	6,365	41.1%	3,650	40.5%

Finally, the Applicant also reviewed the payer mixes for its MRI patient panel. This information is detailed in Table 4. Similar to the BMC panel overall, approximately 26% of the Hospital's MRI patients are covered by APM/ACO contracts. Additionally, like the Hospital's overall panel, the majority of BMC's MRI patients receive insurance coverage through a public payer. In FY22, BMC's MRI public payer mix included greater than 70% of all MRI patients, including MassHealth, Managed Medicaid, Commercial Medicare, and Medicare FFS beneficiaries. The remainder of patients were covered by a commercial plan, under the HSN, or through some other form of insurance.

Table 4: BMC MRI APM/ACO and Payer Mix Percentages				
	FY20	FY21	FY22	FY23 YTD ²⁰
APM Contract Percentages (for any system-affiliated Primary Care Physicians)				
APM and ACO Contracts	23.2%	25.2%	25.6%	26.6%
Non-APM and Non-ACO Contracts	76.8%	74.8%	74.4%	73.4%
Payer Mix Percentages				
Commercial ²¹	29.7%	29.9%	26.2%	24.6%
HMO/POS	8.7%	8.9%	7.5%	7.9%
PPO	6.3%	6.8%	6.2%	5.5%
Other ²²	14.6%	14.1%	12.5%	11.2%
MassHealth	16.0%	15.6%	18.1%	18.8%
Managed Medicaid	24.5%	26.3%	26.9%	28.2%
Commercial Medicare	10.8%	11.7%	13.6%	14.2%
Medicare FFS	13.8%	12.1%	11.7%	10.4%
Free Care/HSN	2.4%	2.0%	1.5%	1.5%
All Other ²³	2.8%	2.4%	2.0%	2.3%

F1.a.ii Need by Patient Panel:

Provide supporting data to demonstrate the need for the Proposed Project. Such data should demonstrate the disease burden, behavioral risk factors, acuity mix, health disparities, or other objective Patient Panel measures as noted in your response to Question F1.a.i that demonstrates the need that the Proposed

²⁰ BMC's FY is from 10/1 – 9/30. FY23 data is provided YTD through 3/2023 and, therefore, is subject to change.

²¹ "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.

²² Please note that in some instances, the Applicant is not able to easily isolate whether a Commercial plan is HMO/POS or PPO/Indemnity. In these instances, in an effort to offer a complete payer mix for the patient panel, "Commercial – Other" has been provided an alternative category.

²³ "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.

Project is attempting to address. If an inequity or disparity is not identified as relating to the Proposed Project, provide information justifying the need. In your description of Need, consider the principles underlying Public Health Value (see instructions) and ensure that Need is addressed in that context as well.

As discussed in the Project Description, the goal of the Proposed Project is to address the existing and future needs of BMC's unique patient panel by providing increased access to timely, high-quality MRI services. To this point, the Applicant notes that it launched a comprehensive assessment of patient panel demographics, historical utilization trends, capacity data, and projected growth to establish the need for the Proposed Project. Through such assessment, BMC determined that its existing MRI resource base is insufficient to meet patient panel need and that an additional 1.5T MRI unit sited at BMC's main hospital campus is necessary to provide the timeliness and quality of care that its patients require and deserve. Specifically, the Applicant anticipates that the proposed addition of one (1) new 1.5T MRI on BMC's main hospital campus will help alleviate capacity constraints and satisfy patient panel needs by decreasing wait times, helping address system reliability and downtime concerns, and providing members of BMC's patient panel, including those within identified under-resourced populations, with enhanced access to high-quality, efficiently-operated, and equitable MRI services that are necessary to detecting and treating a variety of conditions and enhancing clinical outcomes.

A. REVIEW OF HISTORIC MRI DEMAND AND RELATED CONCERNS

BMC is licensed to operate three (3) MRI units – one (1) 1.5T MRI unit and two (2) 3T MRI units. All three (3) units are located on BMC's main campus. As outlined in Table 3, there has been significant growth in the number of patients receiving MRI services at BMC via these units over the last few years. Specifically, the number of unique patients receiving MRI services at BMC increased by 23.2% from FY20 to FY21 (from 12,020 unique patients in FY20 to 14,817 unique patients in FY21), and by another 4.3% from FY21 to FY22 (with 15,449 unique patients in FY22). Preliminary data for FY23 YTD suggest that these numbers will continue to grow into the future – in just the first half of FY23, BMC reported 8,991 unique patients who received 12,304 MRI scans.

In addition to patient counts, BMC's high historical MRI demand is evidenced by its scan volumes. Table 5 outlines these data for the Hospital's existing three (3) MRI units and provides a breakdown of inpatient MRI scans versus outpatient MRI scans, as well as areas of the body scanned.

Table 5: BMC MRI Historical Scan Volume				
	FY20	FY21	FY22	FY23 YTD ²⁴
Total MRI Scans	18,100	22,565	23,331	12,304
Source of Origination				
Inpatient MRI Scans ²⁵	4,113	4,837	4,913	2,424
Outpatient MRI Scans	13,987	17,728	18,418	9,880
Area of Body Scanned				
Face, Head, Neck, Brain	8,404	10,030	10,620	5,270
Spine	4,499	5,830	5,946	3,296
Extremities	2,154	2,540	2,641	1,553
Abdomen	1,401	1,815	1,818	980

²⁴ BMC's FY is from 10/1 – 9/30. FY23 data is provided YTD through 3/2023 and, therefore, is subject to change.

²⁵ Please note that the inpatient number provided also includes ED patients, observation patients, and bedded outpatients.

Pelvis	798	1,100	1,179	674
Breast	332	431	480	277
Cardiac	232	401	339	175
Chest	71	114	85	47
Blood Vessels	35	–	18	–
Spectroscopy	–	13	16	–
Fetal	–	–	–	–
Elastography	–	–	–	–
Other	157	273	183	–

Note: For compliance with the Health Insurance Portability and Accountability Act, categories with 11 scans or less have been denoted with a “–” symbol.

As outlined in Table 5 from FY20-FY22, total MRI scan volume at BMC increased by 28.9% (from 18,100 scans in FY20 to 23,331 scans in FY22). In terms of origination, analytics from BMC’s Radiology Department for the last three (3) fiscal years indicate the following: (1) approximately 21.3% of all MRIs ordered originated from inpatient services and 78.7% from outpatient referrals; (2) inpatient MRI scans increased by 19.4% from FY20-22; and (3) outpatient MRI scans increased by 31.7% during the same time period. These increases were the result of increased clinical demand as well as the institution of various efficiency improvements which resulted in improved throughput and increased availability and included the following:

- (1) FY19: Weekend outpatient hours established on Saturday and Sunday, 7AM-7:30PM;
- (2) March 2020: Routine inpatients scheduled during overnight shifts (while not an ideal practice in the industry, BMC ensures that patients’ screening processes are completed and staffs the overnight shift with two technologists);
- (3) April 2022: Evening outpatient hours extended, Monday-Friday from 7AM-9:30PM; and
- (4) October 2022: Protocol clean-up brought throughput to faster than industry standards (30-minute slots versus 40-minute slots for some).

Notwithstanding this improvement work, however, the increased demand for MRI services has impacted utilization of BMC’s existing MRI units, leading to high operating capacity and extended wait times. In FY22, all three (3) of the Hospital’s existing units operated at greater than 90% capacity (approximately 93%). This high utilization has resulted in long wait times for services. For instance, in FY22, inpatients seeking MRI services at BMC faced average wait times of 8.5 hours and patients seeking outpatient MRI services faced average wait times of 50 days, which is 20 days greater than the target.²⁶ These delays lead to longer lengths of stay for inpatients, as well as delays in diagnosis and treatment for inpatients and outpatients alike, all of which can lead to higher costs and poorer clinical outcomes for BMC’s patients.

Further compounding the issue are concerns related to downtime and system reliability. Specifically, two (2) of BMC’s existing three (3) MRI units experience periodic unscheduled downtime. This is due to age – the existing 1.5T MRI unit is a 16-year-old unit at risk of failure – as well as system-related problems – one (1) of the Hospital’s existing 3T MRI units is a problematic machine with a history of elevated downtime hours. Industry standard downtime for MRIs is 30-60 hours per year. In FY22, BMC’s MRI downtime far-exceeded this standard, with 624 hours of downtime. Preliminary data for FY23 suggest that this problem continues – FY23 data YTD through February 2023 indicate the Hospital’s MRI units (2 of the 3 units) have already

²⁶ Please note that the inpatient number provided also includes ED patients, observation patients, and bedded outpatients. Additionally, please note that outpatient wait times are based on the third next available appointment. This is industry standard and measures average length of time in days between the day a patient makes a request for an appointment and the third available appointment available.

experienced 120 hours of downtime. When the units experience downtime, patients experience delays in imaging, which negatively impacts health care costs and outcomes for BMC's patients. For instance, it is estimated that approximately 400 patients were impacted by the downtime issues in FY22 and approximately 100 patients have been impacted by the downtime issues YTD in FY23.

B. PROJECTED MRI DEMAND AND RELATED CONCERNS

The Hospital anticipates that demand for MRI services will continue to grow into the future. Projected demand is based on several factors including, but not limited to, the historic trends and downtime issues outlined above, a growing and aging population, BMC's status as a safety net hospital, and the Hospital's plans to implement approved DoN Project #BMCHS-22080908-HE for expansion of its inpatient services. Details regarding each of these contributing factors are provided below.

1. A Growing and Aging Population

With regard to population growth, the Applicant highlights the need for BMC to expand its MRI capacity to meet the projected growth in MRI patients, particularly those 65+. The Applicant notes that continued growth among BMC's patient panel is supported by population growth estimates provided by the University of Massachusetts' Donahue Institute ("UMDI"), a public service, research, and economic organization that contracts with the Secretary of the Commonwealth of Massachusetts to produce population projections for Massachusetts geographies for use in both public and private planning initiatives. According to data provided by UMDI, the Massachusetts statewide population is projected to grow a total of 6.4% from 2020 through 2040, and the Greater Boston region, which is home to the large majority of BMC's MRI patients, is expected to experience an increase of 14.2% in its overall population in the 2020 to 2040 period.²⁷ Moreover, a close analysis of UMDI's projections shows that the growth in the Commonwealth and the Greater Boston region's population is segmented by age sector, that modest growth is attributable to residents ages 0-64, and that the highest percentage of the state and the region's population growth is attributable to residents ages 65+.²⁸ For instance, in the Greater Boston region, between 2020 and 2040, the 0-64 age cohort is projected to grow 9.6% and the 65+ age cohort is expected to grow 40.7%.²⁹

As the number of patients across the state and in the Greater Boston region continues to grow and age, the Applicant anticipates that the need for BMC's MRI services will increase. To this point, the Applicant specifically highlights that literature on patterns of MRI use indicate that imaging rates tend to be higher among older adults as the imaging modality is beneficial in connection with diagnosing and treating a variety of age-related conditions.³⁰ The Hospital's own historical data appear consistent with such literature and with the trends projected by UMDI. While MRI utilization rates are high across all age cohorts within BMC's MRI patient panel due to the vulnerable population the Hospital serves, patients 65+ not only account for a significant portion of BMC's MRI patient panel (24.5% in FY22) but have also increased at a higher rate over the last three (3) fiscal years compared to all other age cohorts (42.6% growth from FY20 to FY22 compared to 24.5% growth for MRI patients 0-64 over the same time period). Moreover, FY23

²⁷ *UMDI-DOT Vintage 2018 – EXCEL Age/Sex Details*, MASSACHUSETTS POPULATION ESTIMATES PROGRAM, UMASS DONAHUE INSTITUTE, http://pep.donahue-institute.org/publications/AgeSexDetails_UMDI-DOT_V2018.xlsx.

²⁸ *Id.*

²⁹ *Id.*

³⁰ WORLD HEALTH ORGANIZATION, WORLD REPORT ON AGING AND HEALTH (2015), *available at* http://apps.who.int/iris/bitstream/10665/186463/1/9789240694811_eng.pdf.

YTD data suggest that these trends within BMC's MRI patient panel will continue into the future, with both the total number of MRI patients as well as the number of MRI patients ages 65+ expected to increase.

2. BMC's Status as a Safety Net Hospital

In addition to age, the Applicant notes that another factor that typically contributes to increases in utilization of health care services is a high incidence of vulnerable patients. This demographic is detailed in the Hospital's patient panel data. Specifically, the majority of communities that BMC serves are Boston census tracts that are federally-designated medically underserved populations, many of which experience a high percentage of patients impacted by homelessness and substance use disorders ("SUDs"). Additionally, BMC's patient panel shows that the majority of its patients receive insurance coverage through a public payer, receive free care, or are covered under the HSN (approximately 57% of BMC's overall panel and 71.8% of BMC's MRI panel).

The Hospital's high incidence of vulnerable patients is reflective of its status as New England's largest safety net hospital and further illustrates the need for the Proposed Project. Specifically, as detailed in the literature discussed below in Factor F1.b.i, it is anticipated that BMC and other safety net hospitals will continue to play a disproportionately large role in providing health care to the area's most under-resourced patients into the future. As high numbers of disadvantaged patients continue to seek care at BMC, it is essential to achieving the objectives of equitable care that the Hospital have the resources and depth of services, such as MRI, that are necessary to provide such patients with timely access to high-quality care that does not jeopardize outcomes.

3. Implementation of DoN Project #BMCHS-22080908-HE for Inpatient Service Expansion

Finally, the Applicant anticipates that expansion of BMC's inpatient services associated with implementation of its approved DoN Project #BMCHS-22080908-HE will drive future demand for MRI services. To this point, the Applicant notes that approved DoN Project #BMCHS-22080908-HE includes the addition of seventy (70) new inpatient beds as well as the addition of five (5) new inpatient operating rooms ("ORs"), among other project components. The Hospital is in the process of implementing such project, with a projected go-live date in FY24.

As discussed above, between FY20-FY22, approximately 31.7% of all MRIs ordered at BMC originated from inpatient services. As the number of inpatient beds and inpatient ORs is expanded through implementation of DoN Project #BMCHS-22080908-HE, the number of inpatient referrals for MRI services is expected to grow as well. The Applicant anticipates that this growth in inpatient MRI referrals will exacerbate the current capacity constraints discussed herein and, therefore, emphasizes the need for additional MRI capacity to accommodate its MRI patient panel upon influx of such new inpatients.

C. MEETING EXISTING AND FUTURE NEEDS THROUGH THE PROPOSED PROJECT

In consideration of the historical and forward-looking factors discussed above, the Applicant proposes the addition of a fourth MRI unit at BMC's main hospital campus. Without the Proposed Project, MRI utilization rates will continue to rise to unsustainable levels as patient volumes continue to increase and the Hospital's existing three (3) units are further taxed. As the Hospital's existing MRI units are overburdened by increased utilization, it is anticipated that the amount of downtime will increase each year, beyond the industry standard of 30-60 hours per year. Throughput will continue to be negatively impacted and patients will continue to face increased

wait times and delays in diagnosis and treatment, which lead to high costs as well as poorer outcomes.

Through the Proposed Project, the Applicant seeks to help alleviate these issues. Table 6 illustrates the Hospital's future year MRI volume projections following implementation of the Proposed Project.

Table 6: BMC Projected MRI Scan Volume				
FY24	FY25	FY26	FY27	FY28
25,234	30,728	31,670	32,597	32,597

The expansion of MRI services will accommodate BMC's organic patient population growth, particularly with regard to patients 65+; allow for timely access to high-quality imaging services in New England's largest safety net hospital and thereby ensure the provision of equitable care to BMC's diverse population; ease the strain on the Hospital's existing MRI units and help deal with downtime issues which exacerbate wait times, disrupt patient care, and precipitate leakage to higher-cost providers; and accommodate the increased number of inpatient MRI referrals anticipated upon implementation of BMC's approved DoN Project #BMCHS-22080908-HE for inpatient service expansion. Specifically, the Hospital anticipates that the additional MRI unit, which will operate thirteen (13) hours per day, seven (7) days per week³¹ for outpatient referrals, as well as additional time for inpatient scans allowing for approximately 8,300 more MRI scans per year which equates to approximately a 29% increase in MRI capacity. In total, such expansion will ensure improved access to high-quality MRI services for all BMC patients with appropriate clinical indications, which, in turn, will lead to higher patient satisfaction, improved health outcomes, and decreased costs. Accordingly, the Applicant proposes to expand MRI capacity through the addition of one (1) 1.5T MRI unit at BMC.

F1.a.iii Competition:

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

The Proposed Project competes on the basis of price, TME, provider costs, and other recognized measures of health care spending by addressing BMC's current capacity constraints and providing timely access to MRI services for all patients, including the Hospital's large under-resourced patient population. When patients have timely access to appropriate imaging modalities, clinicians can improve health outcomes through expedited diagnoses and more accurately screen for certain conditions, such as cancer, leading to more appropriate therapeutic interventions and the effective monitoring of the efficacy of treatment, all of which lead to reduced costs.³²

In regard to reducing overall TME, numerous studies have found that more timely access to diagnostic tools, such as MRIs reduce costs due to expedited care and more accurate staging.³³

³¹ Except for certain holidays, such as Christmas, etc.

³² Chandrajit.P. Raut et al., High Rates of Histopathologic Discordance in Sarcoma with Implications for Clinical Care, J. OF ONCOLOGY PRAG. 29, 10065, 10065-10065 (2011).

³³ Center for Financing, Access, and Cost Trends, AHRQ, Household Component of the Medical Expenditure Panel Survey, 2004

³⁴ Researchers at Harvard Medical School have found a correlation between monies spent on in-patient imaging and overall cost savings, specifically for every \$1 spent on this type of imaging, \$3 is saved.³⁵ Additionally, every \$385 spent on imaging decreases a patient's hospital stay by one day, saving approximately \$3,000 per patient.³⁶ Other disease specific studies have found that increased imaging may save up to \$1.2 billion annually in the treatment of certain patients, such as those who have suffered strokes.³⁷

Medical imaging modalities such as MRI and CT have “revolutionized healthcare so profoundly that most physicians would have trouble imagining how [to] take proper care of patients without access to these essential diagnostic tools.”³⁸ It is well established that noninvasive imaging tests, such as MRI, have led to a significant reduction of invasive testing, such as exploratory surgery, leading to reduced costs.³⁹ Imaging also can be valuable merely by contributing information that is needed to guide patient management and optimizing patient care. In fact, MRI and CT scan costs accounts for less than 3% of Medicare spending in the US especially since frequently these modalities replace more invasive and expensive tests.⁴⁰ Given that additional scanning capacity at BMC will reduce wait times leading to more timely care, the Proposed Project will compete on the basis of price and other cost factors.

The Proposed Project also competes on the basis of recognized measures of health care spending by allowing BMC to extrapolate upon successful population health management and value-based reimbursement successes – by screening and assisting more patients with costs associated with the social drivers of health. A report from the American Hospital Association provides that socioeconomic factors are responsible for approximately 40% of a patient's health, while access to care and overall quality care account for only 20%.⁴¹ Consequently, by addressing patients' SDoH needs, providers can significantly reduce health care costs. Examples of programs that reduce health care costs overall include addressing food insecurity through available food resource programs and lower-cost grocery stores, providing access to affordable housing, and creating transportation programs that make accessing health care and other social support services easier.⁴²

For many years, BMC has been a leader in Massachusetts by integrating SDoH programming into its clinical models and ensuring that patients' health care and SDoH needs are addressed. The Hospital has invested in a diverse group of community partnerships throughout its various targeted neighborhoods. Some of these investments include: \$1 million for a no-interest loan and a \$400,000 operating subsidy to support a new, Good Food Markets in a new housing

³⁴ Medical Imaging and Technology Alliance. <https://www.medicalimaging.org/medical-imaging/benefits-of-medical-imaging/health-care-costs-quality>. Accessed May, 2023.

³⁵ *Id.*

³⁶ *Id.*

³⁷ *Id.*

³⁸ van Beek EJR, Kuhl C, Anzai Y, Desmond P, Ehman RL, Gong Q, Gold G, Gulani V, Hall-Craggs M, Leiner T, Lim CCT, Pipe JG, Reeder S, Reinhold C, Smits M, Sodickson DK, Tempany C, Vargas HA, Wang M. Value of MRI in medicine: More than just another test? J Magn Reson Imaging. 2019 Jun;49(7):e14-e25. doi: 10.1002/jmri.26211. Epub 2018 Aug 25. PMID: 30145852; PMCID: PMC7036752.

³⁹ *Id.*

⁴⁰ Lee DW, Duszak R Jr, Hughes DR. Comparative analysis of Medicare spending for medical imaging: sustained dramatic slowdown compared with other services. Am J Roentgenol 2013;201:1277–1282.

⁴¹ *Social Determinants of Health*, AMERICAN HOSPITAL ASSOCIATION, <https://www.aha.org/social-determinants-health/populationcommunity-health/community-partnerships>; LaPointe, *How Addressing Social Determinants of Health Cuts Healthcare Costs*, REVCYCLE INTELLIGENCE: VALUE BASED CARE, <https://revcycleintelligence.com/news/how-addressing-social-determinants-of-health-cuts-healthcare-costs> (last visited Jul. 20, 2022).

⁴² LaPointe, *supra* note 41.

development in Roxbury; \$1 million for a stabilization fund that will provide grants to community-based organizations to help families avoid eviction in and around Boston; and \$1 million to Pine Street Inn, Boston Health Care for the Homeless Program, and other community partners to create a housing stabilization program for individuals with complex medical problems, including SUDs. The Proposed Project will allow BMC to screen additional patients for SDoH and further invest in social programming, ultimately leading to reductions in health care costs.

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

**F1.b.i Public Health Value/Evidence-Based:
Provide information on the evidence-base for the Proposed Project. That is, how does the Proposed Project address the Need that Applicant has identified.**

Through the Proposed Project, the Applicant seeks to address the existing and future needs of BMC's unique patient panel by providing increased access to timely, high-quality MRI services. Specifically, the Proposed Project is designed to meet the growing demand for MRI services, positively impact throughput and operations, increase patient satisfaction and health outcomes, and ensure timely access to New England's largest safety net hospital. Factors F1.a.ii and F1.a.iii describe how the Proposed Project will contribute to these goals and meet the Applicant's patient panel need in a cost-effective manner. As detailed herein, the Proposed Project is also supported by evidence-based literature that illustrates the essential role that safety net hospitals, like BMC, play in the health care system and details the utility of MRI as well as the importance of adequate MRI capacity on hospital operations and patient satisfaction and outcomes.

A. IMPORTANCE OF SAFETY NET HOSPITALS, INCLUDING BMC

BMC and other safety net hospitals play an essential role in the United States and the Massachusetts health care systems by providing indispensable care to low-income and vulnerable populations, including the uninsured and individuals with Medicaid as well as populations facing health inequities, such as racial and ethnic minorities. Despite the significant reduction in uninsurance levels in Massachusetts that occurred with health care reform, the demand for care at safety net facilities continues to rise.⁴³ 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.⁴⁴ Being that BMC and other safety net hospitals are anticipated to continue to play a disproportionately large role in providing inpatient, emergency, and ambulatory care to the area's most under-resourced patients into the future, it is essential to achieving the objectives of equitable care that such hospitals have the resources and depth of services, such as MRI services, that are necessary to provide such disadvantaged patients with timely access to high-quality care that does not jeopardize patient outcomes.⁴⁵ The Proposed Project seeks to facilitate these goals.

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

⁴⁴ Lasser, et al., *supra* note 43; Ku, et al., *supra* note 43; Mohan, et al., *supra* note 43.

⁴⁵ Lasser, et al., *supra* note 43; Ku, et al., *supra* note 43; Mohan, et al., *supra* note 43; Kim, et al., *The Importance of Safety-Net Hospitals in Emergency General Surgery*, J. GASTROINTESTINAL SURGERY (2018), available at https://www.researchgate.net/profile/Young-Kim-122/publication/326565167_The_Importance_of_Safety-

B. EVIDENCE SUPPORTING THE PROPOSED MRI EXPANSION

1. MRI Technology

MRI is a non-invasive imaging technology that is used to investigate anatomy and function of the body without the use of damaging ionizing radiation.⁴⁶ Rather than emitting ionizing radiation, MRI relies on a magnetic field and radio frequencies, making it a safe alternative to many other imaging modalities.⁴⁷ Specifically, MRI uses a powerful magnetic field and pulses of radio waves to create detailed images of the body's internal organs, tissues, and structures.⁴⁸ MRI images provide anatomical and functional information that can be used for disease detection, diagnosis, and treatment monitoring.⁴⁹

2. Advantages of 1.5T MRI Technology

Since MRI entered the clinical arena in the 1980s, it has experienced dramatic advances associated with higher field strengths and an increasing number of clinical applications.⁵⁰ Across the industry today, most clinical MRIs are 1.5T or 3T, although there are varying units above and below these field strengths.⁵¹ The 1.5T MRI is the standard imaging method for most routine scans. There are several benefits to a 1.5T MRI including the ability to scan the largest number of patients and still obtain high quality images.⁵² MRI enables high resolution evaluation of soft tissues without the use of ionizing radiation.⁵³ Given these capabilities, MRI is the imaging modality of choice for diagnosing neurologic, musculoskeletal, and cardiovascular disease.⁵⁴

Although MRI has many uses, this modality has long been considered a contraindication in patients with cardiovascular implanted electronic devices (“CIEDs”), such as cardiac pacemakers and cardioverter defibrillators, as well as other foreign objects (shrapnel, etc.) because the MR field may interact with the device/object with catastrophic consequences, leading to severe complications and even death.⁵⁵ However, within the last decade, studies have found that some implants or foreign objects are safe for insertion in a 1.5T MRI, but are not appropriate for placement in higher magnet machines, such as 3T MRIs, due to the potential interaction of the implanted device(s) and/or foreign object(s) with the external magnetic field which may cause

Net_Hospitals_in_Emergency_General_Surgery/links/5b6300f30f7e9bc79a762ac1/The-Importance-of-Safety-Net-Hospitals-in-Emergency-General-Surgery.pdf.

⁴⁶ *Magnetic Resonance Imaging (MRI)*, NAT'L INST. BIOMEDICAL IMAGING & BIOENGINEERING, <https://www.nibib.nih.gov/science-education/science-topics/magnetic-resonance-imaging-mri> (last visited May 13, 2023); Moser, et al., *Magnetic resonance imaging methodology*, 36 EUROPEAN J. NUCLEAR MED. & MOLECULAR IMAGING 30 (2009), available at <https://link.springer.com/article/10.1007/s00259-008-0938-3>.

⁴⁷ NAT'L INST. BIOMEDICAL IMAGING & BIOENGINEERING, *supra* note 46; Moser, et al., *supra* note 46.

⁴⁸ NAT'L INST. BIOMEDICAL IMAGING & BIOENGINEERING, *supra* note 46; Moser, et al., *supra* note 46.

⁴⁹ NAT'L INST. BIOMEDICAL IMAGING & BIOENGINEERING, *supra* note 46; Moser, et al., *supra* note 46.

⁵⁰ Moser, et al., *supra* note 46.

⁵¹ *Technology Trends: MRI Time to Upgrade? — Considerations for the Move From 1.5T to 3T*, 17 RADIOLOGY TODAY 22 (2016), available at <https://www.radiologytoday.net/archive/rt0216p22.shtml>; *What Does Tesla Mean for an MRI and its Magnet?*, GE HEALTHCARE (2019), <https://www.gehealthcare.com/insights/article/what-does-tesla-mean-for-an-mri-and-its-magnet>.

⁵² Jung JI. Magnetic Resonance Imaging for Patients with Cardiac Implantable Electronic Devices: Reduced Concerns Regarding Safety, but Scrutiny Remains Critical. Korean Circ J. 2016 Nov;46(6):765-767. doi: 10.4070/kcj.2016.46.6.765. Epub 2016 Nov 1. PMID: 27826333; PMCID: PMC5099330.

⁵³ *Id.*

⁵⁴ *Id.*

⁵⁵ *Id.*

movement and dislocation of the device or other severe reactions because of the magnetic force.⁵⁶ The lower strength of the 1.5T MRI enables patients with implanted devices/foreign objects to have necessary scans. Moreover, artifacts from devices or foreign objects are less prominent in 1.5T MRIs, allowing for higher quality images.⁵⁷

Additionally, 1.5T MRIs are efficient and are associated with faster exam times (than machines with magnets of lesser strengths), which facilitate improved throughput, workflow, and accessibility, as well as quicker diagnosis, treatment, and increased patient and/or provider satisfaction.⁵⁸ This efficiency is particularly significant with regard to BMC which, as discussed in Factor F1.a.ii, has identified a need for increased MRI capacity to meet patient panel demand and ensure its continued ability to serve the area's most vulnerable populations including the elderly and under-resourced.

3. Clinical Applications of MRI Technology

In terms of clinical application, the Applicant notes that the utility of MRI technology is extensive and that MRI has gained widespread acceptance in diagnosing, evaluating, and monitoring treatment of a variety of conditions that fall within several fields of medicine.⁵⁹ Significant with regard to the Proposed Project, as outlined in Factor F1.a.ii, some of the most prevalent conditions for which BMC patients sought MRI services between FY20 to FY22 involved the brain, spine, musculoskeletal system, abdomen, pelvis, breast, chest, and heart. The imaging capabilities of a 1.5T MRI technology make this machine the preferred imaging modality for certain of these areas and the conditions that impact them.⁶⁰

For instance, MRI is the imaging modality of choice for brain and abdomen imaging, with the 1.5T MRI superior for these scans given that artifact(s) may occur in these two locations.⁶¹ ⁶² MRI also is the most sensitive imaging test available for the spine and is usually the preferred imaging modality for musculoskeletal and orthopedic conditions due to its ability to provide high-definition images of the bones, cartilage, joints, and soft tissues of the extremities (i.e., muscles, tendons, and ligaments).⁶³ Specifically, MRI is used to assess spine anatomy and alignment; detect

⁵⁶ Saman Nazarian, Roy Beinart, Henry R. Halperin. Magnetic Resonance Imaging and Implantable Devices 2013. Circulation: Arrhythmia and Electrophysiology 419-428. Vol. 6 doi:10.1161/CIRCEP.113.000116 <https://www.ahajournals.org/doi/abs/10.1161/CIRCEP.113.000116>

⁵⁷ *Id.*

⁵⁸ Tanenbaum, 3T MRI in clinical practice, 34 APPLIED RADIOLOGY 8 (2005), available at <https://appliedradiology.com/articles/3t-mri-in-clinical-practice>; Loria, *supra* note 46; *What Does Tesla Mean for an MRI and its Magnet?*, *supra* note 51.

⁵⁹ Tanenbaum, *supra* note 58.

⁶⁰ Technology Trends: MRI Time to Upgrade? — Considerations for the Move From 1.5T to 3T, 17 RADIOLOGY TODAY 22 (2016), available at <https://www.radiologytoday.net/archive/rt0216p22.shtml>; *What Does Tesla Mean for an MRI and its Magnet?*, GE HEALTHCARE (2019), <https://www.gehealthcare.com/insights/article/what-does-tesla-mean-for-an-mri-and-its-magnet>; and *What does Tesla Mean for an MRI and its Magnet* (2019), <https://www.gehealthcare.com/insights/article/what-does-tesla-mean-for-an-mri-and-its-magnet>

⁶¹ <https://www.touchstoneimaging.com/mri-machines-101-understanding-the-differences/#:~:text=1.5%20T%20MRIs%20are%20great,is%20a%20much%20safer%20option>.

⁶² Yasaka K, Tanishima T, Ohtake Y, Tajima T, Akai H, Ohtomo K, Abe O, Kiryu S. Deep learning reconstruction for 1.5 T cervical spine MRI: effect on interobserver agreement in the evaluation of degenerative changes. Eur Radiol. 2022 Sep;32(9):6118-6125. doi: 10.1007/s00330-022-08729-z. Epub 2022 Mar 29. PMID: 35348861.

⁶³ Tanenbaum, *supra* note 58; *Magnetic Resonance Imaging (MRI) - Spine*, RADIOLOGYINFO.ORG, <https://www.radiologyinfo.org/en/info/spinemr> (last updated Apr. 15, 2022); Winegar, et al., *Magnetic resonance imaging of the spine*, 85 POL. J. RADIOLOGY 550 (2020), available at <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7571515/>; *Musculoskeletal MRI*, RADIOLOGYINFO.ORG, <https://www.radiologyinfo.org/en/info/muscmr> (last updated Jul. 30, 2021); Deyle, *The role of MRI in musculoskeletal practice: a clinical perspective*, 19 J. MANUAL & MANIPULATIVE THERAPY 152 (2011), available at

defects, infection, compression, inflammation, and tumors in the vertebrae, discs, spinal cord, meninges, nerves, bones, and soft tissues as well as trauma injury to the bones, discs, spinal cord, ligaments, and tendons; diagnose or evaluate joint disorders such as degenerative arthritis; and plan procedures such as decompression of a pinched nerve, spinal fusion, or steroid injections; among other uses.⁶⁴ In these areas, MRI technology often provides high quality images for better diagnosis and prognosis.⁶⁵

Additionally, MRI has become an essential tool for imaging the abdomen, pelvis, and breast. In the abdomen, MRI is performed to evaluate the liver, biliary tract, kidneys, spleen, bowel, pancreas, and adrenal glands.⁶⁶ Specific indications include diagnosing or monitoring treatment for conditions such as tumors of the abdomen, diseases of the liver (e.g., cirrhosis), abnormalities of the bile ducts and pancreas, and inflammatory bowel diseases such as Crohn's disease and ulcerative colitis.⁶⁷ In the pelvis, MRI is performed to evaluate the bladder and the reproductive organs such as the uterus, ovaries, and prostate.⁶⁸

While MRI can be used for all age cohorts across these areas of the body, it is particularly important for older adults as many of the conditions discussed herein are tied to aging.⁶⁹ The Applicant highlights this point in connection with BMC's substantial number of patients 65+. Specifically, given that the demand for these types of scans increases with age and given the projected continued growth among the older adult cohort of BMC's patient population, the Applicant anticipates that demand for MRI services for these specific clinical categories at BMC will increase into the future. In consideration of these impacts, and the fact that BMC's MRI units are already operating at high capacity, the Applicant proposes implementation of the Proposed Project.

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

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

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) beginning one (1) year following implementation of the Proposed Project.

- 1. Patient Experience and Satisfaction:** Patients that have positive care experiences are more likely to seek additional care when necessary. BMC collects patient experience and satisfaction data via NRC Health patient experience surveys, which are administered to outpatients following a radiology encounter through automated phone calls and emails.

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3143009/>; Maravi et al., *Role of MRI in Orthopaedics*, 21 ORTHOPAEDIC J. M.P. CHAPTER 74 (2015), available at <https://ojmpc.com/index.php/ojmpc/article/view/18/18>.

⁶⁴ Tanenbaum, *supra* note 58; *Magnetic Resonance Imaging (MRI) - Spine*, *supra* note 63; Winegar, et al., *supra* note 63; *Musculoskeletal MRI*, *supra* note 63; Deyle, *supra* note 63; Maravi et al., *supra* note 63.

⁶⁵ *Id.*

⁶⁶ Tanenbaum, *supra* note 58; *Abdominal and Pelvic MRI*, RADIOLOGYINFO.ORG, <https://www.radiologyinfo.org/en/info/mri-abdomen-pelvis> (last updated Jun. 1, 2022); Caraiani, et al., *Indications for abdominal imaging: When and what to choose?*, 20 J. ULTRASOUND 43 (2020), available at <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7266076/>.

⁶⁷ Tanenbaum, *supra* note 58; *Abdominal and Pelvic MRI*, *supra* note 66; Caraiani, et al., *supra* note 66.

⁶⁸ Tanenbaum, *supra* note 58; *Abdominal and Pelvic MRI*, *supra* note 66.

⁶⁹ WORLD HEALTH ORGANIZATION, *supra* note 30.

Quantitative and qualitative survey data are compiled on the NRC Health platform, which facilitates reporting and data management. Due to the increased number of MRI units, the Applicant anticipates that patient experience and satisfaction ratings will improve given more timely access to care.

Measure: The Applicant will collect and provide data from the NRC Health survey question “How likely would you be to recommend this facility to your family and friends?”.

Projections: Baseline: 79.9%; Year 1: 80.1%; Year 2: 80.3%; Year 3: 80.5%.

Monitoring: The Applicant will collect and provide data to DPH on an annual basis beginning one (1) year following implementation of the Proposed Project.

2. **MRI Wait Times:** The Proposed Project seeks to address the existing and future needs of BMC’s unique patient panel by providing increased access to timely, high-quality MRI services. The Applicant anticipates that MRI wait times will be reduced following implementation of the Proposed Project due to increased MRI capacity through the addition of the fourth MRI unit on BMC’s main hospital campus.

- a. **Outpatient Access to Care:** Time to third available appointment.

Measure: This measure will collect data based on the following calculation: Time interval (in days) from when the outpatient case was initiated for scheduling in EPIC to the third available outpatient appointment.⁷⁰ The Applicant will provide the following data to DPH: Median number of days between initiating outpatient MRI cases for scheduling and performing MRI.

Projections: Baseline: 50 days; Year 1: 40 days; Year 2: 30 days; Year 3: 20 days.

Monitoring: The Applicant will collect and provide data to DPH on an annual basis beginning one (1) year following implementation of the Proposed Project.

- b. **Outpatient Access to Care:** Number of patients not attending a scheduled appointment known as the “no show rate.”

Measure: This measure will collect data based on the following calculation: The percentage of appointment time lost because patients do not show up or cancel at the last minute. The no show-rate is calculated by dividing the number of no-shows (including late cancellations) by the total number of daily/weekly/monthly appointments. The applicant will provide the following data to DPH: MRI No-show rate.

Projections: Baseline: 26%; Year 1: 19%; Year 2: 14%; Year 3: 10%

Monitoring: The Applicant will collect and provide data to DPH on an annual basis beginning one (1) year following implementation of the Proposed Project.

⁷⁰ Please note that outpatient wait times are based on the third next available appointment. This is industry standard and measures average length of time in days between the day a patient makes a request for an appointment and the third available appointment available.

- 3. Critical Findings Reporting:** The Proposed Project seeks to ensure timely access to high-quality services for BMC's existing and future patient panel. Currently, BMC has processes in place to ensure quality provision of its MRI services. For instance, when critical findings are registered for a patient, these findings are communicated directly from the radiologist to the ordering provider within 60 minutes. This process ensures that clinical decisions may be expedited and, therefore, impacts patient outcomes and quality of care. This process will continue following implementation of the Proposed Project.

Measure: This measure will collect and provide data on the number of radiologists conducting critical findings reporting on cases being interpreted.

Projections: Baseline: 100%; Year 1: 100%; Year 2: 100%; Year 3: 100%.

Monitoring: The Applicant will collect and provide data to DPH on an annual basis beginning one (1) year following implementation of the Proposed Project.

- F1.b.iii Public Health Value/Health Equity-Focused:**
For Proposed Projects addressing health inequities identified within the Applicant's description of the Proposed Project's need- base, please justify how the Proposed Project will reduce the health inequity, including the operational components (e.g. culturally competent staffing). For Proposed Projects not specifically addressing a health disparity or inequity, please provide information about specific actions the Applicant is and will take to ensure equal access to the health benefits created by the Proposed Project and how these actions will promote health equity.

As outlined throughout this narrative, through the Proposed Project, the Applicant seeks to alleviate capacity constraints and wait times for MRI scans, leading to greater operational efficiencies, increased patient satisfaction and health outcomes. In order to achieve these goals, BMC is further dedicated to addressing deep health inequities that exist among the Hospital's patients and ensuring BMC's sustainability as an academic safety net hospital providing exceptional care to Boston's under-resourced population. Details on BMC's essential role in the community and these efforts are detailed herein.

A. SAFETY NET HOSPITAL

As noted throughout this narrative, BMC is New England's largest safety net hospital, and as such, is dedicated to providing accessible care for everyone regardless of insurance status or ability to pay. The majority of communities that BMC serves are Boston census tracts that are federally-designated medically underserved populations. As detailed in Factor F1.a.i, nearly 55% of BMC's patients receive insurance coverage through a public payer and another 2.3% receive free care or are covered under the HSN. Moreover, BMC's MRI patient panel shows even higher percentages of patients who receive insurance coverage through a public payer – in FY22, BMC's MRI public payer mix included greater than 70% of all MRI patients.

Notwithstanding widespread health reform efforts in the state from 2006 to 2008 which expanded access to public medical insurance, created a health insurance exchange for more affordable private insurance, and expanded access to care in non-safety net hospitals, research suggests that safety net hospitals like BMC remain an important and vital component of the health care system. Specifically, the research shows that the proportion of discharges among minority

patients receiving inpatient care at minority-serving hospitals in Massachusetts increased after the implementation of health insurance reform measures which expanded access to care in non-safety net hospitals. Researchers point to several possible explanations for the increase in the proportion of minorities cared for at minority-serving hospitals in Massachusetts over the study period, including, but are not limited to "loyalty" of patients and access to services such as insurance assistance, interpretation, and intensive case management which are often unavailable at other facilities due to poor reimbursement rates.⁷¹

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

Safety net hospitals like BMC are anticipated to continue to play a disproportionately large role in providing care to the area's most under-resourced patients into the future. It is therefore essential to achieving the objectives of equitable care that such hospitals have the resources and depth of services necessary to provide such disadvantaged patients with timely access to high-quality care that does not jeopardize patient outcomes.⁷² The Proposed Project seeks to facilitate these goals by increasing access to high-quality MRI services for all of BMC's patients.

B. #123EQUITY PLEDGE CAMPAIGN

BMC also participates in the American Hospital Association's #123Equity Pledge Campaign. Launched in 2015, this Campaign builds on the efforts of the National Call to Action to Eliminate Health Care Disparities (a joint effort of the American Hospital Association, American College of Healthcare Executives, Association of American Medical Colleges, Catholic Health Association of the United States and America's Essential Hospitals) and asks hospital and health system leaders to begin taking action to accelerate progress on the following areas: (1) increasing the collection and use of race, ethnicity, language preference and other socio-demographic data; (2) increasing cultural competency training; (3) increasing diversity in leadership and governance; and (4) improving and strengthening community partnerships. Examples of ways in which BMC has accelerated progress in these areas are addressed below in the discussion related to culturally appropriate care and language access.

C. CULTURALLY APPROPRIATE CARE AND LANGUAGE ACCESS

To further ensure equal access to Hospital services, BMC has adopted the United States Department of Health and Human Services Office of Minority Health's Culturally and Linguistically Appropriate Services ("CLAS") standards. Specifically, BMC has supported the adoption of the

⁷¹ Lasser, et al., *supra* note 43; Ku, et al., *supra* note 43; Mohan, et al., *supra* note 43.

⁷² Lasser, et al., *supra* note 43; Ku, et al., *supra* note 43; Mohan, et al., *supra* note 43; Kim, et al., *supra* note 45.

CLAS standards in the following ways, as divided into the six categories provided in DPH's guide to CLAS, *"Making CLAS Happen: Six Areas for Action"*:

- 1. Foster Cultural Competence:** The Hospital requires staff to complete various CLAS training programs, the objectives of which are to ensure effective use of interpreter services and CLAS standards. Additionally, in FY21, BMC's Interpreter Services Department ("ISD"), along with Pediatrics, created a tool called "The 10 and 10". This tool provides 10 tips on working with interpreters and 10 tips on working with multicultural patients. Providers at BMC use this tool to train staff on the use of interpreters and help them have a better understanding and respect of patient diversity. BMC will continue working to expand this tool for FY22 and beyond.

Moreover, the Hospital has a goal of training at least 80% of employees on the "Thriving People and Culture" tool. Staff have been providing this training since June 2023 and will continue to provide informational sessions (two-hour sessions) until the end of September 2023 to reach BMC's goal and establish strong knowledge in this area. To date, BMC has trained over 2,000 staff, delivering 8 training sessions per day for employees.

- 2. Build Community Partnerships:** BMC is deeply rooted in the Boston community and is committed to collaborating with community providers and organizations to improve the health and well-being of the vulnerable patient populations it serves. In addition to partnering with various CHCs to meet patients' health care needs in the communities where they live, BMC also has long-term relationships with many diverse community-based service organizations and offers a number of hospital-based programs and initiatives aimed at addressing health needs outside of the traditional medical model. Examples include, but are not limited to, investments in housing, food-related programs, programs related to careers in health care and education for youth, the Violence Intervention Advocacy Program, Elders Living at Home Program, Project TRUST, and StreetCred.

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

Finally, the Applicant notes that it is one of BMC's Health Equity Accelerator (discussed further at Factor F1.b.iv below) priorities to build on the Hospital's existing community

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

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

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

Finally, as discussed in further detail below, as BMC cared for COVID-19 patients throughout 2020 and into 2021, BMC researchers led a first-of-its-kind study that investigated the differential impact of COVID-19 on racial groups within the Hispanic community. This study highlighted not only that Hispanic groups as a whole have worse outcomes than non-Hispanic white individuals, but also that Hispanic Black individuals had the highest rates of comorbidities, admittance to the ICU, ventilation, and death due to COVID-19. Analysis of the national data underscored that these disparities were not rooted in biology, but rather, reflect the systemic impacts of racism and inequity. In response to such data, BMC took urgent action to address the blatant racial inequities in new ways, including introducing new services (including home visits, telehealth, contact tracing, and other public health tools) and providing education on and access to vaccination for communities of color. Significantly, such data collection and responsive

efforts served as a model for BMC's new Health Equity Accelerator, which is discussed in detail below at Factor F1.b.iv.

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

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

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

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

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

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

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

- Requesting a spoken language face-to-face interpreter: All spoken languages face-to-face interpreter requests are submitted through BMC's online system, ID-QUEUE.
- Telephone interpretation: Telephone interpretation is available at all times in all inpatient and outpatient areas. All callers may place the call to the vendor (Propio) directly using the dual handset phones. If additional phones are needed at any location, a request can be made with the ITS helpdesk by calling or by submitting an online ticket.

- Requesting an ASL Interpreter, Tactile interpreter (services for deaf and blind patient), or Certified Deaf Interpreter: During normal business hours, these interpreters can be reached by calling the ISD. After regular business hours or on weekends or holidays, Operator Services can assist in paging the ISD supervisor who will coordinate with the respective department. If no ASL interpreter is available, the on-call supervisor will recommend the usage of the Video Interpreting Unit when appropriate. One-hundred (100) Video Interpreting Units, for communicating in ASL, are available in the ED and various other departments throughout BMC.
- To obtain equipment for DHH patients: During normal business hours, equipment can be accessed by calling the ISD. After regular business hours or on weekends or holidays, Operator Services can assist in paging the ISD supervisor who will coordinate with the respective department. Telecommunications devices for the deaf include TTY/TDD, mobile phone for text messaging and email, and amplified telephones.
- Resources for visually impaired: Telephones with Braille Keys are available in all patient areas. A Braille translation of the Patient's Rights and Responsibilities is available through the ISD and can be requested during regular business hours by calling the ISD or after regular business hours or on weekends or holidays by calling the Operator Services.

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

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

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

In 2021, BMC launched its Health Equity Accelerator with "the vision of transforming health care to deliver health justice and well-being. BMC is reimagining a new approach to accelerate its journey toward health equity and address core issues associated with traditional methodologies. Those involved in the accelerator have found that, to understand and address drivers of racial inequities, [one must] challenge conventional wisdom in multiple ways: (1) revisit conclusions derived from standard statistical analyses; (2) adopt a mindset that if you do not find an inequity, you need to look harder; (3) seek novel insights through primary research with the appropriate mix of patients; and (4) engage with community members to achieve both insights and impact. The BMC accelerator addresses these fundamental issues through focused and multidisciplinary teams that are resourced to be dynamic, to break through convention, and to do things differently."⁷³

⁷³ Mendez-Escobar, et al. *Health Equity Accelerator: A Health System's Approach – Boston Medical Center's Health Equity Accelerator Aims to Eliminate Barriers to Health Equity*, NEW ENGLAND J. MED. CATALYST (2022), available at <https://catalyst.nejm.org/doi/full/10.1056/CAT.22.0115>.

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.⁷⁴ All patients will benefit from this work, as the Hospital seeks to ensure that all patients receive the care and services that they need in the appropriate setting and by a diverse staff.

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

To ensure continuity and coordination of care for the Applicant's patient panel, BMC staff will continue existing population health management processes for inpatients following implementation of the Proposed Project. These include, but are not limited to, discharge and readmissions programming for inpatients, Complex Care Management ("CCM") programming, and screening protocols. Details regarding these programs and processes are provided below. Additionally, BMC will continue to utilize navigation and patient access staff for outpatients in need of SDoH screenings or other services.

A. DISCHARGE AND READMISSIONS PROGRAMMING

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

Recognizing that discharge and readmissions work is particularly challenging in a safety net environment, the Hospital is dedicated to the following targeted priority discharge interventions for FY23 and beyond:

- 1. Post-Discharge Services Bundle:** Recognizing that patients with 7–14-day post hospital discharge follow-up have lower readmission rates, this intervention focuses on providing post hospital discharge follow-up appointments and follow-up phone calls for all patients regardless of risk for readmission and primary care site. Specifically, BMC staff proactively schedule follow-up appointments 48 hours prior to discharge; for any patient with a BMC primary care physician who is discharged without follow-up, the Central Discharge Team attempts to contact the patient and negotiate follow-up. Pertinent to the Proposed Project, the Central Discharge Team has partnered with inpatient and ambulatory staff to

⁷⁴ *Id.*

strategize the workflow and expand the intervention to cover all inpatients and those patients discharged from the ED. With follow-up appointment scheduling rates continuing to improve, the Hospital plans to further enhance this intervention by partnering with external primary care physician sites and ambulatory clinic leaders to explore direct scheduling and improve appointment compliance.

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

B. CCM PROGRAMMING

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

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

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

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

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

C. SCREENING PROTOCOLS

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

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

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

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

- Massachusetts Executive Office of Health and Human Services
- DPH, including, but not limited to: Dennis Renaud, Director, DoN Program; Elizabeth Kelley, Director, Bureau of Health Care Safety and Quality; Lynn Conover, Analyst, DoN Program; Rebecca Kaye, Esq., Senior Deputy General Counsel; Jennica Allen, Manager of Community Engagement Practices, Division of Community Health Planning and Engagement; Elizabeth Maffei, Program Manager, Division of Community Health Planning and Engagement; and Katelyn Teague, Specialist, Division of Community Health Planning and Engagement.
- Massachusetts Office of Attorney General
- HPC
- Center for Health Information and Analysis
- The Centers for Medicare & Medicaid Services
- MassHealth

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

In contemplation of preparing its DoN Application for the Proposed Project and to ensure appropriate community engagement, the Applicant sought to engage community members, patients, families, and staff that may be impacted by or have an interest in the Proposed Project. Specifically, the Applicant's engagement efforts focused on soliciting feedback on the need for the Proposed Project as well as the design details, layout, and community-related benefits in order to maximize the Hospital's ability to meet its patient panel demand, provide superior patient

satisfaction, promote high-quality outcomes, and support the Greater Boston community of which BMC is part. Engagement efforts are described in detail below.

A. ENGAGEMENT OF THE HOSPITAL'S CAB

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

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

Based on these responsibilities, leadership determined it was appropriate to engage the CAB with respect to Proposed Project. Accordingly, on June 12, 2023, Megan Sandel, MD MPH, Co-Director of BMC's GROW Clinic and Co-Chair of the Hospital's DoN CHI CAB and Dr. Thea James, Vice President of Mission, Associate Chief Medical Officer of BMC, and Associate Professor of Emergency Medicine, met with the CAB members to present an overview of the Proposed Project and related CHI processes. During this meeting the CAB discussed amalgamating these funds with BMC's current CHI, how to move forward with the selection of health priorities and strategies, and how to move upstream initiatives forward.

B. COMMUNITY MEETINGS

The Applicant also sought to engage patients, staff, community members, and local neighborhood stakeholders around the Proposed Project. Accordingly, the Applicant hosted two community meetings – one on June 26, 2023 and the other on June 29, 2023. The meetings were publicized via flyers within BMC's service area and sent out via multiple channels, as well as through outreach to local resident and community members.⁷⁵ Moreover, the meetings were held over Zoom at different times of the day – one in the morning and one in the evening after normal business hours – to accommodate different schedules and promote increased participation.⁷⁶

⁷⁵ The Applicant notes that distribution of the meeting notices via the Equity Partnership Network ListServe was determined to be the best option for informing community and staff members of the meetings.

⁷⁶ The Applicant notes that the community meetings were held virtually over Zoom as this is the standard way for these meetings to occur to obtain a larger audience.

C. ENGAGEMENT OF THE HOSPITAL'S PFAC

Finally, the Applicant engaged the Hospital's PFAC around the Proposed Project. Sponsored by the Hospital's Patient Experience Department, BMC's PFAC aims to improve operations across BMC Health System and achieve its mission for patient-centered and equitable care. In compliance with DPH's Hospital Licensure Regulations, BMC's PFAC is co-chaired by a staff member and a patient/family member, and at least 50% of PFAC members are current or former patients and/or family members and are representative of the community served by BMC. Specifically, BMC's PFAC is currently comprised of eleven (11) patient/family advisors. Moreover, BMC's PFAC leaders are committed to continuously recruiting new members with the goal of creating diverse and collaborative partnerships with BMC patients, families, and caregivers that are representative of BMC's diverse patient population, as well as with staff from different areas across BMC.

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

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

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

On June 15, 2023, Diana Diaz, Director of Radiology Operations, Brendan Whelan, Senior Director of Design and Construction, Drs. Megan Sandel and Thea James, as well as outside legal counsel, met with the PFAC to present an overview of the Proposed Project.⁷⁷ The presentation included a summary of the DoN process as well as a description of the Proposed Project components, the patient panel need the Proposed Project is designed to address, and the associated public health value and community benefit. In total, fourteen (14) individuals attended the meeting, including six (6) PFAC members and eight (8) staff members (including MRI operations, legal, and facilities staff for learning purposes). Following the presentation, PFAC members were given the opportunity to comment on the Proposed Project and ask questions of clinical and administrative leaders in attendance. There was a substantial dialogue amongst attendees and PFAC members asked important questions about the Proposed Project. Specifically, there was discussion around the Proposed Project modality and how it will meet patient needs. In support of the Proposed Project, PFAC members asked questions around accessibility, current wait times, and the need for additional scanning capacity. Hospital representatives expressed their belief that the Proposed Project will allow BMC to continue its dedicated approach to careful resource planning and measured campus development to

⁷⁷ The Applicant notes that the PFAC meeting was held virtually over Zoom as has been the case since the onset of the COVID-19 pandemic.

sensitively maintain the integrity of the urban fabric and the surrounding neighborhoods while continuing to meet the growing patient panel need and the Hospital's mission to offer high quality patient care and sustain ever changing health care trends.

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

To ensure sound community engagement throughout the development of the Proposed Project, the Applicant and BMC took the actions detailed in Factor F1.e.i. For materials related to these activities, please refer to Appendix 3B, which includes copies of meeting agendas, minutes, presentations, etc. In addition, for transparency and to ensure appropriate awareness within the community regarding the Proposed Project, the Applicant published a legal notice associated with the Proposed Project in the *Boston Herald* on June 26, 2023 and also posted a copy of such legal notice prominently on the BMC website. Please refer to Appendix 9 for copies of the legal notices.

Factor 2: Health Priorities

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

The Commonwealth's goals for cost containment are focused on creating high-quality, low-cost care alternatives. To this end, the Health Policy Commission (“HPC”) seeks to control health care spending while improving access and quality of care. The provision of timely care in an appropriate setting has proven to reduce mortality and morbidity for chronic conditions, which translates to better patient clinical outcomes and reduced costs.⁷⁸

The Proposed Project will meet the noted goals in the following ways: First, an increase in MRI scanning capacity will allow for more timely access to care and treatment. When patients have access to services earlier in the disease phase, both health outcomes and overall health care costs are improved based on staging and the efficacy of treatment. Second, the Applicant, after much consideration, determined that a 1.5T MRI is the better option for the institution – given that a greater number of patients may be scanned on this machine, offering more timely access to care for the majority of patients. For these reasons, the Applicant asserts that the Proposed Project meets Massachusetts' goals for cost containment.

F2.b Public Health Outcomes:
Describe, as relevant, for each new or expanded service, how the Proposed Project will improve public health outcomes.

⁷⁸ *Chartbook on Access to Health Care, Elements of Access to Health Care: Timeliness*, AGENCY FOR HEALTHCARE RESEARCH AND QUALITY, <https://www.ahrq.gov/research/findings/nhqrdr/chartbooks/access/elements3.html> (last visited Jul. 20, 2022); Kaplan & Porter, *The Big Idea: How to Solve the Cost Crisis in Health Care*, HARVARD BUSINESS REVIEW (2011), <https://hbr.org/2011/09/how-to-solve-the-cost-crisis-in-health-care>.

As more fully detailed throughout Factor 1, the Proposed Project will improve public health outcomes by improving access to MRI services at BMC. Specifically, the Applicant anticipates that additional scanning capacity will improve access to timely services, the overall “no show rate,” as well as patient experience. When patients have reduced wait times for services, they seek care sooner and are more apt to attend appointments. Expedited imaging can ensure appropriate staging of a disease, ensure more timely therapies are administered, and lead to less stress for a patient. Accordingly, through the Proposed Project, public health outcomes will be improved.

F2.c Delivery System Transformation:

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

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

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

Factor 5: Relative Merit

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

Proposal: The Proposed Project involves the addition of one (1) 1.5T MRI unit at BMC’s main hospital campus. BMC is currently licensed to operate three (3) MRI units – one (1) 1.5T MRI unit

and two (2) 3T MRI units. All three (3) units are located on BMC's main campus. Accordingly, following implementation of the Proposed Project, BMC will operate four (4) MRI units at its main campus.

Quality: The Proposed Project will improve quality of care by expanding capacity of MRI services at BMC. The Applicant anticipates that additional MRI capacity will provide the Applicant's patient panel with improved access to imaging services, and that such improved access will in turn positively impact turnaround times in diagnosis and treatment. Overall, these improvements will result in enhancements in health outcomes and quality of life for BMC's vulnerable and aging patient panel, with specific examples detailed in Factor F1.b.ii.

Efficiency: As detailed throughout this narrative, the Proposed Project is designed to create additional MRI capacity, which will help alleviate access, utilization, and throughput concerns, ensure that patients can continue to receive care at New England's largest safety net hospital, and, thereby, provide efficiencies in care and costs.

Capital Expense: There are capital expenses associated with the implementation of the Proposed Project. The total capital expenditure for the Proposed Project is \$7,994,800. However, as detailed further below, the Proposed Project represents a cost-effective approach to addressing the needs of the Applicant's under-resourced and aging patient panel and ensuring the Hospital's long-term ability to provide high-quality care and fulfill its role as New England's largest safety net hospital in an evolving health care environment. To this point, the Applicant notes that the Proposed Project was also informed by input from community members, patients, family members, and staff that may be impacted by or have an interest in the Proposed Project. Consistent with the Applicant's commitment to providing exceptional care without exception, the Proposed Project is designed to address demand constraints and allow the Hospital to both meet current patient panel needs and better serve its patient panel into the future.

Operating Costs: There are operating costs associated with the Proposed Project. The average incremental operating costs of the Proposed Project are anticipated to be approximately \$2,763,457.

List alternative options for the Proposed Project

Alternative Proposal: The 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 MRI capacity.

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

Alternative Efficiency: This alternative would be inefficient as it would not provide additional access to necessary MRI services at BMC. Without additional MRI capacity, access challenges at BMC will persist and the area's most vulnerable

patients will continue to face long wait times as well as delays in diagnosis and treatment.

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

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