Memorandum to the Public Health Council

APPLICANT: Mass General Brigham Incorporated
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SITE: The General Hospital Corporation d/b/a Massachusetts General Hospital
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PROJECT NUMBER: # MGB-20121612-HE (Original)
#MGB-23120414-AM (Amendment)

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Introduction

This memorandum presents, for Department of Public Health (Department) action, the Determination of Need (DoN) Program's recommendation pertaining to a request by Mass General Brigham, Inc., (Holder) for a Significant Change to The General Hospital Corporation d/b/a Massachusetts General Hospital (the Hospital) DoN # MGB-20121612-HE. The proposed change would allow the Hospital to add 94 inpatient beds to their license. The total cost of the project is $0.00, and the Maximum Capital Expenditure would remain unchanged.

This request falls within the definition for Significant Change that includes "… (1) Any change, modification, or deletion of components within a previously issued Notice of Determination of Need that is not an Immaterial Change" and will be reviewed pursuant to 105 C.M.R. 100.635(A), which requires that the proposed change falls within the scope of the Notice of Determination of Need and is reasonable.

The DoN Program received no comments on this request for Significant Change.

Background

On May 11, 2022, the Holder received DoN approval for a Substantial Capital Expenditure and Substantial Change in Service. DoN #MGB-20121612-HE (the Original DoN) approved the construction of a new tower on the MGH Main Campus containing the following:

- 388 private beds, of which, 364 existing semi-private M/S beds and 24 ICU beds (388 total) beds to be transferred from Main Campus. The Department did not approve the requested addition of 94 new licensed beds.
- Outpatient oncology services relocated from current buildings on the MGH Main Campus and expanded to include 100 oncology infusion bays and 120 oncology exam rooms.

- Cardiac services relocated from current buildings on the MGH Main Campus and expanded. Five (5) operating rooms (ORs) currently dedicated to cardiology and nine (9) rooms currently serving as catheterization and electrophysiology (EP) rooms to be moved to the new tower as hybrid ORs. In addition, one new OR dedicated to cardiology, eight (8) new hybrid ORs, and three (3) new procedure rooms dedicated to cardiology.
- New diagnostic imaging equipment. Two (2) new computed tomography (CT) units, two (2) new magnetic resonance imaging (MRI) units, and two (2) new positron emission tomography computed tomography (PET/CT) units. The Department did not approve the addition of a new PET/MR Unit.
- Other clinical services renovation projects at Main Campus and licensed satellites.

In the Original DoN filing, the Holder noted the new tower would achieve the following:

- Reduce its number of semi-private rooms and increase the number of private inpatient rooms.[1]
- Reduce operating costs through decrease in length of stay resulting from reduced spread of infection, patient falls, and medication errors.
- Relocate, expand, and co-locate both its cancer and cardiac services.
- Increase imaging capacity through the addition of diagnostic imaging equipment.
- Strengthen MGH's role as a regional resource.
- Improve MGH's disaster preparedness.

In its analysis of the Original DoN, DoN Program staff:

1. Concluded that without data showing the impact that the new tower project (introduction of 388 single-bedded rooms and reactivation of 24 single-bedded rooms) would have on ED boarding and throughput issues, they could not find a clear and convincing need for additional 94 beds.
2. Noted the Health Policy Commission's analysis indicated the additional inpatient capacity would allow MGB to increase its market share by 2.7% to 3.8%, resulting in increased health care spending, increased commercial insurance premiums, and a negative impact on health care market functioning, including access and equity.

Therefore, Conditions 2 and 3[2] of the Original DoN Notice of Final Action were included to detail the data required by the Department as part of any request for Significant Change submitted by the Holder for project components that were disapproved as part of the original decision (which includes the addition of licensed beds).

Proposed Amendment

[1] In the filing, the Hospital indicated it would close 388 existing semi-private beds and construct 482 new private rooms, increasing the overall percentage of single-bed medical/surgical rooms across the Hospital from 38% to 88%.

[2] The language of Conditions 2 and 3 as approved in the Original DoN final action can be found in Appendix I.

Under the Approved Project, the 388 beds in the new building were to be relocated from existing units on the Hospital's campus[3] without an increase in the number of licensed beds and, through communication with Department staff, [4] the Holder was approved to relocate an additional 94 beds from other buildings on campus to the new building (prioritizing conversion of existing double-bedded rooms to private rooms), for a total of 482 beds in the new building. The Proposed Change will allow the Holder to add 94 beds to the Hospital's license without any renovation or capital cost by maintaining those beds that are already operational in their existing space, instead of relocating them to the new building. The Holder states that the 94 beds would be comprised of 54 medical/surgical and 40 ICU beds, with no plan to designate beds to a particular specialty. The Holder has estimated the new building will open in late 2027. Table 1 demonstrates the composition of M/S rooms on the MGH license if the Proposed Project is approved.

Table 1: Composition of M/S Rooms on the MGH License

	Today	**If Proposed Change is Approved**
Beds in Single Bedded Rooms in New Building	N/A	482
Beds in Single Bedded Rooms on the Rest of MGH Main Campus	408	430
Beds in Double Bedded rooms on the Rest of MGH Main Campus	492	82
Total Beds	900	994

For the small number of double-bedded rooms that will remain on the MGH Campus, the Holder notes that they have policies and procedures in place under MGH Infection Control and Prevention Program that reduce the risk of acquiring and transmitting infection in patients, visitors, and healthcare personnel as well as standards for cleaning/disinfection. When feasible, MGH manages the patient placement process to minimize the use of double occupancy rooms.

The Holder states that the additional beds will allow the Holder to respond to "unprecedented overcrowding". The Holder demonstrates this need through Hospital Occupancy data and Emergency Department (ED) Boarding data.

Occupancy

The Hospital reports that it has experienced increased instances of having more patients in need of a bed than beds available, which leads to admitted patients spending their initial nights

[3] The Holder will relocate 277 beds in existing facilities and convert existing double-bedded rooms on the MGH Main Campus into 111 singles in existing rooms for a total of 388 beds.

[4] Department staff confirmed for the Holder's regulatory counsel this was permissible via email on April 5, 2022.

in the ED, Post Acute Care Unit (PACU)/recovery bay, or alternative spaces like stretchers or chairs in hallways.

Table 2 provides data on the capacity challenges that MGH has experienced since the original DoN application was filed. The table includes two views: one based on all licensed beds even if they are not usable and one based on available beds which accounts for closed headwalls attributable largely to challenges using double occupancy rooms.[5]

Table 2: MGH Main Campus Historical Utilization

Metric	FY2019 Licensed Beds[6]	FY2019 Available Beds[7]	FY2023 Licensed Beds	FY2023 Available Beds
Beds	900	836	900	836
Inpatient Days	280,843	280,843	292,078	292,078
Bedded Outpatient Days[8]	12,120	12,120	12,013	12,013
Total Days	292,963	292,963	304,091	304,091
Inpatient Occupancy	85.5%	92.0%	88.9%	95.7%
Bedded Outpatient Occupancy	3.7%	4.0%	3.7%	3.9%
Total Occupancy	89.2%	96.0%	92.6%	99.7%

The above table shows that the total number of inpatient days increased by 4% from FY2019 to FY2023. Occupancy rates for available beds have also increased from 96% in 2019 to 99.7% in 2023. The Hospital is operating above the industry standard of 85% for optimal operating efficiency[i], delaying timely access to inpatient care.

Staff inquired how the Holder determined that 94 beds would be the appropriate number to address high occupancy rates. The Holder referred to Table 3, showing that the FY2023 Occupancy rate would have been just below the 85% industry standard with the Proposed Change of 94 beds added to the license.

Table 3: MGH Utilization FY2023 With 94 Additional Beds

	FY2023 Utilization Modeled with 94 additional Licensed Beds[9]
Licensed Beds	994

[5] For example, double occupancy rooms cannot accommodate two patients in situations involving infectious disease, behavioral and mental health issues, or end of life.
[6] Inclusive of medical/surgical and intensive care unit beds.
[7] Adjusted for closed headwalls.
[8] Outpatient beds refer to outpatients occupying an inpatient bed (PPRs, Admit to Observation, including Short Stay Unit)
[9] Inclusive of medical/surgical and intensive care unit beds.

Inpatient Days	292,078
Bedded Outpatient Days[10]	12,013
Total Days	304,091
Inpatient Occupancy	80.5%
Bedded Outpatient Occupancy	3.3%
Total Occupancy	83.8%

The Holder stated that the addition of 94 beds will allow the Hospital to operate at 86% of licensed bed capacity in FY2028 and 89.6% by FY2032, as detailed in Table 4. The Holder states that while this occupancy rate is still above the industry standard, it will allow MGH to move patients in a timelier manner from the ED to inpatient floors, as well as provide some capacity for surge and increases in patient volume.

Table 4: MGH Projected Utilization[11]

	FY2028	FY2029	FY2030	FY2031	FY2032
Licensed Beds	994	994	994	994	994
Inpatient Days	299,985	303,269	307,233	310,093	312,989
Bedded Outpatient Days[12]	12,013	12,013	12,013	12,013	12,013
Total Days	311,998	315,282	319,246	322,106	325,002
Inpatient Occupancy	82.7%	83.6%	84.7%	85.5%	86.3%
Bedded Outpatient Occupancy	3.3%	3.3%	3.3%	3.3%	3.3%
Total Occupancy	**86.0%**	**86.9%**	**88.0%**	**88.8%**	**89.6%**

The Holder states that adding bed capacity is just one part of a multi-factor approach to managing capacity issues at the Hospital. One aspect of the capacity issue has been delays in transitioning patients to post-acute facilities. MGH reports that it has recently established a system to collect data on the number of patient days associated with these delays, inputting an indicator when patients are medically cleared for discharge. In the future, MGH intends to report on the number of delay days for both med/surg and mental health patient populations. Since FY2022, the Holder has sought to address the challenge of discharge delays by contracting for access to 69 leased skilled nursing facility (SNF) beds.

[10] Outpatient beds refer to outpatients occupying an inpatient bed (PPRs, Admit to Observation, including Short Stay Unit)
[11] The Holder notes that these projections do not account for any potential growth or change in length of stay between now and when the new building will open (estimated to be late 2027).
[12] Outpatient beds refer to outpatients occupying an inpatient bed (PPRs, Admit to Observation, including Short Stay Unit) The projection for bedded outpatient days assumed they would remain flat with 2023 actual levels (noting 2023 was slightly lower than 2019). Outpatients are placed in inpatient beds when a post-acute care unit or recovery bed is not available. The new building design includes 13 additional peri-operative bays to care for patients during recovery as well as expanded urgent care capacity in the oncology unit for observation care.

The Holder has also sought to address capacity issues by directing appropriate admissions to community hospitals, including a new affiliation with Cambridge Health Alliance. The Mass General Capacity Coordination Center collaborates with clinicians across the Hospital to verify that patients requesting transfers from other hospitals cannot receive the same level of care at their location; operates programs that reduce the length of stay for patients who were transferred from other hospitals and supports inpatient units facing barriers to discharge or care progression, including challenges with tests, imaging, procedures, or other necessary services.

Through these initiatives, the Holder states they have reduced community hospital-appropriate admissions at MGH while simultaneously increasing tertiary care admissions. Through a retrospective review, MGH determined that it has seen a modest decrease in secondary admissions, while tertiary care has increased, as shown in Table 5. Despite the multi-factor approach, the Holder's occupancy remains high.

Table 5: Tertiary And Secondary Admissions[13]

Level of Care Table	FY22	FY23[14]	% Change
Secondary	25,567	25,194	-1%
High-End Secondary[15]	6,435	6,647	3%
Tertiary	5,188	5,830	12%

Staff inquired whether other facilities in the MGB health system would be able to assist in alleviating MGH's capacity issues. The Holder states that MGH uses MGB community hospital capacity when available for transfers and direct admissions. MGB is also expanding a Home Hospital program for qualified patients. Both programs address the lower acuity (e.g., community-level) patients. However, the three MGB community hospitals in eastern Massachusetts[16] are over the standard 85% occupancy (over 90%). They also note that MGH is the community hospital for segments of Boston, Revere, Chelsea and Winthrop and those patients should not be transferred outside of the community.

ED Boarding

The Holder states that MGH's high inpatient occupancy rate does not allow ED patients who require an inpatient admission to quickly transition out of the ED. As a result, 24,388 patients in FY2023 boarded in the ED, the vast majority of whom were waiting for an M/S bed at MGH. The

[13] To determine this data, the Holder ran each patient's final diagnosis related group ("DRG") disposition through an algorithm used by vendors like Vizient and SG2 to classify the level of care. DRGs are a patient classification scheme which provides a means of relating the type of patients a hospital treats (i.e., its case mix) to the costs incurred by the hospital.

[14] The number of patients in the Level of Care Table varies slightly from the Change in Service Form because the table is based on the discharge DRG of the patient and therefore likely includes some young adult patients who had a medical DRG but were cared for on the pediatric unit.

[15] High end secondary cases are those patients whose diagnosis related group could be treated in the community hospital if the hospital had the capability to do so (e.g., access to cardiac catheterization). Secondary cases are patients with acuity levels that typically are treated in a community hospital.

[16] Brigham & Women's Faulkner Hospital, Salem Hospital, and Newton Wellesley Hospital

wait time for M/S Boarders increased from approximately 12 hours in FY2019 to approximately 20 hours in FY2023. Table 6 details the FY2023 ED Boarding statistics.

Table 6: Emergency Department Boarders

	Total Number of ED Boarders	Boarding patients waiting for M/S bed[17]	Boarding patients waiting for a non-M/S Bed[18]
FY2019	23,100	22,385	715
FY2023	24,388	23,522	866

The Hospital reports that it was in Code Help[19] or Capacity Disaster[20] status for approximately 93% of days in FY2023. This is a significant increase from the FY2019 figure of operating in Code Help or Capacity Disaster status 23% of the time. The Holder notes that the increasing incidences of Code Help and Capacity Disaster have been on a steady upward trend since 2018. In analyzing the underlying causes of the increase, the Holder states that, "The health care system has grappled with a global pandemic and its downstream impact, including deferred and delayed care resulting in significantly more patients seeking treatment for more acute conditions, often first seeking care through the ED."

In addition to long waits for ED Boarders, many patients leave the ED without being seen due to long wait times. In FY2023, 3.7%, of all patients who presented at the Hospital's ED left without being seen, more than doubling the FY2019 data point of 1.2% of patients leaving without being seen, as presented in the original DoN. MGH estimates that approximately 10% of these FY2023 patients would have been admitted, meaning more than 500 patients further delayed or avoided care altogether.[21]

The Holder states that without adequate inpatient capacity, patients will continue to experience delays in transitioning out of the ED to inpatient floors. By retaining access to the 94 inpatient beds that would otherwise have been relocated to the new building, the Holder asserts that they will have sufficient capacity to move patients from the ED to an inpatient bed expediently, ensuring appropriate access to both emergency and inpatient care for the community it serves.

[17] The Holder notes that many patients waiting for an M/S bed may have an acute medical issue as well as co-occurring behavioral health needs.
[18] This number reflects patients who may have been waiting for behavioral health, pediatric, or maternal newborn beds at MGH, but does not include patients waiting for placement outside of MGH, which is the case for the majority of MGH's behavioral health patients.
[19] The Applicant defines Code Help status as: All ED patient rooms are full and all of the hallway stretcher spaces with cardiac monitoring capacity are also full.
[20] The Applicant defines Capacity Disaster status as: there are ≥45 boarders in the MGH ED.
[21] According to the most recent data analyzed by the Centers for Disease Control and Prevention, 13.1% of all ED visits resulted in an inpatient admission. Therefore, MGH conservatively estimates 10% of ED visits would result in an inpatient admission.

Given that the proposed benefits of an increased bed count articulated by the Holder would not be realized for several years, staff inquired about the Holder's current efforts to alleviate ED boarding and overcrowding. The Holder asserts that the strategies in place are in the early stages and the capacity generated will continue to ramp up over time. MGH's agreement with Cambridge Health Alliance is intended to ramp up to a daily census of fifteen beds and so far in FY2024, MGH has achieved the equivalent of five beds.

Similarly, the MGB Home Hospital program is working to hire staff and increase its capacity to accept new patients. This program has been running at a census of nine year-to-date in FY2024 at MGH, but the MGB-wide program is consistently raising its census to accommodate more patients. Home hospital has no physical constraints to capacity, and it is all about phasing the growth in staff to meet projected demand of eligible patients. This program also allows community hospitals to free up capacity and accept appropriate transfers from the Academic Medical Centers.

The Holder also stated that MGH has a capacity leader on call every day to help eliminate barriers to patient flow (e.g., ensure a specific test can be scheduled and reviewed to get patient discharged). The individual interventions are tracked to look for any themes that might require more systemic improvements.

Additionally, MGH is currently constructing 17 bays adjacent to the emergency room that will be used as incremental space for boarded patients. This is the only physical location available to provide some improvement in the crowding or density. These bays are expected to come online in September.

Analysis

Staff has reviewed the Amendment request and has determined that it falls within the scope of the original Approved DoN under Condition 2, and that the Holder has provided the necessary information stipulated in Condition 2. Staff finds that the Holder has demonstrated an increase in patient days, occupancy rate, and ED Boarding since the 2019 data provided in the Original DoN, and anticipates that these trends will continue. The Holder provided details on the steps they have taken to alleviate capacity issues to demonstrate that an increased bed count is one of several approaches to resolving the issue. Based on these points, staff finds that the Holder has established a reasonable basis for the addition of 94 beds to the Hospital's license.

Impact on Cost

The regulation requires that a Holder submit a description of any cost implications associated with the Proposed Change for the Holder and the Patient Panel. The Holder states that the Proposed Change does not require any renovation or further construction and can be achieved without any additional capital expenditure. There would be some minor, one-time operating expenses associated with using internal facilities staff to move furniture, and movable

equipment. The Holder expects that operating expenses associated with approval of the Proposed Change will be neutral or net positive because staffing needs will not change. The teams of nurses, physicians, and associated support personnel currently caring for these patients in an overcrowded setting would be shifted to provide similar care in licensed beds on an inpatient unit. There may also be cost efficiencies associated with reduced patient boarding such as improved wait times and patient flow, lower length of stay, and better coordination of care.

The Holder anticipates that its Patient Panel will not experience any impact on cost from the Project as a result of adding 94 beds to the license. The Hospital currently provides inpatient medical/surgical services, and the Holder asserts that the additional beds will not result in any change to price for the Holder's existing Patient Panel.

Impact on Community Health Initiative Funding

Mass General Brigham Incorporated at MGH is applying for an Amendment project that will be achieved without accruing any additional expenditures. With no costs associated with this Project, there are no CHI contributions for this application.

Staff Summary and Findings

Staff reviewed the 2022 Staff Report and Notice of Final Action for the Original DoN to determine whether the request falls within the scope of that Approval and whether the Holder met the requirements established in Condition 2 of the original DoN. Based upon the information submitted, and information in the record, the Department can find that "the proposed change or modification falls within the scope of the Notice of Determination of Need as previously approved by the Department, and … is reasonable" 105 C.M.R. 100.635(A)(3), which are the requirements for approval of an Amendment.

Other Conditions to the DoN

1) To better track the role of post-acute placement in discharge delays, the Holder shall provide number of patient days associated with these delays for the M/S population.
2) To track the effectiveness of the Holder's efforts to direct admissions to community hospitals, the Holder shall report on the Secondary and Tertiary admissions in the annual Post DoN reporting for the original project #MGB-20121612-HE.

Upon approval of the Proposed Change, the Holder will include the additional 94 licensed beds in all Post DoN Reporting Conditions and Outcome Measures data for the original project #MGB-20121612-HE.

Appendix I: Conditions 2 and 3 as approved for Original DoN Application # MGB-20121612-HE

Condition 2 – If the Holder submits any request for Significant Change to add any of the 94 new

inpatient beds[22] related to the Proposed Project, the Holder must include the following data as part of its Application:

a. Emergency Department (ED) boarders waiting for a medical/surgical (M/S) bed including
    i. Number of patients and length of stay
    ii. Location of bed (inpatient or observation)
b. Post-Acute Care Unit (PACU) patient data including
    i. Number of patients and length of stay
    ii. Location of bed (inpatient or observation)
c. Average daily number of blocked M/S beds
d. Percentage (with numerator and denominator) of MGH inpatients who were part of MGB's Patient Panel prior to the MGH admission
e. Operating capacity and occupancy rate
f. Acuity level by case mix index, and number of discharges for M/S patients at MGH by service line:
    i. Cancer
    ii. Cardiac
    iii. Other Adult M/S (with exclusion of obstetric, pediatric, and psychiatric discharges)
g. Average monthly lost transfer number and rate (calculated as the number of transfers not accepted over the number of requests for transfers) from community hospitals

$$\frac{\text{Number of transfers not accepted by Holder}}{\text{Number of requests for transfers to Holder}}$$

Condition 3 – If the Holder submits any request for Significant Change to add a new PET/MR unit, the Holder must include the following:

a. Number of PET/MR scans conducted at MGH, separated by research and clinical scans. Include the number of scans broken out by PET/MR and MRI only.
b. Wait times for PET/MR scans at MGH.
c. Acuity by case mix index of patients receiving PET/MR scans at MGH.
d. Average time per PET/MR scan.
e. Hours current PET/MR scan is available for clinical use.

[22] The Applicant can request to add any of these beds via a Significant Change request and the beds may be located in any appropriate space on the MGH campus.

Appendix II: Data Provided in Accordance with Condition 2 As Approved in Original DoN

In compliance with the conditions of the Determination of Need # MGB-20121612-HE, the Holder submitted the following information in support of the Proposed Change.

a. **Emergency Department (ED) boarders waiting for a medical/surgical (M/S) bed including:**

   i. **Number of patients and length of stay:** 24,388 patients, with an average length of stay of 15.5 hours in FY23.

   ii. **Location of bed (inpatient or observation):** By definition, a "boarder" has a written order for inpatient admission, meaning that all 24,388 patients are inpatients.

b. **Post-Acute Care Unit (PACU) patient data including:**

   i. **Number of patients and length of stay:** 4,799 patients with an average length of stay of 17.1 hours.

   ii. **Location of bed (inpatient or observation):** By definition, a "boarder" has a written order for inpatient admission, meaning that all 4,799 patients are inpatients.

c. **Average daily number of blocked M/S beds:** The average number of blocked beds is 40 beds, with a range of 32-75 beds. 134 days in FY23 had 50 or more blocked M/S beds.

d. **Percentage (with numerator and denominator) of MGH inpatients who were part of MGB's Patient Panel before their admission to MGH.**

	FY22	FY23
Unique Inpatients	37,265	37,722
MGB Panel	23,157	23,786
Percent of MGH inpatients who were part of MGB's Patient Panel before their MGH admission	62%	63%

e. **Operating capacity and occupancy rate:** Operating capacity was 836 beds (inclusive of ICU beds) and a 99.7% occupancy rate.

f. Acuity level by case mix index, and number of discharges for M/S patients at MGH by service line:

Inpatient Type	FY22 Cases	FY22 CMI	FY23 Cases	FY23 CMI
Cancer	8,576	2.78	8,793	2.99
Cardiac	5,920	3.54	5,730	3.62
All other Med/Surg	22,694	2.46	23,148	2.52

g. Average monthly lost transfer number and rate (calculated as the number of transfers not accepted over the number of requests for transfers) from community hospitals

Number of transfers not accepted by Holder

Number of requests for transfers to Holder

The average monthly lost transfer rate was 49%. The monthly average volume of requests was 736, of which an average of 362 were declined. There were 8,834 requested transfers in FY23. Of those requests, MGH declined 4,344 cases.

References

[i] Kelen GD, Richard W, D'Onofrio G, et al. Emergency department crowding: the canary in the health care system. NEJM Catal. Published online September 28, 2021. doi:10.1056/CAT.21.0217