STAFF SUMMARY FOR DETERMINATION OF NEED
BY THE PUBLIC HEALTH COUNCIL
October 20, 2016

APPLICANT: Boston Children's Hospital

PROGRAM ANALYST: Lynn Conover

LOCATION: 300 Longwood Avenue
Boston, MA 02115
2 Brookline Place
Brookline, MA 02445

REGION: HSA 4

PROJECT NUMBER: 4-3C47

DATE OF APPLICATION: December 7, 2015

Category - 2

PROJECT DESCRIPTION: Construction of an 11 floor tower and associated renovations to expand Magnetic Resonance Imaging ("MRI"), operating room, inpatient intensive care unit and psychiatric bed capacity; construction of 8-floor outpatient clinical services building in Brookline.

ESTIMATED MAXIMUM CAPITAL EXPENDITURE:
Requested: $1,068,263,000 (December 2016 dollars)
Recommended: $1,068,263,000 (December 2016 dollars)

ESTIMATED FIRST YEAR INCREMENTAL OPERATING COST:
Requested: $118,019,412 (December 2016 dollars)
Recommended: $118,019,412 (December 2016 dollars)

LEGAL STATUS: A regular application for substantial change in service pursuant to M.G.L. c.111, § 25C and the regulations adopted thereunder.

ENVIRONMENTAL STATUS: No environmental notification form or environmental impact report is required to be submitted for this project since it is exempt under 301 Code of Massachusetts Regulations 11.00, promulgated by the Executive Office of Environmental Affairs pursuant to Massachusetts General Laws, Chapter 30, Sections 61-62H. As a result of this exemption, the project has, therefore, been determined to cause no significant damage to the environment.

OTHER PENDING APPLICATION(S): None

COMPARABLE APPLICANTS: None

COMMENTS BY THE CENTER FOR HEALTH INFORMATION AND ANALYSIS: None submitted

COMMENTS BY THE HEALTH POLICY COMMISSION: Comments received September 27, 2016

TEN TAXPAYER GROUP(S): Three formed

RECOMMENDATION: Approval with conditions

I. PROJECT DESCRIPTION AND BACKGROUND

A. Project Description

Boston Children's Hospital ("BCH" or "Applicant") is a 415-bed nonprofit, acute care pediatric hospital located at 300 Longwood Avenue, Boston, MA 02115. BCH's DoN application #4-3C47 seeks to construct an 11 story inpatient clinical care building on the hospital's main campus ("BCCB"), and an 8 story ambulatory services center at 2 Brookline Place ("2BP"), Brookline, MA, for a total new construction of 785,165 gross square feet ("GSF"). Additionally, the main campus will undergo a major renovation of 571,824 GSF, which is approximately 50% of the in- and outpatient space on the main campus. The requested maximum capital expenditure ("MCE") is $1,068,263,000 (December 2016 dollars).

BCH states that it has been experiencing capacity constraints based upon increasing lengths of stay as it serves an increasingly complex patient population, as measured by increase in case mix index acuity, and the need for beds for patients who remain in the hospital for observational status. BCH anticipates increasing out of state and international patient demand that will both potentially exacerbate current capacity constraints and, at the same time provide the demand for the project. The project itself is designed to better serve its current patient panel as well as accommodate increasing out of state and international patient demand.

The goals of the project include bringing undersized spaces into compliance with current hospital building standards, creating more efficiencies by consolidating all medical and surgical ("M/S") cardiology services into one contiguous area, and relocating and creating an updated neurology service with a dedicated epilepsy unit.

Services and facilities to be impacted by the project are:

- Relocation and expansion of existing neonatal intensive care unit ("NICU") by 6 beds
- Expansion of ICU/CCU/SICU[1] by 61 beds
- Expansion of psychiatric services by 4 beds
- Replacement and relocation of outdated operating rooms ("ORs")
- Expansion of cardio-vascular ORs by 3
- Development of one hybrid OR/interventional radiology suite
- Undoubling of most patient rooms
- Renewal of Longwood campus outpatient facilities
- Addition of 2 MRI units
- Relocation of green spaces
- Construction of an 8 story clinical ambulatory care facility

[1] ICU means Intensive Care Unit and for the purposes of this includes all intensive care beds other than Neonatal Intensive Care ("NICU"). In this Staff Summary, these are also sometimes referred to as Pediatric Intensive Care Unit ("PICU") beds. SICU refers to Surgical Intensive Care Unit and, as noted will be included in references to ICU or PICU beds.

The table below summarizes the changes by service and final bed, MRI, and OR counts, assuming project approval. More detailed descriptions by service follow in the Health Care Requirements and Standards Compliance sections of this summary.

BCCB and INPATIENT RENEWAL CHANGES (Chart # 1)

Service	Current	Future	Change
NICU	24	30	+6
ICU	108	169	+61
Acute Care	272	276	+4
Total Beds	**404**	**475**	**71**
MRI	5	7	+2
OR's	24	28*	+4
*1 new on 3rd floor- General Surgery and 3 new on 6th floor- Cardiology			

B. Background

Based upon a review of the application and relevant literature, BCH is the principal acute hospital for children of Greater Boston. It is also a tertiary and quaternary referral hospital for children with complex medical conditions, and its service area extends beyond Massachusetts across the United States and internationally. BCH discharges 90% of all the Massachusetts children discharged from hospitals with a case-mix index of greater than 5.

In addition to its in- and outpatient services at the Longwood site, BCH also operates satellite campuses in Jamaica Plain (Martha Eliot Community Health Center), Waltham, Lexington, Peabody and North Dartmouth. The Waltham facility includes 11 acute medical/surgical beds and multiple specialty care services as well as a new Community Based Acute Treatment program with 24 hour multi-disciplinary mental health treatment. (For a more detailed description of the satellite services see Attachment 1.)

II. STAFF ANALYSIS

Factor 1 – Health Planning Process

DoN analysis of the Health Planning Process requires a review of a facility's annual planning process as well as their planning for the current project. The DoN Application kit specifically asks about parties with whom the applicant consulted, including other providers, agencies, and relevant groups.

Community participation and engagement of stakeholders is critical to a successful Health Planning Process. According to its application, BCH consulted with: clinical and administrative leadership; local, regional, and national providers; families; community organizations; and, representatives from state agencies. However, at the public hearing on February 25, 2015, some speakers testified that they were concerned about a lack of communication with a variety of stakeholder groups.

BCH reports that in 2008, it filed an Institutional Master Plan with the Boston Redevelopment Authority ("BRA"). In 2010 that Master Plan was amended. In 2012, prior to and as a pre-requisite to filing the DoN, BCH began the process of gaining approval from the BRA and other agencies of that amendment. The plan

approved in 2013 by the BRA included development of a new building connected to the existing facility with the addition of administrative space and recognition of the need to modernize the NICU, to consolidate all cardiovascular services and to develop interdisciplinary care settings for more complex patients.

Concurrently, in 2013, BCH retained the Boston Consulting Group to work with hospital leadership to develop a strategic plan. During this process, it conducted site visits to thirteen major pediatric specialty facilities to learn about their clinical operations BCH additionally used its relationship with the Children's Hospital Association for benchmarking data related to operations, quality and financial performance.

BCH gathered input from a variety of sources as a facet of planning, consulted with constituencies both within and beyond the enterprise and incorporated feedback from those conversations into the planning for this project. The BCH Office of Community Health engages in annual conversations with 10 community health centers. These discussions help frame the broader strategic thinking and, according to BCH, were useful in providing additional context to its plans for this project.

Finding
Factor 1 – Health Planning Process

Staff finds that, pursuant to the DoN guidelines for health planning, BCH engaged in a satisfactory health planning process. This process has been the subject of significant input from a wide range of stakeholder groups with continuing interest in the impact of the project on varying constituencies. To ensure that stakeholder groups continue to have a role in the project during implementation and prior to any construction, DoN Staff recommends the following as a Condition of Approval:

> To ensure that stakeholder groups continue to have access to real-time information about construction design, timeline and progress prior to any construction, BCH shall prepare a plan for ongoing communication for employees and community groups addressing at least the following aspects of project implementation: a calendar of construction phasing with major milestones, notice of material changes in phasing; notice of commencement of each phase; and, notice of opportunities for communication with relevant BCH staff around questions. (See Condition 7.)

Factor 2 – Health Care Requirements

DoN analysis of the Health Care Requirements Factor involves review of proposed changes in each of the impacted services as well as population projections, supply, and service area.

Staff analyzed and incorporated the information provided by the applicant, as well as data from the Center for Health Information and Analysis ("CHIA") that provides information about utilization and case mix. In addition, the Department requested and received an Independent Cost Analysis ("ICA") performed by Navigant. [2]

[2] Navigant concludes in the ICA that, based upon its own experience, for a children's hospital like BCH to retain its top tier status, the following criteria are important and, further, that BCH meets all of the relevant criteria. Those criteria are: High volume and clear market leadership, which increasingly extends beyond regional to national and international leadership; greater than one million "covered children's lives" to support quaternary services; a full complement of services across the care continuum, Investment and reinvestment in programs and facilities to meet the needs of an increasingly complex patient population; dedicated "children's only" leadership team; academic affiliation with a top-ranked medical school; cutting edge research; leadership in training the next generation of children's specialists; strong philanthropic base supporting both research and clinical development; and physician leadership in subspecialty programs that will attract patients from a broad geography. ICA pp. 6-7.

Recent expansions of Medicaid ("MassHealth") and the Children's Health Insurance Program ("CHIP") have increased access to care for children. However, often government payment rates are below a hospital's cost, and, as a result, children's hospitals need to develop alternative strategies to cover those costs to maintain viability. Thus, BCH is looking to expand capacity and serve a broader patient population.

In response to some assertions at the public hearing that BCH is limiting access for patients on MassHealth/CHIP, staff reviewed the payer mix and determined that between 25% and 30% of patient days at BCH are reimbursed by MassHealth and that percentage this has not changed appreciably over the past three years. Future potential changes may occur but it will be difficult, if not impossible, to associate them, causally, with this project because of the nature of insurance contracting and the health care market. BCH insists that it remains committed to continuing to serve patients covered by government payers in Massachusetts at the same level as they do currently, and their proposed plans reflect this expectation.

BCH anticipates and Navigant through the ICA confirmed a continuing decrease in inpatient discharges. As well, Navigant confirmed that BCH data reflects a concomitant increase in patients held for observation (Attachment 2, ICA, p. 17). Finally, Navigant updated the relevant data up through 2016, and found the trends identified by BCH appear to continue (Attachment 2, ICA, p. 18).

At the same time, BCH informs the Department that it continues to grow services, programs, and physician expertise to treat rare and complex conditions requiring subspecialized care (Attachment 2, ICA, p19). BCH has developed multiple Clinical Centers focusing on rare and complex diseases. These centers draw a significant number of regional, national, and international patients who travel to receive treatment (Attachment 2, ICA, p20).

Population Projections

At the time of project implementation in 2025, the pediatric population of Massachusetts is projected to have decreased slightly, by 1%, as shown in the table below. The only age cohort with a modest projected increase, 2%, is the group ages 0 to 4. With the small decline, the proposed expansion project could not rely solely on the pediatric population of Massachusetts.

Massachusetts Population Projections[3] (Chart # 2)

AGE	Census 2010	Projection 2015	Projection 2020	Projection 2025	Projection 2030	% Growth 2015-25
0-4	367,087	366,716	370,588	372,601	369,709	2%
5-9	385,687	382,200	377,519	380,988	383,650	0%
10-14	405,613	403,257	395,932	391,781	395,352	-3%
15-19	462,756	423,674	423,741	415,621	414,500	-2%
Total	1,621,143	1,575,847	1,567,780	1,560,991	1,563,211	-1%

Due to the documented correlation between volume and quality outcomes, children's hospitals require an expansive service area in order to deliver high quality subspecialized care and to train and maintain a highly specialized clinical workforce to treat rare and complex conditions. Some tertiary and quaternary programs require a population base of one to three million to maintain skills and efficiencies to deliver high quality services. While the population projections within Massachusetts cannot provide the necessary volume, BCH currently has a wider draw than just Massachusetts. Thus, notwithstanding a small decrease in the population of children in Massachusetts, when one includes the approximately 1.5 million people ages 0-19 in the other New England states (already a part of the BCH services area for higher acuity patients) the population base doubles to over 3 million:

Population (age 0-19) by NE State	(Chart # 3)	
	2015	**2025**
New Hampshire	297,686	287,982
Maine*	289,625	274,034
Connecticut	775,430	822,855
Rhode Island	120,539	112,698
Vermont	21,586	N/A
Total	**1,504,866**	**1,497,569**

*Years 2017, 2027

In its report, Navigant states "The growth that will result from the project will impact BCH's service to children regionally, nationally and internationally while preserving access to all of its services for Massachusetts residents. The assumptions underlying the project's volume and financial analysis do not include market share changes related to Massachusetts residents. …Growth will occur based on increased global, national, and regional market share." (Attachment 2, ICA, p. 26)

The ICA did not include rigorous testing of the assumptions made by BCH and the application did not include detailed information explaining the basis for the projections. It appears that Massachusetts and the New England region could provide the necessary population base for this project only if BCH took on medical needs now served by other facilities. However, based upon BCH's assertions, considering its development of centers of excellence that already attract out of state and international patients of significantly high acuity, and looking at the BCH data and the analysis by Navigant, it appears that BCH intends to keep its population base large by accessing patients outside of Massachusetts . Staff recommends adoption of Condition 8 to monitor the degree to which BCH's anticipated international and out of state demand materializes in order to mitigate any negative impact upon Massachusetts' payers. (See below at p. 8.)

[3] Massachusetts Institute for Social and Economic Research

Supply

There are approximately 1,254 pediatric beds in Massachusetts. Chart # 4, below shows that the acute care hospitals in Massachusetts that have over 29 pediatric beds are for the most part academic medical centers. They comprise approximately 60% of the total supply of pediatric beds in the state. Of those beds, approximately 120 are NICU beds and 155 are ICU beds. BCH currently has 404 beds, which is 32% of the total bed complement in the Commonwealth. BCH has 108 ICU beds, which is over 70% of the statewide ICU beds. None of the hospitals with fewer than 30 pediatric beds have NICU or specialized pediatric ICU beds.

MA Pediatric Beds at Academic Medical Centers (Chart # 4)

	M/S	ICU	NICU	Total
Boston Children's Hospital	272	108	24	404
Tufts	57	10	40	107
Cambridge Hospital	45	0	0	45
The General Corp. MB+GH	44	13	14	71
UMass Memorial	41	11	27	79
Boston Medical Center	30	6	15	51
Total	**489**	**148**	**120**	**757**

Source- Bureau of Healthcare Safety and Quality

Service Area

BCH provides care to over a third of the pediatric hospitalizations in Massachusetts. In the most recent fiscal year, BCH had approximately 124,000 bedded days and more than 17,400 surgical procedures performed at the Longwood campus of Boston Children's Hospital. Many of these patients require extended stays, in some cases because their care necessitates multistage, iterative procedures.

BCH is the largest pediatric referral center in New England. BCH defines its primary service area as encompassing all of Massachusetts and including other states and countries. In FY 2009, 20% of BCH discharges were patients residing outside of Massachusetts. As shown in Chart # 5, this percentage grew to 24.7% in 2014:

Inpatient Origin (Chart # 5)

	2009 %[4]	2014 %[5]
Massachusetts	80.0	75.3
Other New England	12.7	-
Other U.S.	5.5	20.7
International	1.8	4.0

Staff notes that given the decline in the population of New England, and the need to maintain generally accepted criteria and requirements of top tier pediatric hospital (such as a high number of covered lives and a full complement of services across the care continuum), the expansion of the patient base beyond the region is appropriate for this project.

[4] BCH Internal Data
[5] Case-Mix Database (CHIA)

International patients have increased from 1.8% in 2009 to 4.0% in 2014 and non-New England patients have increased from 5.5% to 20.7% during the same time period. BCH is relying on continued growth in that out of state patient population, and on the assumption that these projections hold true, the inclusion of international and out of state and non-New England patients in this analysis is appropriate and the project is unlikely to have a negative impact upon access and affordability with the Commonwealth.

Many of BCH referrals come through its formal and informal Boston area service and referral agreements. BCH physicians currently have formal relationships with community hospitals in Massachusetts to provide a variety of services discussed under **Factor 3 - Operational Objectives** below at page 18.

(Chart # 6)

	FY 2013			FY 2014			FY 2015		
Inpatients	**Cases**	**ALOS**	**CMI**	**Cases**	**ALOS**	**CMI**	**Cases**	**ALOS**	**CMI**
Local +	10,184	5.59	1.42	9,545	6.08	1.53	9,958	6.15	1.51
All Regions	14,969	6.88	1.80	14,688	7.48	1.95	15,382	7.42	1.90
Bedded~									
Local +	17,521	3.76	1.12	16,588	4.05	1.19	16,366	4.25	1.21
All Regions	24,772	4.65	1.40	24,023	5.08	1.51	24,336	5.16	1.51

* CMI- Case Mix Index based on APR DRG v30

\+ Inside I-495

~ Includes observation cases

Chart # 6, above, compares Local Discharges with All Regions for Bedded and Inpatient discharges. In 2013, 2014, and 2015 the average length of stay and the case mix acuity index were higher for All Regions than for the Local region for both inpatients and when counting observation patients to inpatients in the Bedded category. (All Regions includes patients within the Boston area as well as those worldwide.) This chart supports BCH's assertion that patients from out of the local region have a higher average acuity index than local patients. Higher acuity patients are already coming into BCH for more complex specialized procedures than are provided at their local hospital.

Existing Services -Current State- Licensed Beds

The table below summarizes the current allocation and location of patient rooms within the existing facility. At present BCH maintains 404 licensed beds, comprised of 272 acute care beds and 132 ICU beds (the 24 bed NICU is included in the total number of ICU beds).

Fifty-six percent of the patient rooms are located in the 28 year old Main building. The average age of the entire physical plant is currently greater than 12 years, which places BCH's facility as among the oldest facilities of major children's hospitals treating tertiary and quaternary patients.

Current Composition of Beds at Longwood (Chart # 7)					
Building	**Main**	**Main South**	**Mandell**	**Bader ***	**Total**
Age Years+	28	10	2	86	13.33
Licensed Beds					
ICU Beds					
Single	29	67	11		107
Doubles/ Triples	2	3			5
Bay~	20				20
Total ICU	***51***	***70***	***11***		***132***
Acute Beds					0
Single	73	48	33	6	160
Doubles	102			10	112
Total Acute	***175***	***48***	***33***	***16***	***272***
TOTAL	**226**	**118**	**44**	**16**	**404**

~NICU
***Psychiatric Beds only**
+Avg building age, 13 yrs, not incl Bader
Waltham has 11 licensed beds+ 404= 415
Total licensed beds

At children's hospitals, multi-bed rooms increase the difficulty of accommodating parents (who often stay overnight with their children) in a family-centered environment. In addition, double-bedded rooms are sub-optimal for patient care delivery due to increased risk of infection among patients and visitors, increased risks for patient safety, and increased impacts on efforts to protect patient privacy.

At BCH, 66% of beds (167) are in single-bedded rooms. According to BCH, many of those rooms are out of date relative to modern industry standards. Capacity constraints have led BCH to seek and receive approval from the Department's Health Facilities Licensure and Certification to re-double 17 previously "un-doubled" rooms. As discussed further under **Factor 4 - Standards Compliance** (below at p. 20), the proposed plan includes only private rooms and the plan generally calls for the renovation of the currently outdated facilities.

Thus, this plan to undouble rooms and update space is an important part of BCH's plan to improve patient care and further its family-centered mission.

Operating Rooms

Pediatric operative protocols and procedures differ greatly from adult procedures. Children's hospitals must maintain safety protocols, equipment and capabilities that are age appropriate for patients who range in age from infants to young adults. For example, anesthesia types and dosing, intubation tubing and blood pressure cuffs and operative equipment vary widely by size and age. Further, in order to reduce anesthesia exposure, which poses greater risks in children for apnea, multiple surgical procedures are combined into one OR when possible.

In recognition of the wide variations in complexity of surgeries being performed in different settings throughout the United States, the American College of Surgeons along with the Children's Hospital Association convened a taskforce and developed standards and benchmarks for surgical centers that provide pediatric care. The Taskforce for Children's Surgical Care made recommendations for optimal resource allocations among three levels of Pediatric Surgical Designations. [6]

Consistent with the most comprehensive level of surgical services, BHC provides the following recommended resources: surgeons; anesthesiologists; Emergency Department ("ED" physicians); intensivists; interventional radiologists; and, medical/surgical specialists, all trained in pediatrics and available 24/7; as well as a Level IV NICU and a transfer team. BCH provides services across the full range of pediatric surgical sub-specialties including general surgery, orthopedics, cardiovascular surgery, neurosurgery, otolaryngology, urology, oncology and plastic surgery. As discussed previously, BCH treats patients who have greater medical complexities than at most hospitals and at times treats patients with multiple congenital anomalies that may require multiple surgeries over many years. For example, patients who have cleft palates often have cardiac conditions and need long-term multiple procedures that may involve up to 14 specialties.

The specialists at BCH have developed complex surgical capabilities that have led to the development of BCH as an international referral center. These include surgical programs in the following areas: cardiovascular (part of the Heart Center); transplants; complex spine surgery; oncology; neurosurgery; cleft palate; craniofacial; and, level 1 trauma surgical services.

BCH has experienced growth in its enterprise-wide surgical volume[7] and has shifted many of its less complex cases to its satellites in Lexington and Waltham to compensate for the high demand and wait-times at the Longwood site.

[6] Taskforce for Children's Surgical Care. Optimal Resources for Children's Surgical Care in the United States. Journal of the American College of Surgeons, March 2014

[7] While the number of cases has not grown, over time the complexity of cases has increased. The increase in the number of surgical minutes has increased by 9.25% since 2003, from 84 to 147 minutes per case in 2014.

Chart # 8, below, compares impact of the projected growth rate with maintaining status quo and with the addition of operating rooms ("ORs").

Projected OR utilization (Longwood) (Chart # 8)

Actual and projected utilization and capacity for 24 and 28 ORs (FY 2012-2014 and 2024-2026)

				24 ORs		28 ORs	
		Total billed OR minutes	Total in-block OR utilized minutes[1]	Utilized hours/OR/day	% capacity	Utilized hours/OR/day	% capacity
Actual	2012	2,669,502	2,656,218	7.38	79%		
Actual	2013	2,636,847	2,622,615	7.29	78%		
Actual	2014	2,748,084	2,729,101	7.58	82%		
Projected	2024	3,331,009	3,304,343	9.18	99%	7.87	85%
Projected	2025	3,394,987	3,367,809	9.36	101%	8.02	86%
Projected	2026	3,461,182	3,433,474	9.54	103%	8.17	88%

[1] Includes 30 minute turnover per case and excludes surgical minutes done outside of block time or done in procedure rooms.

This growth rate requires an expansion of OR capacity by four ORs to meet projections. Best practice also dictates the co-location of cardiovascular surgical services with other Heart Center services and interventional radiology, the updating of space to meet current building standards, and maintenance of occupancy rates in the 85% range, while allowing room for innovation.

BCH proposes the following changes to its complement of ORs on the Longwood campus:

(Chart # 9)

	Existing	Proposed	Net new	In BCCB
General OR	20	21	1	-
MRI OR	1	1	-	Relocate 1
CV OR	3	6	3	Relocate 3
Total	24	28	4	Relocate 4

Heart Center Consolidation

As proposed, the new building will accomplish the goal of consolidating all inpatient and outpatient medical and surgical cardiology services[8] over five floors into a comprehensive Heart Center. The Center will encompass 165,657 GSF with an estimated associated capital cost of $195,485,980 as seen below.

(CHART # 10)

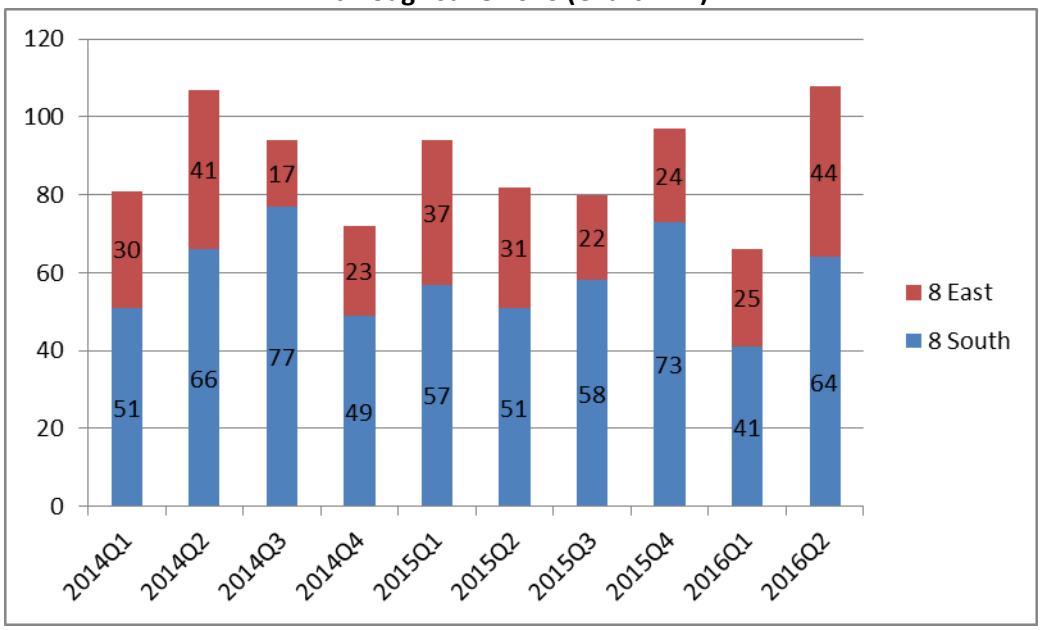
Cardiology-BCCB						
Floor	Use	GSF	Capital Cost	$/GSF	*Non Departmental*	
2	Clinic	23,330	$26,596,200	$1,140	7351	
6	Cath Lab, Surg, MRI	38,225	$50,213,500	$1,314	5702	
7	ICU & Unit	34,665	$39,518,100	$1,140	5897	
8	ICU & Unit	34,694	$39,551,160	$1,140	5960	
9	Unit	34,743	$39,607,020	$1,140	5911	
Total		**165,657**	**$195,485,980**	**$1,180**	30821	19%

Currently, due to room size, for certain procedures, and in emergent situations, surgery is performed in the patient room with staff and equipment extending into the hallways. In the new Heart Center, the Cardiac Intensive Care Unit ("CICU") rooms will all accommodate the need for as many as 9 clinicians and multiple high tech, life-sustaining machines such as patient monitoring systems, Extra Corporeal Membrane Oxygenation ("ECMO"), ventilators, dialysis, cardiac monitors, Electroencephalographs ("EEG"), and hypothermia machines.

With this project, 75 existing Heart Center beds will be relocated to the new BCCB, and 21 new beds will be added for a total of 96 beds, 64 will be licensed as Pediatric Intensive Care Unit (PICU) beds[9] and 32 will be acuity adaptable. Additionally, three dedicated cardiovascular ORs will be added for a total of six, all of which will be located on the sixth floor.

[8] Fetal echocardiograms will continue to be performed within the Advanced Fetal Care Service.
[9] PICU shall mean all Intensive Care Unit Beds other than Neonatal Intensive Care Unit (NICU) beds.

Heart Center occupancy--number of days over 85% occupancy based on midnight census, January 2014 through June 2016 (Chart # 11)



At Staff's request, BCH provided updated data on the occupancy rates of the Heart Center from the start of 2014 to the second quarter of 2016. Since the optimal occupancy rate is in the 80- 85% range, data on the number of days each quarter that the units were above 85% were counted. Depending on the quarter and with variance between unit 8 East and 8 South, the Heart Center exceeded 85% occupancy from 18% to 83% of the time. The units' occupancy rates were frequently over 100%.

Boston Children's Heart Center has been ranked number one in the country by US News & World Report in pediatric cardiology and cardiac surgery for every year since this category has been ranked in 2009. As a result of this reputation, referrals from the United States and overseas have increased, placing constraints on capacity. The Heart Center receives 10 to 30 second opinion requests per month from patients and foreign embassies. At current capacity, the significant demand for care at BCH has the potential to limit access for Massachusetts' residents. The proposed expansion will support access for both Massachusetts' and out of state patients. BCH' plans for patients from outside of Massachusetts to provide the demand for the proposed expansion and that payments from those patients will support enhanced access for the in-state, lower reimbursement population. (See Attachment 2, ICA p. 30)

Neonatal Intensive Care Unit (NICU)

The BCH NICU is a Level IV NICU referral center for children who need quaternary subspecialty care that cannot be provided at their local hospitals or at many Level III NICUs. Most patients referred to the BCH NICU are from Level III NICUs. Patients up to six months old, who have complex medical conditions, can be transferred to BCH. The majority come from Massachusetts, with approximately 15% coming from outside of the state and out of the country.

BCH is proposing an additional six NICU beds because the unit has exceeded the optimal occupancy rate of 85% over the past four years with an average occupancy rate of 88%. The length of stay in the NICU can vary from a few days to many months. The unit therefore needs to address the wide variation in needs of patients and families.

Additionally, the space in the current NICU is primarily an open bay layout with six beds per bay with an average of 169 square feet per bed. There are four beds located in private rooms. The open bay layout hinders the privacy of patients, Health Insurance Portability and Accountability At ("HIPAA") compliance, infection control, and the placement of personnel and medical equipment such as patient monitors, ventilators, hypothermia basinets, infusion pumps, and dialysis machines. Routinely, portable x-rays, ultrasound, and echocardiography machines need to be moved to the patient's bed and in urgent situations medical/surgical procedures may be performed at the bedside with a team of surgical and anesthesia specialists in full view of other families. This interrupts a family's experience with their own sick child and infringes on patient and family privacy.

While birthrates in Massachusetts are not increasing, increases in the prevalence of maternal conditions such as substance use disorder, diabetes, hypertension, and preeclampsia have increased the number of premature births, complications (such as respiratory distress syndrome) and congenital anomalies. More babies born at 22 weeks gestation are surviving with requirements for complex care and long term treatments. Type 2 diabetes is estimated to occur in as many as one in seven pregnancies in the United States and the incidence of preeclampsia has risen from 0.3% in 1980 to 1.4% in 2010. These health factors have contributed to higher occupancy rates in the NICU.

Staff has evaluated the occupancy and space concerns and reviewed other sources which indicated that NICU occupancy rates ranging from 75%-85% is the optimal range. The average occupancy rate for BCH is 88%. Thus based on the information provided and further analysis, Staff finds that the applicant meets the requirements of the guidelines for six additional NICU beds.

Magnetic Resonance Imaging

Magnetic resonance imaging ("MRI") has become a central tool in diagnosis, surgical management, and treatment efficacy assessment for a large number of conditions across much of the pediatric disease spectrum. Almost all of BCH's multidisciplinary centers require specialized imaging capabilities. As part of this DoN project, BCH is planning to expand MRI services at its Longwood campus by adding two general use units to the four that already operate at capacity on the second floor. BCH is currently approved to operate 11 MRI units. Two are for research and BCH has informed staff that it will be submitting, under separate cover, a Notice of Assurance (research exemption) for a third MRI to be located at 2 Brookline Place. Of the nine remaining, six are for general use and three are for specialized use as demonstrated in Chart # 12.

(CHART # 12)

Location	Available hours per week	Location Special Use/ Hours
General Use Units		
Longwood	168	27/7 magnet - 2nd Floor
Longwood	92.5	2nd Floor
Longwood	62.5	2nd Floor
Longwood	70.5	2nd Floor
Waltham	62	
Peabody	60.5	
Total Hours/week	**516**	
Total Hours/Year	**25,800**[10]	
Specialized Use Units		
OR Unit	50	Operative Guidance
Main Campus	62.5	Heart Center
Main Campus	52.5	Neuro-critical Unit
Main Campus	As needed	Research NICU
Waltham—Clinical Hrs.	18.6	Research-43.4 Hrs.
Total Specialized Hours	**183.6**	

On average, 15% of scans are performed on inpatients and 85% on outpatients. The urgent needs of inpatients creates difficulties for scheduling outpatient scans. This is compounded by the long distances many travel to obtain their scans. Patients needing scans may wait several weeks to obtain an appointment only to have it rescheduled.

Scans performed on pediatric patients are more specialized as pediatric patients often require sedation or anesthesia which results in longer scan time to accommodate administering and recovery from the drugs. As a result there is a requirement that those scans be performed during daytime hours.

As a tertiary/quaternary referral center, BCH has developed specialized imaging protocols for clinical needs such as epilepsy. In 2014 BCH performed over 250 scans on patients with epilepsy and was on target to perform over 350 in 2015.

[10] This is based on a usage rate of 50 weeks per year to incorporate maintenance and downtime.

Total Scans Performed (Chart # 13)

Fiscal year	Longwood (general-use)	Longwood (specialized)	Peabody	Waltham	Total scans
Units #	**4**	**3**	**1**	**1**	
2012	14,824	1,599	5,366	1,328	**23,117**
2013	14,383	1,282	1,906	5,435	**23,006**
2014	16,198	2,413	2,016	5,267	**25,894**
Growth	**9.27%**				**12.01%**

Notes:

(1) Mandell 2 and 7 scanners opened on 2/1/14 – One is general use and one is for Neuro-critical patients outside the ICU.
(2) Peabody unit began operations in FY 2011.
(3) Waltham experienced significant downtime due to scanner malfunction during FY 2014 and part of FY 2015, which is why volume appears to have decreased.
(4) Cardiac MRI was down from 4/6/15 to 6/12/15 for an upgrade; can help with overflow
(5) FY 2015 volume extrapolated based on actual data through May 2015.

As Chart # 13, above, indicates, there has been a significant growth in scans performed.[11]

Total General Use MRI Scans (Chart # 14)

Location	2014 Actual scans	Available annual hours	Percentage operating capacity	2015 Estimated scans	Available annual hours	Percentage operating capacity
Longwood	16,198	19,675	103%	16,753	19,675	106%
Waltham	5,267	6,200	106%	4,964	6,200	100%
Peabody	2,016	3,025	83%	2,285	3,025	94%
Total	**23,481**	**28,900**	**102%**	**24,002**	**28,900**	**104%**

Notes:
(1) Longwood volume excludes specialized units
(2) 50 weeks per year of scanning for each unit; two weeks of downtime for maintenance and holidays
(3) Average 75 minutes per scan
(4) Waltham calculation includes 62 hrs/wk on the 1.5T plus 18.6 clinical and 43.4 research hrs/wk on the 3T
(5) FY2015 estimates based on data for eight months

As Chart # 14 above indicates, the general use MRIs are operating at above 90% (the minimum standard in the MRI Guidelines) with the exception of the Peabody location[12].

[11] This is due not only to the extended reach of BCH's service area, but also to the move away from performing CTs on children in order to reduce their exposure to ionizing radiation and the commitment of clinicians to reduce the use of anesthesia through the *Try Without* initiative whereby trained staff work with children to ease anxiety which takes longer. This initiative, while successful at times, results in repeats due scans to movement.

[12] BCH has not included the specialized use units because they are utilized for very ill patients and while two can at times be available for overflow, the risk is that they would not be able to quickly prepare the unit in the event of an emergency in the ICU of Cardiac Center. (The OR unit is not available for general use.)

In summary, the project, as proposed, encompasses the acquisition of two additional fixed general use MRIs to address the long wait times of patients in need of this diagnostic tool as well as the anticipated increase in volume as result of the proposed expansion. Staff finds that this portion of the Application meets the standards of the Guidelines.

Ambulatory Care

According to BCH, ambulatory services for children have grown as outpatient treatments have become safer and more efficient, thereby allowing more children to be treated outside of the acute care setting. For BCH, the trend has been growth in ambulatory visits for many children with co-morbidities requiring long term treatment and care.

BCH proposes to renovate primary and multi-specialty ambulatory services at the Longwood campus and to construct an ambulatory site that is close to the hospital and that will be licensed as a clinic. The new site, at 2 Brookline Place, will encompass 190,756 GSF over seven floors of clinical space, one floor of retail, and a research MRI in the basement that does not require a DoN. BCH selected this site because it has less congested parking for patients and staff and easy access to public transportation, while remaining proximate to the Longwood campus. Some lower intensity clinical services will be moved to the 2 Brookline Place site including physical and occupational therapies with a therapy pool, a gym, exam and treatment rooms, imaging with radiography, ultrasound and two procedure rooms, blood draw stations, and primary care exam rooms and support.

The expanded programs and additional inpatient beds proposed for the new BCCB will further stress the amount of space available for ambulatory care and physician office clinics on the Longwood campus. With the construction of the 2 Brookline Place building, the project contemplates a modernization of the overall ambulatory care. By moving the lower-complexity ambulatory clinics to 2 Brookline Place, secondary-care ambulatory procedural programs may be relocated to newly renovated space on campus in the Fegan Building,

Finding
Factor 2 – Health Care Requirements

BCH appears to be following a shifting business model that contemplates expanding its provision of services to patients from a broad geographic area including projections for an extensive international patient base, and patients with a particularly high acuity. Based upon those assumptions, and in recognition that BCH considers its service area to include not just Massachusetts, but regional, national, and international patients with high acuity, Staff finds that the project, as proposed, will provide sufficient capacity in conformance with Factor 2, to adequately address what BCH believes is a rising demand as well as the health care requirements of its service area.

Staff finds that given the high occupancy rates and space limitations of their current units, the proposal to consolidate services into a more coordinated, multi-disciplinary service will better serve all patients in a more efficient manner. The research continues to document that for specialized services higher volume leads to better patient outcomes.

This project involves a number of projections with respect to potential increases in demand from international and/or the highest acuity patients from a national service area. Analysis of the likelihood of these predictions being fully realized is outside the scope of DoN factors.

Staff is in receipt of a letter from the Health Policy Commission (HPC) dated September 27, 2016 in which HPC expresses its concern that there is a likelihood that the expansion will lead to an increase in

Massachusetts health care spending. HPC asserts that BCH would require an increase in commercial discharges of Massachusetts patients to achieve its goals. HPC asserts that the increase in commercial discharges from Massachusetts could be exacerbated if out of state and international trends flatten over time. HPC further asserts that there is a likelihood that this Project will lead to increases in Massachusetts health care spending because their analysis purports to show potential shifts of Massachusetts patients from lower priced pediatric care facilities to BCH which "has among the highest commercial and Medicaid MCO prices in the state for hospital care". In addition, HPC states the potential destabilization of competing pediatric care programs from BCH's expansion could result in increases in costs to Massachusetts payers and patients.

In order to ensure that this proposed project does not pass along increased costs to the payers and consumers of the Commonwealth, Staff recommends, as a condition of approval, that

1. BCH shall not cover its approved final incremental operating costs by passing on the costs to governmental and non-governmental Massachusetts payors or patients in excess of the Commonwealth's cost containment goals ("Condition Item 1");
2. BCH shall maintain its commitment to serving Medicaid [13] patients ("Condition Item 2"); and,
3. BCH shall report annually to the Department the following ("Condition Item 3"):
    a. Information concerning the degree to which the anticipated out of state demand for BCH's service is realized;
    b. Information sufficient to allow the DoN Program to conduct an analysis of material changes in acuity mix; and
    c. Information sufficient to identify a material decrease in the volume of Medicaid patients.[14]

See Condition 8, below for the full text of this proposed Condition.

Based on the information provided by the applicant, the ICA, and other documentation, and in consideration of Condition 8, Staff finds that BCH meets the standards for Health Care Requirements.

Factor 3 – Operational Objectives

In the DoN analysis of the Operational Objectives Factor, health care quality is the predominant consideration. In addition, staff reviews information relating to operational efficiencies, community referral relationships, and health equity.

Health Care Quality

In its application, BCH detailed its quality initiative plan encompassing all of its sites as well as its participation in external quality initiatives. The internal quality assessment and performance improvement (QA-PI) written plan focuses on indicators related to improving outcomes and reducing medical errors and is updated and reviewed annually by senior leadership and the Board of Trustee's Patient Care Assessment Committee (PCAC). Divisions and departments of BCH provide a plan describing how it ensures and implements an effective quality program in their respective areas to PCAP.

BCH's Patient Safety and Quality ("PPSQ") program is responsible for providing staff support and technical guidance in the operation and coordination of the institution's QA-PI Plan and related activities.

[13] For the purposes of these Conditions, Medicaid shall mean patients receiving coverage under the MassHealth program including those insured by either Medicaid, a Medicaid MCO, and/or the Children's Health Insurance Program.
[14] For the purposes of these conditions, Medicaid shall mean patients receiving coverage under the MassHealth program including those insured by either Medicaid and/or the Children's Health Insurance Program.

BCH has developed quality and safety indictors and collects and analyzes data utilized for monitoring and implementing necessary changes. BCH provided a description of nine reports utilized regularly. Boston Children's Comprehensive Safety Report is the highest-level institutional report of adverse event data. Safety events are entered in the on-line safety event reporting system ("SERS") in a standardized method which incorporates performance on the National Patient Safety Goals. After an event is entered in SERS, it is assigned a severity level, reviewed by one or more committees and a Root Cause Analysis is often conducted. Data collected in SERS and other reports are analyzed to identify areas that are not performing as expected or require further study. Current specific priority projects are identified including eliminating specified infections, pressure ulcers, preventable harm, adverse drug events, blood clots, readmissions and MRI Zone 4 events.

PI improvement methods include Model for Improvement®, Six Sigma, and Lean Processes. Multi-disciplinary teams are created to develop and implement a correction plan. BCH also participates in numerous state, national and international initiatives to develop valid pediatric outcome measures, quality improvement collaboratives, and state level public reporting.[15]

Operating Efficiency

Based upon the application, there are a number of operational improvements anticipated from the proposed project. Efficiency gains include:

- Creating all single bed rooms which will result in improved use of staff time. Nursing, housekeeping, transport and administrative staff time will no longer be used for moves that now occur due to risks for infection, gender or age issues. These improvements should speed up admissions to the inpatient units.

- The addition of two MRIs will reduce cost and disruption to planned surgical operations due to the need to reschedule to accommodate emergency patients.

- Expanding and increasing private areas for the ICU will enhance communications among medical personnel and patients without violating privacy as well as enable staff to perform specialized procedures in rooms.

- Centralizing all coronary care services into one Center will enhance communication, collaboration and coordination and is expected to reduce movement of patients and improve the flow of operations.

Community Relationships and Referral Agreements

Boston Children's Hospital maintains a Community of Care ("CoC") network of community hospital relationships, satellites, and physician office locations. Through this network, BCH supports the delivery of and access to pediatric care for patients in the communities in which they live. The CoC network includes formal relationships with six community hospitals in eastern Massachusetts where BCH physicians provide clinical oversight and on-site physician coverage of emergency department, pediatric inpatient, and neonatal services in settings ranging from Level 1 to Level 3 nurseries. Some of the relationships BCH maintains also include service arrangements for ambulatory surgical and specialty consultations as well as remote services for interpretations (e.g., EEG, EKG and echocardiography). The CoC network also includes its six satellite locations described in Attachment 1.

[15] BCH cited its involvement with the following organizations: Child Health Corporation of America, Massachusetts Coalition for the Prevention of Medical Errors, Children's Hospital Association, Institute for Healthcare Improvement, Quality Alliance, National Initiative for Children's Healthcare Quality, Medically Induced Trauma Support Services.

Additionally, BCH and its physician practices maintain relationships and service a variety of service arrangements with other pediatric specialists who are based at the smaller pediatric programs in the region (including Boston Medical Center in Boston, Massachusetts, Hasbro Children's Hospital in Providence, Rhode Island, and UMass Memorial Medical Center in Worcester, Massachusetts). A list of the 54 Hospitals with which BCH maintains formal referral agreements is at Attachment 3.

BCH provided copies of many agreements and descriptions of referral networks sufficient to indicate that they are capable of operating efficiently and effectively in relation to other facilities and services.

Payor Partnerships to Transform Pediatric Care

The Applicant described several efforts to meet the requirements in Chapter 224 of the Acts of 2012 for MCOs and ACOs and has developed pilot models of care to improve health outcomes while reducing costs and eliminating ineffective and over-utilized care under the umbrella of the Payor Provider Quality Initiative. BCH remains committed to maintaining access for its Massachusetts patients, irrespective of payer, however, the shifting role of MassHealth MCOs and their efforts to manage their costs, make analysis and prediction of the impact of this project on access difficult to assess.

Staff recommends that in connection with this factor ongoing consideration of access by patients in MCOs be a significant priority for the Applicant.

Interpreter Services

Staff notes that the Office of Health Equity ("OHE") recently conducted a review of the interpreter and outreach services available to limited and non-English proficient ("LEP") patients at BCH. After review of this program and visits to the campuses, the Office of Health Equity has determined that Boston Children's Hospital and all sites operating under its license has agreed to comply with the standards set out in Attachment 4. OHE's recommendations have been included as a condition of approval of this project.

Finding
Factor 3 – Operational Objectives

Based upon the foregoing, Staff finds that the project meets the operational objectives requirements of the DoN regulations.

Factor 4 – Standards Compliance

DoN analysis of the Standards Compliance Factor requires that the Applicant provide assurances that the project will, upon completion, comply with all applicable standards of operation imposed by law.

BCH states that all space will meet the physical hospital licensure requirements and that the proposed project will meet all Department construction and licensure requirements, in addition to all requirements set forth for such physical facilities by the Medicare Program, including disability access. These plans will be subject to approval during the plan review process subsequent to DoN approval and prior to construction.

Construction will be accomplished in phases, as indicated below:

Phase 1: Construction of Boston new 11 story inpatient facility and 8 story ambulatory clinical care building in Brookline.

Phase 2: Phased inpatient renewal of Main, Main South and Bader Farley Pavilion.

Spatial Analysis

The breakdown of the new construction and renovations at the Longwood campus and at 2 Brookline Place are shown in Chart # 15 below.

Gross Square Feet Involved in Project (Chart # 15)

Functional Areas	Current	New Construction	Renovation	% Renewal
BCCB -Longwood	-	594,409	-	
Existing In-Patient Longwood	820,622	-	463,007	56%
Existing Ambulatory Longwood	196,397	-	108,817	55%
2 Brookline Place	-	190,756	-	
TOTAL	**1,017,019**	**785,165**	**571,824**	

Source: BCH and DoN staff analysis

Main Campus

The new BCCB will have 594,409 GSF. The consolidation of all cardiology medicine and surgical services will be accommodated on four inpatient floors, Levels 6-9, with the outpatient clinics, including imaging, being located on Level 2.

Approximately 56% of in-patient and 55% of outpatient spaces at the Longwood campus will be renovated. Renovations of the main campus will encompass 571,824 GSF. Multiple services will be impacted including expansion, improvements and reconfigurations to ICU, Psychiatry, Medicine, Surgery, Hematology/Oncology, and Neurology with the addition of a state of the art epilepsy space. In order to accommodate the higher severity of the patients at BCH (as opposed to patients in other Massachusetts pediatric units), 166 beds will now be acuity adaptable. All of the beds will be in private rooms and sized to current hospital building standards.

2 Brookline Place

The 2 Brookline Place will have 190,756 GSF which will house primary care and other services for patients that are less intensive than for those that have a rapid change in their condition and thus require admission, such as cardiac patients. This area is less congested and will have more convenient parking and public transport access. Shuttles will be operating to the Longwood campus.

This space will include diagnostic imaging, a blood draw station, extensive rehabilitation treatment including a gym and a hydrotherapy pool, as well as approximately 50 exam rooms accompanying the therapeutic and primary care clinics to be located there. The ground floor will include a lobby and retail shell space.

The charts in Attachment 5 give a more detailed explanation of the space usage by floor as provided by BCH.

Finding
Factor 4 - Standards Compliance

Based upon the above analysis, Staff finds that the project meets the standards compliance factor of the DoN Regulations.

Factor 5 – Reasonableness of Expenditures and Costs

The DoN analysis of this Factor requires a review to determine that the proposed capital expenditure and likely operating costs are reasonable, including: a comparison with expenditures and costs involved in similar projects; the likely effect of the capital expenditure and operating costs upon charges to the public and reimbursement by third party payers to the applicant and to other providers; and the availability of funds for capital and operating costs to support health care services in Massachusetts.

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Reasonableness of Capital Expenditures

The requested and recommended maximum capital expenditure is: $1,068,263,000 (December 2015 dollars), itemized as follows:

(CHART # 16)

	NEW CONSTRUCTION: BCCB & 2 BP	**RENOVATION: Main Campus Inpatient & Ambulatory**	**TOTAL**
Land Costs:			
Land Acquisition Cost	$14,380,000	-	$14,380,000
Site Survey & Soil Investigation	2,968,000	-	2,968,000
Other Non-Depreciable Land Development	13,296,000	-	13,296,000
Total Land	30,644,000	-	30,644,000
Construction Costs:			
Depreciable Land Development	3,891,000	-	3,891,000
Building Acquisition Cost	-		-
Construction Contract	690,940,000	191,853,000	882,793,000
Fixed Equipment NOT in Contract	18,600,000	-	18,600,000
Architectural Cost	64,349,478	23,834,000	88,183,478
Pre-filing Planning & Development	8,712,000	-	8,712,000
Post-filing Planning & Development	1,000,000	-	1,000,000
Other: BCCB & Renewal Furniture & Signage	8,902,000	-	8,902,000
Other: 2 BP Furniture and Signage	5,745,000	3,792,000	9,537,000
Net Interest Exp. During Construction	12,000,000	-	12,000,000
Major Movable Equipment	-		-
Total Construction Costs	$814,139,478	$219,479,000	1,033,618,478
Financing Costs			
Cost of Securing Financing	4,000,000	-	4,000,000
Bond	-	-	-
Other	-	-	-
Total Financing Costs	4,000,000	-	4,000,000
TOTAL	**$848,783,478**	**$219,479,000**	**$1,068,262,478**

Below please find a staff comparison of BCH's construction costs to Marshall & Swift Valuation Service ("M&S"), Class A "Excellent" base cost of new construction for general hospitals.

(Chart # 17)

	New Construction	Renovation	Total
Construction Contract	$690,940,000	$191,853,000	$882,793,000
Site Survey & Soil Investigation	2,968,000	-	2,968,000
Architectural & Engineering Costs	64,349,478	23,834,000	88,183,478
Fixed Equipment not in Contract	18,600,000	-	18,600,000
Total Construction Costs	$776,857,478	$215,687,000	$992,544,478
BCH Cost per FT SQ	$989.42	$377.19	
Marshall & Swift Comparison Costs	$864.11	$518.47	
Variance	**14%**	**-27%**	

The analysis finds BCH's adjusted unit cost for new construction of $989.42 per GSF, or approximately 14% higher than the M&S standard, while the project renovation costs are 27% below the standard as shown below.

By way of background, this project incorporates the construction of 67 ICU, 116 acuity adaptable medical/surgical beds, two MRIs, four ORs, all of which spaces require greater electrical, HVAC, plumbing, and shielding, and fixed equipment than a general hospital or clinic space. In addition 2 Brookline Place includes greater intensity of laboratory, imaging and a hydrotherapy pool, all of which are more specialized than a general pediatric practice. Additionally, dense urban sites are associated with higher costs due to the need to preserve the integrity of the surrounding infrastructure, the need for construction staging, and higher labor costs. The Longwood medical area falls within these criteria.

By way of comparison with other area projects, please see Chart # 18.

(Chart # 18)

Hospital	Project #	Filing Date	Cost/GSG
Nantucket Cottage	5-3C53	May- 16	$773
Mass. General	4-3C45	Aug-15	$1335
South Shore	4-3C42	May-15	$763
Boston Medical Ctr	4-3C32	April- 14	$673

Staff notes that academic medical centers, children's hospitals and tertiary/quaternary hospitals are known to be more costly due to the increased acuity of patients needing an increased intensity of higher cost technology and services; additionally, children's hospitals need to accommodate not just the patient but also the child's family[16].

Note that the incremental operating costs are addressed below in analysis of Factor 6.

[16] While this is the largest DoN project submitted in Massachusetts, a search for major construction projects nationwide over the past six years found that costs for such new hospital buildings were in this range.

Likely Effect Upon Charges to the Public and Reimbursement by Third Party Payers

As noted above (Factor 2) this project involves a number of projections with respect to potential increases in demand from international and/or the highest acuity patients from a national service area. Analysis of the likelihood of these predictions being fully realized is outside the scope of DoN factors.

Staff is in receipt of a letter from the Health Policy Commission (HPC) dated September 27, 2016 in which HPC expresses its concern that there is a likelihood that the expansion will lead to an increase in Massachusetts health care spending. HPC asserts that BCH would require an increase in commercial discharges of Massachusetts patients to achieve its goals. HPC asserts that the increase in commercial discharges from Massachusetts could be exacerbated if out of state and international trends flatten over time. HPC further asserts that there is a likelihood that this Project will lead to increases in Massachusetts health care spending because their analysis purports to show potential shifts of Massachusetts patients from lower priced pediatric care facilities to BCH which "has among the highest commercial and Medicaid MCO prices in the state for hospital care". In addition, HPC states the potential destabilization of competing pediatric care programs from BCH's expansion could result in increases in costs to Massachusetts payers and patients.

In order to ensure that this proposed project does not pass along increased costs to the payers and consumers of the Commonwealth, Staff recommends, as a condition of approval, that

1. BCH shall not cover its approved final incremental operating costs by passing on the costs to governmental and non-governmental Massachusetts payors or patients in excess of the Commonwealth's cost containment goals ("Condition Item 1");
2. BCH shall maintain its commitment to serving Medicaid [17] patients ("Condition Item 2"); and,
3. BCH shall report annually to the Department the following ("Condition Item 3"):
    a. Information concerning the degree to which the anticipated out of state demand for BCH's service is realized;
    b. Information sufficient to allow the DoN Program to conduct an analysis of material changes in acuity mix; and
    c. Information sufficient to identify a material decrease in the volume of Medicaid patients.

See Condition 8, below, for the full text of this proposed Condition.

Availability of Funds

The project will be financed as follows: BCH will use $457,991,000 from its Plant Replacement Fund and $410,272,000 of unrestricted funds and plans to issue $200,000,000 in debt.

In May 2015, Standard and Poor's reaffirmed BCH's "AA" bond rating and opined that "The rating reflects our view of Children's solid business position as a leading provider of pediatric services; we believe that will allow it to maintain solid operating profitability and balance sheet strength. We expect that Children's could issue $250 million in additional debt for capital projects in the next one to two years. We believe there is debt capacity for this debt given the strong liquidity position and relatively low debt levels." (Attachment 2, ICA at pp. 32-33.)

[17] For the purposes of these Conditions, Medicaid shall mean patients receiving coverage under the MassHealth program including those insured by either Medicaid, a Medicaid MCO, and/or the Children's Health Insurance Program.

Finding
Factor 5 – Reasonableness of Expenditures

Based upon this analysis, Staff finds the proposed construction and renovation costs to be reasonable relative to Marshall & Swift. In addition, looking at the likely effect upon charges to the public and reimbursement by third party payers to the applicant and to other providers, with Condition 8, staff finds that the Application meets the requirements of Factor 5. Finally staff finds that Applicant has met the availability of funds aspect of Factor 5.

Factor 6 – Financial Feasibility

In looking at Financial Feasibility, Staff looks at the capacity of the applicant to finance and operate post project approval.

Financing

BCH plans to finance the proposed project with $200,000,000 in tax-exempt bonds issued through the Massachusetts Health and Educational Facilities Authority ("MHEFA"). The MHEFA bonds will have a 30-year term and an anticipated interest rate of 2%. The balance of the proposed project cost will be met through an equity contribution of $410,272,000 from internal unrestricted funds and a plant replacement fund of $457,991,000. The equity contribution, representing 81.3% of the total MCE of $1,068,263,000 (December 2015 dollars) exceeds the DoNs minimum of 20%.

Key financial ratios were calculated from recent audited financial statements and other information submitted by the Applicant. The calculated values are well above the DoN minimum standard, as shown in Chart # 19:

(CHART # 19)

	FY 2014	DoN standard
Current Ratio	1.84	1.5
Debt Service Coverage	6.76	1.4

The ICA cited Standard and Poor's Rating Services which affirmed BCH's "AA" long-term rating on MEFA series P-1 and M bonds and underlying ratings on the series N bonds; while rating their short and long-term series N-3 and N-4 as 'AAA/A-1+. In so doing the ICA also noted "We expect that Children's could issue $250 million in additional debt for capital projects in the next one to two years. We believe that there is capacity for this debt given the strong liquidity position and relatively low debt levels…" (For more detail please see Attachment 2, ICA at p. 33.)

Additionally, when compared to Fitch Ratings 2015 Children's Hospital Median Ratios for Not-For-Profit Children's Hospitals Special Report, BCH is in a favorable position relative to all ratios (Operating Margin, Operating EBITDA Margin, and Long Term Debt to Capitalization) except Average Age Of Physical Plant in years of 12.3 as compared to the median of 8.6 years.

Based upon these analyses, Staff finds that the proposed financing the project is within the financial capability of BCH and within the standards of the guidelines.

Incremental Operating Costs

The requested incremental operating costs of $118,019,412 (December 2015 dollars) for the first full year of operation (FY 2025) following project implementation are itemized in Chart # 20:

(Chart # 20)

	Incremental Operating Costs	
Salaries, Wages & Fringe	$	25,597,413
Purchased Services	$	2,061,003
Supplies and Other Expenses	$	28,785,464
Depreciation	$	50,146,219
Interest	$	10,457,964
Pension	$	971,349
Total	$	118,019,412

Staff notes that the above operating costs represent an increase in staffing of 676 FTEs, which includes all associated clinical, support and administrative staff for both the BCCB and 2 Brookline Place. As shown, the incremental personnel costs are related directly to the increase in capacity of high intensity services for the project.

BCH is projecting a steady level of both the number of Medicaid patient days and the Medicaid net patient service revenue ("NPSR"). (See Chart # 21, below) Staff finds that this is consistent with the stagnant pediatric population projections in Massachusetts and supports the Applicant's assertion that it is committed to serving the needs of the MassHealth population. While the volume and amounts will not change, Medicaid as a percentage of the total volume of patient days and of collected revenue are expected to decline. This is because the overall patient volume is projected to expand through out of state patients. Given the increase in capacity from this project, the volume and collections from other patients and payers (largely international) are projected to increase. The Applicant's business model reflects that the "Other" streams of revenue will more than cover the projected incremental operating costs of $52,870,000 by approximately 50%.

(CHART # 21)

Payer MIX	Total Patient Days	Gross Patient Service Revenue	Net Patient Service Revenue	% of Total NPSR	NPSR/GPSR (% Collected)
2013 Actual (A)					
Medicare	2,082	25,181,781	28,736,836	3%	114%
MA Medicaid	29,021	369,016,894	162,481,533	17%	44%
Other Government	12,388	119,134,277	51,160,952	5%	43%
Private Insurers	64,270	875,631,208	656,010,965	70%	75%
Self Pay	647	7,000,717	1,636,321	0.2%	23%
Other	6,547	60,499,355	35,429,623	4%	59%
TOTAL	114,955	1,456,464,232	935,456,230		64%
2014 Actual (A)					
Medicare	2,464	26,314,494	30,038,559	3%	114%
MA Medicaid	33,292	388,665,061	184,332,740	18%	47%
Other Government	13,996	148,055,565	59,069,843	6%	40%
Private Insurers	63,080	883,772,889	689,634,406	67%	78%
Self Pay	129	4,842,114	1,626,695	0.2%	34%
Other	9,849	91,934,315	63,762,307	6%	69%
TOTAL	122,810	1,543,584,438	1,028,464,550		67%
2024 Projected (P1) Project Approval					
Medicare	2,885	32,160,724	36,712,156	3%	114%
MA Medicaid	33,292	388,665,061	184,332,740	15%	47%
Other Government	16,388	180,948,725	72,193,252	6%	40%
Private Insurers	73,860	1,080,118,653	842,848,876	68%	78%
Self Pay	151	5,917,876	1,988,094	0.2%	34%
Other (Largely International)	17,221	198,707,959	103,977,252	8%	52%
TOTAL	143,797	1,886,519,000	1,242,052,370		66%
2024 Projected (P2)-Project Denial					
Medicare	2,561	28,659,238	32,715,135	3%	114%
MA Medicaid	33,292	388,665,061	184,332,740	17%	47%
Other Government	14,545	161,248,006	64,333,241	6%	40%
Private Insurers	65,555	962,521,168	751,084,042	68%	78%
Self Pay	134	5,273,569	1,771,641	0.2%	34%
Other (Largely International)	11,542	134,757,957	76,511,278	7%	57%
TOTAL	127,629	1,681,124,999	1,110,748,077		66%

Staff finds that the "Other" revenue category is reasonable given that the applicant is not projecting that 100% of gross revenues, that is, full charges, will be realized since most payers negotiate rates with providers. Instead, BCH has reasonably projected a 52% rate of charges realized in Year One. With these rates, even if half of the international patient days did not materialize, the applicant would likely be able to cover their incremental operating costs associated with this project.

BCH's business model contemplates expanding capacity to accommodate out of state and international patients. Staff recommends adding a condition to address the hospital's needs if this out of state demand does not meet BCH's projections.

Finding
Factor 6 – Financial Feasibility

Based upon these analyses, Staff finds the project to be financially feasible and within the financial capability of BCH and within the standards of the guidelines.

Factor 7 – Relative Merit

DoN review of the Relative Merit factor, Staff must find that the application reflects that the project as proposed is, on balance, superior to alternative and substitute methods for meeting the foreseen health care requirements, taking into account the quality, efficiency, and capital and operating costs of the project relative to potential alternatives or substitutes, including theoretical as well as existing models.

BCH reports that over the past ten years it has reviewed fifteen potential site options for its clinical expansion and commissioned and considered multiple design studies. Staff requested a supplemental explanation to justify the relative merit of this application. (See Attachment 7, identifying the different potential sites) Below is a general summary of the options:

1. Maintain status quo
This alternative was rejected because it would do nothing to address the serious current and anticipated capacity issues.

2. Expand vertically
After extensive analysis, this project was rejected on the basis of its being too costly and disruptive to operations. This was also rejected because it did not sufficiently resolve the issues of expansion of needed inpatient facilities described herein.

3. Construct an 11 story tower (proposed project)
This alternative was found to be the most fiscally responsible and cost-effective means of providing facilities to support BCH's capacity needs for the foreseeable future.

Along with the unique requirements of a pediatric setting including benefits of parents' overnight stays, additional space requirements for families in waiting areas, as well as the current standard of care preference for private rooms to reduce transfers and bed blocks, BCH applied seven metrics to each of the siting options considered. They are:

1. Meets forecasted bed need for 71 net new beds to accommodate the longer lengths of stay due to increasingly complexity of patients.
2. Meets the following program benchmarks:
    i. all existing patient care operations can be maintained with no programmatic loss;
    ii. permits creation of an expanded NICU (30 beds in private rooms) with the colocation of the expanded Heart Center;
    iii. expands programs such as inpatient psychiatric beds by 4, to private beds;
    iv. facilities conversion to all private rooms;
    v. results in the renewal of inpatient and outpatient spaces.
3. Is within projected cost parameter- net total expense of $1.3 billion in capital costs and does not "excessively increase operating costs.
4. Meets schedule requirements- the project will take five years for Heart center and eight years overall.
5. Meets operational objectives – the design allows for critical floor alignments and contiguous floor plates that are large enough to support a minimum of 30 beds per floor with associated support services – approx. 40,000 GSF per floor.
6. Ensures uninterrupted operations – clinical services continue to operate at capacity without bed closures during construction.
7. Limits or prevents displacement/relocation, including greenspace where relevant.

Eleven options were rejected early in the process because they did not meet these metrics. Attachment 8 is a summary chart of the options considered and why they did or did not meet the metrics. BCH selected the new tower option as it would result in the least disruptions in care delivery, be below their target cost parameter of $1.3B, and best meet the aforementioned seven criteria.

Finding
Factor 7 – Relative Merit

When compared to the other options available to the Applicant, Staff concluded that the selection of this option was reasonable and thus, the Application meets the relative merit provisions of the Guidelines.

Factor 8 – Environmental Impact

DoN Review of this factor requires that the applicant provide assurances that all feasible measures will be taken in the execution of the project to avoid or minimize damage to the environment.

Effective January 1, 2009, DoN applications submitted by acute care hospitals for new construction or gut renovation became subject to the Determination of Need Guidelines for Environmental and Human Health Impact ("Green Guidelines"). Applicants must meet all of the prerequisite measures and demonstrate plans for achievement of at least 50% of the possible points for the Leadership in Energy and Environmental Design – Health Care ("LEED-HC"), Green Guidelines for Health Care ("GGHC"), or with the Department's approval, the equivalent current nationally accepted best practice standard. This is the percentage needed to achieve a certifiable "silver level" green building.

BCH indicated that the proposed project was registered under LEED 2009 for Healthcare. The BCCB will achieve 55 of a possible 110 points with the possibility of another 10 potential points as the project is constructed and brought on line. The building is especially strong in LEED categories of energy and atmosphere, indoor environmental quality, and water efficiency. The Brookline Place building will achieve 57 of a possible 110 points with the potential for another 43 points during construction and implementation. This building is strong in sustainability, choice of materials, environmental quality, and innovation in design. Complete LEED Checklists are included as Attachment 9.

Finding
Factor 8 – Environmental Impact

On this basis, Staff finds that the project is in compliance with the DoN Green Guidelines.

Factor 9 – Community Health Initiatives

To satisfy Factor 9, the applicant must offer a plan for the provision of primary and preventive health care services and documentation of any such community services and contributions currently provided by the applicant in its service area.

Consistent with relevant policies and procedures, BCH worked with representatives of the Department of Public Health's Bureau of Community Health and Prevention ("BCHAP"), Office of Community Health Planning and Engagement to identify community planning partners and to establish an Advisory Committee comprised of representatives of: MDPH, Boston Mayor's Office, Boston Public Health Commission, Brookline's Public Health Department, Boston Children's Community Advisory Board, Boston Alliance for Community Health, Community organizations with expertise in child development and children's mental/behavioral health, Community residents/parents.

The role of the Advisory Committee is to develop a specific plan to ensure that the funds are directed to community health initiatives that will improve health for vulnerable populations, reduce health disparities, and create policy, system and environmental change that positively impact the social determinants of health.

Boston Children's has held six open meetings from July through September 2016 in neighborhoods agreed to by the Advisory Committee. Additional meetings have and will take place as deemed necessary by the Advisory Committee to ensure broadest possible inclusivity.

Funding will be allocated according to the plan outlined in Attachment 10. Specifically, $53,413,150 will be distributed over a period of 7-10 years with a final determination of years of investment made by the Advisory Committee at its final planned meeting. Once a specific plan is developed, funding can commence upon approval by Public Health Council. Summary documents of the Advisory Committee meetings and related recommendations will be made available to DPH and available to the Public Health Council by November 2016.

Finding
Factor 9 – Community Health Initiatives

Based upon the foregoing and as more fully articulated in Attachment 10, and with the condition of approval that the applicant will make a formal presentation to the Public Health Council by April 2017 describing the final funding plan, Staff finds that BCH meets the requirement of Factor 9.

III. COMMENTS BY TEN TAXPAYER GROUPS ("TTG") AND OTHER PARTIES

Three ten taxpayers registered in connection with this project:

1. BCH Ten Taxpayer Group ("BCHTTG");
2. Ten Taxpayer Group Regarding Application by the Children's Hospital Corporation for Determination of Need for Proposed "Boston Children's Clinical Building" ("TTG 1"); and,
3. Ten Taxpayers for Improving Health Care for Children (TTG 2") (formed March 7th, during the post hearing comment period).

At the request of the BCH TTG, a public hearing was held on February 25, 2016 at the Harvard School of Public Health. It was attended by approximately 350 people, 81 of whom testified over the course of over four hours. Subsequent to the hearings hundreds of written comments and calls related to the project were received by the DoN Office and the TTG1 filed suit against the Department of Public Health and BCH.

The names of those testifying at the hearing or submitting written comments are included in Attachment 11. The major issues of the testimony and written comments are summarized below.

The majority of the comments presented at the public hearing and in subsequent written testimony expressed opposition to the project for reasons relating to high costs, lack of need, access for Massachusetts Medicaid patients, the loss of the Prouty Garden, and the lack of consideration of alternative sites. TTG 1 commented on each DoN factor and their perception that the Application did not meet each criterion.

High Cost Given the cost containment goals of the State of Massachusetts, several individuals drew attention to the high capital and operating costs of this project. The concern surrounded the expectation that the hospital would raise fees and drive up the costs to insurers and patients, thereby limiting access for Massachusetts patients, in particular Medicaid recipients. The commenters assert that some patients are being turned away because they are MassHealth patients in plans that the hospital, they say, will not accept. Staff has seen no evidence that the Applicant rejects patients because they are MassHealth patients. The Department is aware that there are MassHealth MCOs that do not contract with BCH, but we do note that even these MCOs have made arrangements on an as-needed basis for patients who need high level care. Further, based on the proposed project and on staff review of the project with MassHealth, staff has confidence that the Applicant shall maintain its access to patients on Medicaid and will work in good faith in connection with negotiations around MCO participation.

No Need Individuals expressed concern that there was no need for the expansion and that there was an adequate supply of pediatric services in Massachusetts. Concerns were expressed that BCH was going to become a monopoly and attract patients from community and other tertiary care hospitals, thereby

jeopardizing those hospital's ability to maintain pediatric services. Partly in response to these concerns, Staff commissioned an ICA and specifically requested an analysis of the impact of this project upon health care access and cost containment. While these issues are outside the scope of DoN, and while Staff has not had the ability to test the assumptions of the applicant or the ICA consultant, Staff recommends addition of Condition # 8, and ongoing attention to the potential impact on the market. That said, it remains an open question whether the potential impact can be tied, causally, to this project and the positive impacts of the project for the operations of BCH generally and its care of their entire patient population mitigate in favor of support.

Need Many commenters also expressed support of the project, citing the cramped space in the NICU and ICU. Additionally, the commenters expressed concerns about the current lack of room for more than two parents per bay, infection control, lack of space for family to sleep/shower contiguous to their child. Several doctors and nurse managers testified that many hours were spent each day moving current patients and rescheduling other very sick patients because of the lack of adequate beds in these units, as they try to find room for referrals from other hospitals. They asserted that patients were turned away regularly for much needed tertiary care that is uniquely available in this region due to lack of capacity.

The Loss of the Prouty Garden The vast majority of comments were in strong support for retaining the Prouty Garden. Extensive and emotional personal testimony surrounding the healing and soothing powers of this half acre space came from family, young adult patients, BCH affiliated physicians and staff, and individuals who felt that BCH was breaking a perceived agreement with the Prouty family to keep this space a garden. Following the hearing many additional letters and e-mails were received expressing these views. While this is not a clinical service and thus outside the scope of DoN review, Staff considered the thoughtful and concerned testimony in the context of review of alternative options for siting the expansion.

Alternative plans and sites Commenters believed that alternatives, such as the Facility Master Plan that was approved by the City of Boston's Boston Redevelopment Authority for the addition of two floors on the Enders Building, and the sale of the garage across Longwood Avenue, or the Waltham site would, in their view, be preferable to the current site.

Community Involvement Some individuals commented that there was not adequate community participation and that the immediate neighbors were not informed. Others commended the hospital for not encroaching further on the residential neighborhood as well as for the extensive community work that the hospital does engage in including their involvement in identifying and treating health disparities such as asthma.

Comment by Health Policy Commission

On September 27, 2016, the HPC issued a letter to DPH (Attachment 12). In their letter, HPC articulated its concern that there is a likelihood that the expansion will lead to an increase in Massachusetts health care spending. HPC asserts that BCH would require an increase in commercial discharges of Massachusetts patients to achieve its goals. HPC asserts that the increase in commercial discharges from Massachusetts could be exacerbated if out of state and international trends flatten over time. HPC further asserts that there is a likelihood that this Project will lead to increases in Massachusetts health care spending because their analysis purports to show potential shifts of Massachusetts patients from lower priced pediatric care facilities to BCH which "has among the highest commercial and Medicaid MCO prices in the state for

hospital care". In addition, HPC states the potential destabilization of competing pediatric care programs from BCH's expansion could result in increases in costs to Massachusetts payers and patients.

Staff has reviewed this comment and has referenced it in the discussion of Factors 2 and 5. DoN Staff has reviewed HPC's comments in the context of the DoN statute and regulations, and believes that the inclusion of Condition 8 will address the appropriate DoN factors and will address HPC's concerns that BCH will require an increase in commercial discharges for Massachusetts patients to achieve its goals. DoN Staff believes that Condition 8 will provide a means to identify any such trends as BCH begins to expand its beds, and will provide a means to address any materially significant increase in commercial discharges in Massachusetts.

IV. STAFF FINDINGS

Based upon the foregoing analysis, Staff finds the following:

1. Boston Children's Hospital proposes to construct an 11 story 785,165 GSF addition to expand and consolidate all cardiology services, add new ICU, NICU, OR and imaging space as well as to renovate over 50% of its existing in- and out-patient capacity on its Longwood Avenue campus in Boston. Additionally, it is proposing to expand its ambulatory services through the construction of an 8 story ambulatory services space at 2 Brookline Place in Brookline.

2. The health planning process was satisfactory and consistent with the DoN Guidelines.

3. The project meets the health care requirements provisions of the DoN regulations.

4. The project meets the operational objectives of the DoN regulations.

5. The project meets the compliance standards of the DoN regulations.

6. The proposed and recommended maximum capital expenditure of $1,068,263,000 (December 2015 dollars) is reasonable, based on the unique nature of Children's hospital construction and previously approved projects.

7. The proposed and recommended incremental operating costs of $137,539,418 (December 2015 dollars) are reasonable based upon similar, previously approved projects.

8. The project is financially feasible and within the financial capability of the Applicant.

9. The project meets the relative merit provisions of the Guidelines.

10. The project meets the requirements of the DoN Green Guidelines.

11. The project, with adherence to a certain condition, meets the community health service initiatives of the DoN Regulations.

IV. STAFF RECOMMENDATION

Based upon the foregoing analysis and findings, Staff recommends approval with conditions of Project Number 4-3C47 submitted by Boston Children's Hospital. Failure of the Applicant to comply with the conditions may result in Department sanctions, including possible fines and/or revocation of the DoN.

1. BCH shall accept the maximum capital expenditure of $1,068,263,000 (December 2015 dollars) as the final cost figure, except for those increases allowed pursuant to 105 CMR 100.751 and 100.752.
2. BCH shall contribute $200,000,000 (December 2015 dollars) in equity out of the total approved maximum capital expenditure.
3. BCH shall adopt the recommendations of the Office of Health Equity for improvement of policies and procedures related to language access for non-English or limited English proficient patients as detailed in Attachment 4 of this Staff Summary.
4. BCH shall contribute a total of $53,413,150 (December 2015), over a period of 7-10 years with a final determination of years of investment made by the Advisory Committee at its final planned meeting to fund the community health services initiatives referenced in the Staff Summary and as outlined in Attachment 10 of this Staff Summary.
5. BCH shall maintain its same level of commitment to the underserved patients in its primary service by continuing to provide access to all levels of care.
6. BCH shall achieve green building certification at the silver level or better.
7. To ensure that stakeholder groups continue to have access to real-time information about construction design, timeline and progress prior to any construction, BCH shall prepare a plan for ongoing communication for employees and community groups addressing at least the following aspects of project implementation: a calendar of construction phasing with major milestones, notice of material changes in phasing; notice of commencement of each phase; and, notice of opportunities for communication with relevant BCH staff around questions.
8. Approval of this DoN Application shall be conditioned on the following requirements ("Condition 8" or the "Conditions"):
   1. BCH shall not cover its approved final incremental operating costs by passing on the costs to governmental and non-governmental Massachusetts payors or patients in excess of the Commonwealth's cost containment goals ("Condition Item 1");
   2. BCH shall maintain its commitment to serving Medicaid [18] patients ("Condition Item 2"); and,
   3. BCH shall report annually to the Department the following ("Condition Item 3"):
      a. Information concerning the degree to which the anticipated out of state demand for BCH's service is realized;
      b. Information sufficient to allow the DoN Program to conduct an analysis of material changes in acuity mix; and,
      c. Information sufficient to identify a material decrease in the volume of Medicaid patients.

   Reporting

   In order to satisfy the conditions of the DoN listed above in Condition 8, BCH shall report the following information to the DoN Program on an annual basis:
   1. BCH shall report on or before April 1, 2017, data from the preceding Federal Fiscal Year End (FFYE) 2016 ("Baseline report"), and shall report annually on or before April 1 of each year for a period commencing with FFYE17 and ending 5 (five) years after project completion subject to, at DPH's option and based upon an analysis of trends in the reported data, up to an additional 5 (five) years.
   2. Reporting shall include:

[18] For the purposes of these Conditions, Medicaid shall mean patients receiving coverage under the MassHealth program including those insured by either Medicaid, a Medicaid MCO, and/or the Children's Health Insurance Program.

- For inpatient and observation discharges: volume and acuity mix by zip code (or international code); payer type (commercial, Medicaid, Medicare, other government, and other[19]); Medicaid and commercial patient days; and Medicaid and commercial payer gross patient service revenue ("GPSR").
- For outpatient/ambulatory care: aggregate encounters by zip code (or international code), payer type commercial, Medicaid, Medicare, other government, and other; and Medicaid and commercial payer gross patient service revenue ("GPSR").
- The volume and margin associated with BCH's Medicaid patients, based on Medicaid patient days, Medicaid costs and Medicaid net patient service revenue.

Review

The DoN program shall review the data received from BCH in accordance with this Condition 8 and other data available to it, including but not limited to licensure data, data from CHIA, and other sources including BCH, to determine whether there is a:

a. material decrease in the acuity level of the Massachusetts patients served by BCH; and/or,
b. material increase in Massachusetts discharges other than for high acuity patients; and/or,
c. material decrease in service to Massachusetts Medicaid patients. For the purposes of assessing a decrease in service to Massachusetts Medicaid patients, DPH staff shall rank Massachusetts acute care hospitals by percentage of Massachusetts Medicaid payor mix.[20] If BCH remains in the top decile of Massachusetts hospitals by rank, there shall be a presumption that there has not been a material decrease in service to the Massachusetts Medicaid patients during that period.

Hereinafter these shall be referred to, individually and collectively, as the "Referral Indicators"

Referral

If the DoN Program finds, based upon Reporting by BCH or otherwise, any one or more of the Referral Indicators, the matter shall be referred to the PHC for review to determine whether BCH is in violation of one or more Conditions set forth in this Condition 8.

Upon referral to the PHC based upon any one or more of the Referral Indicators, BHC shall have an opportunity to show cause why the PHC shall not find noncompliance with one or more of these Condition Items. This may include a presentation of evidence that the Referral Indicators occurred as a result of factors beyond BCH's control.

Noncompliance

If the PHC finds noncompliance with Condition Items 1 or 3 of this Condition 8, above, BCH agrees that the PHC may impose the following measures:

1. If BCH has not yet received licensure for all of the net new beds, BCH will not seek licensure for any new PICU beds until such time as BCH demonstrates to the PHC's satisfaction that there is a need for those beds consistent with the objectives of this Condition; and/or,

2. BCH will remove PICU beds from service in the amount determined by the PHC until such time as BCH has demonstrated to the PHC's satisfaction that there is a need for those beds consistent with the objectives of this Condition.

[19] For example, self-pay patients

[20] (Massachusetts Medicaid + Children's Health Insurance Program GPSR)/Massachusetts GPSR for each hospital.

If the PHC finds noncompliance with Condition Item 2 of this Condition 8, above, it will be subject to a payment, similar to that set forth in the final DoN regulations in effect at the time of the finding of noncompliance. This payment shall not exceed 2.5% of the total cost of this DoN project and may be directed to the MassHealth Safety Net Trust Fund M.G.L. C. 118E s. 66. PHC will consider, in assessing this penalty, the amount of cumulative additional losses attributable to Massachusetts Medicaid experienced above the baseline during the reporting period, as presented to the PHC by BCH, as a possible offset to the amount of the penalty.