

STAFF REPORT TO THE COMMISSIONER FOR A DETERMINATION OF NEED	
Applicant Name	Beth Israel Lahey Health, Inc.
Applicant Address	20 University Road, Suite 700, Cambridge, MA 02138
Filing Date	July 27, 2023
Type of DoN Application	DoN Required Equipment
Total Value	\$2,100,496.00
Project Number	#23050911
Ten Taxpayer Groups (TTG)	None
Community Health Initiative (CHI)	\$105,024.80
Staff Recommendation	Approval
Delegated Review	Commissioner Approval
<p style="text-align: center;"><u>Project Summary and Regulatory Review</u></p> <p>Beth Israel Lahey Health, Inc., with a principal place of business at 20 University Road, Suite 700, Cambridge, MA 02138, filed a Notice of Determination of Need with the Massachusetts Department of Public Health to acquire a second computed tomography (CT) unit for operation at Anna Jaques Hospital (AJH or Hospital), located at 25 Highland Avenue, Newburyport, MA 01950 (Proposed Project).</p> <p>This DoN application falls within the definition of DoN-Required Equipment and Services, which is reviewed under the DoN regulation 105 CMR 100.000. The Department must determine that need exists for a Proposed Project, on the basis of material in the record, where the Applicant makes a clear and convincing demonstration that the Proposed Project meets each Determination of Need Factor set forth within 105 CMR 100.210. This staff report addresses each of the six factors set forth in the regulation.</p>	

Table of Contents

Applicant Background and Application Overview	3
Factor 1	4
Patient Panel	4
Factor 1: a) Patient Panel Need	7
Factor 1: b) Public Health Value, Improved Health Outcomes and Quality of Life; Assurances of Health Equity.....	10
Factor 1: c) Efficiency, Continuity of Care, Coordination of Care.....	12
Factor 1: d) Consultation	13
Factor 1: e) Evidence of Sound Community Engagement through the Patient Panel	14
Factor 1: f) Competition on price, total medical expenses (TME), costs and other measures of health care spending	15
Summary, FACTOR 1.....	15
Factor 2: Cost containment, Improved Public Health Outcomes and Delivery System Transformation	15
Summary, FACTOR 2.....	17
Factor 3: Relevant Licensure/Oversight Compliance	17
Factor 4: Demonstration of Sufficient Funds as Supported by an Independent CPA Analysis	17
Factor 5: Assessment of the Proposed Project's Relative Merit	18
Factor 6: Fulfillment of DPH Community-based Health Initiatives Guideline	19
Findings and Recommendations	20
Other Conditions	20
Appendix I: Measures for Annual Reporting	21
REFERENCES	21

Applicant Background and Application Overview

Beth Israel Lahey Health, Inc.

The Beth Israel Lahey Health, Inc (BILH or Applicant), is a Massachusetts, non-profit, tax-exempt corporation that oversees an integrated health care delivery system comprised of teaching and community hospitals, physician groups, behavioral health providers, post-acute care providers and other caregivers serving patients in Greater Boston and the surrounding communities in Eastern Massachusetts and South Eastern New Hampshire.¹

Collectively known as “BILH Hospitals,” BILH’s member hospitals include:

Acute Hospital ²	Type (Per CHIA Category ^{a, b)}
Anna Jaques Hospital	Community Hospital
Beth Israel Deaconess Hospital–Milton	Community Hospital
Beth Israel Deaconess Hospital–Needham	Community Hospital
Beth Israel Deaconess Hospital–Plymouth	Community-High Public Payer Hospital
Beth Israel Deaconess Medical Center	Academic Medical Center
Lahey Hospital & Medical Center	Teaching Hospital
Mount Auburn Hospital	Teaching Hospital
New England Baptist Hospital	Specialty Hospital
Northeast Hospital	Community-High Public Payer
Winchester Hospital	Community Hospital

BILH operates Beth Israel Lahey Health Performance Network, LLC (BILHPN), a Massachusetts Health Policy Commission (HPC) certified Accountable Care Organization (ACO), which the Applicant states is a value-based physician and hospital network whose goal is to partner with other community hospitals and providers throughout Eastern Massachusetts to improve quality of care while managing medical costs.

Anna Jaques Hospital

Anna Jaques Hospital (AJH or the Hospital) is a 119-bed community hospital. AJH offers cancer care, emergency medicine, hyperbaric medicine, inpatient behavioral health, interventional pulmonology, orthopedics, pain management, radiation oncology, as well as Women’s Health and OB/GYN care. Its service area includes cities and towns in the Merrimack Valley and North Shore, regions of Massachusetts, as well as Southern New Hampshire. The Hospital is a DPH-designated Primary Stroke

¹ The Applicant states that an estimated five million people reside in the BILH service area.

² Beth Israel Lahey Health includes the following Hospitals: Addison Gilbert Hospital (Northeast), Anna Jaques Hospital, Beth Israel Deaconess Hospital – Milton, Beth Israel Hospital – Needham, Beth Israel Hospital – Plymouth, Beth Israel Deaconess Medical Center, Beverly Hospital (Northeast), Lahey Hospital & Medical Center, Lahey Medical Center, Peabody, Mount Auburn Hospital, New England Baptist Hospital, and Winchester Hospital.

Service, providing 24 hours a day, 7 days a week care to patients experiencing stroke and stroke symptoms.

Proposed Project

The Proposed Project would add a second CT unit to AJH in order to meet the needs of current and future patients by providing timely access to CT imaging. As a Primary Stroke Service, it is essential for AJH to ensure expedient access to CT for all Emergency Department patients in the service area. The Hospital's existing CT operation is nearing capacity and increased instances of downtime delay diagnosis and treatment.

Factor 1

In this section, we assess if the Applicant has sufficiently addressed Patient Panel need, public health value, competitiveness and cost containment, and community engagement for this Proposed Project.

Patient Panel³

As shown in Table 1, the BILH Patient Panel consisted of 1,324,649 patients in Fiscal Year (FY) 2023⁴. The Applicant notes that a drop in COVID testing and immunizations between 2022 and 2023 resulted in a lower number of total unique patients in FY2023.

Table 1: Overview of BILH Patient Panel

	FY2020	FY2021	FY2022	FY2023
BILH Total Unique Patients	1,219,718	1,427,711	1,633,109	1,324,649

The Applicant provided data showing that the top 15 patient origins of their Patient Panel included Plymouth, Woburn, Beverly, Peabody, Gloucester, Quincy, Boston, Cambridge, Billerica, Burlington, Dorchester, Arlington, Danvers, Medford, and Wilmington⁵. The Applicant also provided demographic data for BILH's Patient Panel, which is presented in Table 2. Staff notes the following observations about the two fiscal years of data below:

- **Age:** The 18-64 age group ~60% of BILH's Patient Panel, followed by the over 65 age group at ~30%.
- **Race:** The majority of BILH's patients self-identified as White (over 74%). Patients also self-identified as Black or African American (~5%), and Asian (~6%). Less than 1% self-identified as American Indian or Alaska Native, Native Hawaiian or Other Pacific Islander.
- **Ethnicity:** Over 80% of patients identify as "Not Hispanic".

³ As defined in 105 CMR 100.100, Patient Panel is the total of the individual patients regardless of payer, including those patients seen within an emergency department(s) if applicable, seen over the course of the most recent complete 36-month period by the Applicant or Holder.

⁴ For purposes of the Applicant's Patient Panel, the fiscal year is defined as July 1 through June 30.

⁵ This information is from the Center for Health Information and Analysis ("CHIA") Massachusetts Acute Care Hospital Inpatient Discharge Dataset, which is only current through the end of 2021. Therefore, the data provided is from FY21.

- **Payer Mix:** Approximately 50% of patients were covered by Commercial insurance, followed by Medicare (~30%) and Medicaid (~9%).

Table 2: BILH Patient Panel Demographic Profile

	FY2022 Totals	FY2023 Totals
Total Unique Patients	1,633,109	1,324,649
Gender		
Female	60.23%	58.50%
Male	39.63%	41.35%
Other ⁶	0.14%	0.15%
Total	100.00%	100.00%
Age		
0-17	11.08%	6.82%
18-64	60.84%	61.31%
65+	28.09%	31.87%
Total	100.00%	100.00%
Race		
White	74.05%	74.54%
Black or African American	5.45%	5.43%
American Indian or Alaska Native	0.13%	0.11%
Asian	6.45%	6.83%
Native Hawaiian or Other Pacific Islander	0.07%	0.05%
Other ⁷	6.66%	7.14%
Unknown	5.71%	1.94%
Patient Declined	1.49%	3.94%
Total	100.00%	100.00%
Ethnicity⁸		
Hispanic/Latino	5.95%	7.13%
Not Hispanic/Latino	80.38%	84.71%
Patient Declined	2.91%	1.32%
Unknown	7.36%	4.92%
Other	3.41%	1.92%
Total	100.00%	100.00%
Payer Mix		
Commercial	53.23%	47.36%
Medicare	26.02%	34.24%
Medicaid	10.14%	8.55%

⁶ Patients for whom a gender is not specified or whose gender varies across visits over the time period are included in "Other."

⁷ As a newly merged health system, BILH has not yet fully implemented a standardized data collection methodology for BILH Hospitals. As a result, "Other" may include patients whose race and/or ethnicity varied over time, as well as patients who did not report their race and/or ethnicity. Furthermore, patients who declined to report their race and/or ethnicity might also be captured in "Unknown" or "Patient Declined". "Other" is a choice for patients to select if they do not feel that their race/ethnicity is reflected in the list of choices.

⁸ Ethnicity information is not available at the system-level for three hospitals: BID-Milton, BID-Needham, and BID-Plymouth. For the remaining BILH hospitals, ethnicity information is self-reported. Patients for whom ethnicity is not specified are included in "Patient Declined," "Unknown," or "Other," per the local facility's data collection methodology. Patients for whom ethnicity varies across visits over the time period are included in "Other."

	FY2022 Totals	FY2023 Totals
Multiple Payers	2.65%	3.66%
Other ⁹	7.96%	6.19%
Unknown	0.00%	0.68%
Total	100.00%	100.00%

The Applicant provided patient population information for AJH, the Hospital targeted for this Proposed Project. AJH's primary service area includes Newburyport, Amesbury, Haverhill, Salisbury, Merrimac, West Newbury, Newbury, and Byfield.¹⁰ Some highlights from the data in Table 3 include:

- **Age:** The majority of AJH's patient population is between 18 to 64, followed by 65+ and 0-17 age cohorts, respectively
- **Race:** Over 90% of the AJH patient population self-identify as White.
- **Ethnicity:** The Applicant's efforts to improve data collection (detailed in Factor 1b) resulted in a reduction in the percentage of patient's declining to identify ethnicity from FY2022 to FY2023.
- **Payer Mix:** Like BILH, Commercial payers are the primary payer source for AJH (~51%), followed by Medicare (~30%) and Medicaid (~12%).

Table 3: Anna Jaques Patient Population, FY2022-FY2023

	FY2022 Totals	FY2023 Totals
Total Unique Patients	61,555	63,260
Gender		
Female	62.44%	62.29%
Male ¹¹	37.57%	37.71%
Total	100.00%	100.00%
Age		
0-17	11.67%	11.85%
18-64	58.79%	57.42%
65+	29.54%	30.74%
Total	100.00%	100.00%
Race		
White	92.42%	92.16%
African American	1.28%	1.40%
American Indian or Alaska Native	0.03%	0.03%
Asian	0.95%	1.03%
Native Hawaiian or Other Pacific Islander	0.02%	0.03%
Other	2.21%	2.12%

⁹ Includes self-pay, health safety net, and liability insurance coverage other than worker's compensation for an injury event.

¹⁰ List of city and town populations that make up the primary service area is in descending order.

¹¹ Includes "Male" and "Other" for patient confidentiality.

	FY2022 Totals	FY2023 Totals
Unknown	1.77%	1.85%
Patient Declined	1.32%	1.38%
Total	100.00%	100.00%
Ethnicity		
Hispanic/Latino	2.63%	4.78%
Not Hispanic/Latino	71.36%	90.49%
Patient Declined	26.01%	4.73%
Unknown	0.00%	0.00%
Other	0.00%	0.00%
Total	100.00%	100.00%
Payer Mix		
Payer - Commercial	51.87%	51.47%
Payer - Medicare	30.25%	30.70%
Payer - Medicaid	12.38%	12.92%
Payer - Multiple Payors ¹²	0.00%	0.00%
Payer - Other ¹³	5.49%	4.91%
Total	100.00%	100.00%

Factor 1: a) Patient Panel Need

In this section, staff assesses if the Applicant has sufficiently addressed Patient Panel need for the Proposed Project.

Patient Panel Need

The Applicant attributes the need for a second CT machine to two factors:

- 1) Capacity limitations of one CT unit
 - a. Increased Downtime for CT Equipment Maintenance
 - b. Primary Stroke Service Hospital Service Demands
- 2) Projected Increase in Demand

1) Capacity Limitations of One CT Unit

AJH currently has one CT unit for inpatient, outpatient, and ED needs. Operating with a single unit means that urgent or emergent CT cases are prioritized over non-urgent inpatient and outpatient CT scans. AJH cannot perform CT guided procedures without impeding access to CT imaging for stroke and ED patients. As a result, emergency cases often disrupt access for inpatients and cause scheduled outpatients to be delayed or rescheduled. Due to these scheduling issues, AJH struggles to keep up with current demand or expand its Low Dose Computed Tomography (LDCT) program with only one CT unit.

¹² "Multiple Payors" is defined as patients whose primary payors within a given fiscal year fall into more than one payor category.

¹³ "Other" includes but is not limited to: self-pay, workers' compensation, other government payment, free care, health safety net, auto insurance, Commonwealth Care/ConnectorCare plans, Unknown (defined as patients whose primary payor is missing in the data) and dental plans.

a) Increased Downtime for CT Equipment Maintenance

An increase in CT scan volume with only one CT unit to complete the scans has led to an increase in the need for CT equipment maintenance. Downtime to perform CT equipment maintenance leaves the Hospital without CT capability. Table 4 illustrates that between FY2020 and FY2022, total downtime hours more than doubled for the Hospital's CT unit. The Applicant notes that the Hospital replaced its existing CT scanner with a newer unit in January 2023, which resulted in a decreased amount of downtime, but continued downtime remains an issue. As demonstrated by the continued presence of downtime for the existing unit, a second CT scanner will provide the Hospital much needed redundancy to better ensure one unit continues to be available to patients while the other is offline.

Table 4: Anna Jaques Hospital Historical CT Scanner Downtime¹⁴

Type of Downtime	FY2020	FY2021	FY2022	FY2023 October 1 – July 31
CT Downtime Hours for Interventional Radiology Procedures	125.0	128.0	141.0	83.0
CT Downtime Hours (in use or maintenance)	36.0	81.0	190.3	103.0
Total Downtime Hours for existing CT	161	209	331.3	186

When the unit experiences downtime, patients must wait, be rescheduled, or transferred to another facility. The Applicant noted that the number of ED patients transferred because the CT unit was down or occupied increased from 23 patients in FY2021 to 29 patients in FY2022. As the CT unit is taxed by high utilization, it is expected that downtime hours will increase and disrupt care. A second CT unit would mitigate downtime on the existing unit by allowing the Hospital to reduce the overutilization of the existing unit across two machines. A second unit can extend the life of the current unit, delaying the need for replacement. In addition, the second unit ensures redundancy if either unit requires repair or maintenance. The Applicant asserts that increased downtime for maintenance and repairs, and the likelihood that the existing scanner will increasingly require maintenance downtime as it ages, are evidence of the need for a second CT to provide redundancy when one unit is offline.

b) Primary Stroke Service Hospital Service Demands

DPH designates AJH as a Primary Stroke Service (PSS) Hospital¹⁵, which means the EMS will send patients experiencing symptoms of a stroke to the AJH's ED. Clinical guidelines for stroke recommend that patients receive CT imaging within 25 minutes of arrival at the ED.^c Acute stroke patients, and other patients requiring an emergent CT scan are

¹⁴ The term "downtime" indicates the CT unit is not available and emergent patients in need of CT imaging must be diverted elsewhere.

¹⁵ To be designed a PSS Hospital, a hospital must be equipped to readily provide timely acute stroke evaluation and treatment, and "must provide emergency diagnostic and therapeutic services 24 hours-a-day, seven days-a-week to patients presenting with symptoms of acute stroke." *Primary Stroke Service validation*, <https://www.mass.gov/info-details/primary-stroke-service-pss-validation> (last visited Feb. 24, 2022). Also see *Designated Primary Stroke Services Hospitals*, <https://www.mass.gov/info-details/designated-primary-stroke-services-hospitals> (last visited Feb. 24, 2022).

prioritized over less urgent exams on other patients. When an emergency CT is needed, all other patient scans are delayed. As demonstrated in Table 5 below, AJH experienced an approximately 50% increase in the number of stroke patients presenting to its ED between FY2020 and FY2022, with FY2023 volumes already surpassing the previous year.

Table 5: Anna Jaques Hospital Stroke Patient Volume

	FY2020	FY2021	FY2022	FY2023 October 1 – July 31
Emergency Department Stroke Patients	97	127	146	152

The Applicant states that in FY2021 and FY2022, nine to ten patients each year with stroke symptoms were transferred to another facility because the CT unit was not available. The growth in the volume of stroke patients presenting in the ED reinforces the need to have an operational CT unit available at all times.

2) Projected Increase in Demand

Based on historical volume and projections for future demand, AJH expects CT volume will continue to grow as the Hospital's Primary Service Area experiences sustained growth over the coming years. The population of AJH's Primary Service Area is projected to increase by approximately 2.84% from 2020 to 2035.^d In particular, the age 65 and older cohort is expected to grow by approximately 43.30% from 2020 to 2035.^e As the patient population ages, patients will likely present with higher acuity and more frequently require advanced diagnostic imaging, including CT. The Applicant notes that patients in the 65+ age cohort represented over half (53.37%) of the patient population receiving a CT scan in FY2022. This increase in utilization by an aging patient population reflects the growth in the Hospital's 65+ age cohort, which grew 14.40% between FY2020 and FY2022. Table 6 details the historical CT scan volume and Table 7 demonstrates the Applicant's projected increase in CT Scan volume calculated from the expected implementation date of the Proposed Project.

Table 6: Anna Jaques Hospital Historical CT Scan Volume

	FY2020¹⁶	FY2021¹⁷	FY2022	FY2023 October 1 – April 30
Total CT scans	17,271	16,890	17,747	10,547

Table 7: Anna Jaques Hospital Projected CT Scan Volume

	FY2024	FY2025	FY2026	FY2027	FY2028
Total Projected CT scans	18,017	18,400	18,700	18,700	18,700

¹⁶ Fiscal year is defined as October 1 through September 30 for all data aside from data in the Applicant and Hospital's Patient Panel.

¹⁷ Applicant notes CT scan volume likely decreased from FY20 to FY21 due to patient avoidance of hospitals during the COVID-19 Pandemic.

In addition to the projected growth in scan volume due to a growing and aging population, the Applicant's intention to expand the low-dose CT (LDCT) lung cancer screenings will also increase demand for CT. AJH offers LDCT lung cancer screenings of high-risk patients, which can significantly decrease lung cancer mortality. The Applicant states AJH does not currently market LDCT lung cancer screening due to capacity constraints. Despite this, AJH saw a 53% increase in LDCT lung cancer screenings from FY2020-FY2022, as detailed in Table 8.

Table 8: Anna Jaques Hospital Historical LDCT Lung Cancer Screening Volume

	FY2020	FY2021	FY2022	FY2023 October 1 – July 31
Annual Screenings Completed	287	379	440	535

In 2022, Centers for Medicare & Medicaid Services (CMS) expanded eligibility for these screenings by lowering the starting age for lung cancer screening and reducing requirements around tobacco smoking history, which will increase access to lung cancer screening for at-risk populations. The Applicant notes that they plan to increase volume of LDCT screenings with a second CT machine available.

Analysis

Staff finds that the historic and projected growth in CT scan volume demonstrate sufficient need for a second CT unit at AJH. By reducing over-utilization of the current unit, AJH will be able to extend its useful life, delaying the need for replacement and significant disruption for patients. Acquiring a second CT unit will also decrease the amount of downtime on the existing unit, in turn prolonging the life of both units. In addition, the second unit will ensure redundancy if either unit requires repair or maintenance. A second unit will provide capacity to accommodate emergent patients without disrupting access to CT for inpatients and outpatients. As a hospital designated as a Primary Stroke Service, a second CT unit will provide the timely access to a CT scan, which is essential to the swift diagnosis and treatment of patients showing signs of a stroke. Having the capacity to perform necessary CT scans will also eliminate the costs associated with transferring patients to another hospital. The Proposed Project will also accommodate additional demand for CT services and allow improved access for LDCT lung screenings in adherence with recommended timelines. As a result, Staff finds that the Proposed Project meets the requirements of Factor 1a.

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

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

Public Health Value and Health Outcomes

The Applicant asserts that the Proposed Project aims to improve health outcomes and quality of life through the provision of timely CT imaging, which will lead to earlier diagnosis and treatment, thereby improving quality of life. To demonstrate improved public health value and quality of life, the Applicant provided well documented clinical utility of CT technology overall, and why it is the preferred imaging modality for a number of clinical concerns.

A Computed Tomography (CT) is an imaging tool that utilizes x-ray beams to generate cross-sectional images - or “slices” - of the bones, blood vessels and soft tissue.^f As a result, CT scans produce more clear, detailed images than conventional x-rays, making CTs extremely useful in detecting tumors or lesions within the abdomen and lungs; detecting heart disease or abnormalities of the heart; head injuries; and blood clots and embolisms.^g CT scans can generally be performed in minutes, which means providers can quickly detect and diagnose emergent conditions such as strokes and consequently, reduce the chances of brain damage and disability.^h

With AJH serving as a Primary Stroke Service, the Hospital must have adequate CT capacity to serve stroke patients within the recommended timeframe.¹⁸ The addition of a second CT unit at AJH will provide improved access to CT imaging by expanding the machine’s availability to patients and maintaining an in-house CT imaging option when one machine is in downtime. This will enable AJH to have the CT capacity to expand its Lung Cancer screening program, which has been increasing in volume (as detailed in Factor 1b). The Applicant predicts that the availability of a second CT unit will increase screening rates and early identification of lung cancer. The Applicant noted that approximately 8 million Americans qualify as high risk for lung cancer and are recommended to receive annual screening with low-dose CT scans.ⁱ Screening with LDCT for those at high risk can decrease lung cancer mortality by 14% to 20%.^j Early identification can lead to treatment when disease can be more easily treated at lower costs than advanced disease, ultimately improving health outcomes.

Analysis: Public Health Value, Health Outcomes, and Quality of Life

Staff finds that timely access to CT imaging contributes to improved health outcomes for all patients. Not having adequate access to CT scans can lead to delays in diagnosis and treatment. Unimpeded access to a CT scan is a particular concern for AJH as a designated Primary Stroke Service, which requires expedient patient imaging for proper diagnosis and treatment of patients. DoN Staff finds that a second CT unit will allow a greater capacity for CT imaging and potential for greater emphasis on prevention and early treatment through its Lung Cancer Screenings. Staff finds that the Proposed Project has potential to add to public health value in terms of improved health outcomes and quality of life for the Applicant's Patient Panel. As a result, Staff finds that the Applicant meets the requirements of the Public Health Value: Health Outcomes part of Factor 1b.

Health Equity and Social Determinants of Health (SDoH)

AJH states that they continually strive to ensure health equity to all populations, including vulnerable and underserved populations. The Proposed Project will increase access to hospital-based CT services and will ensure accessibility of AJH services for low income, medically indigent and/or Medicaid

¹⁸ According to the Massachusetts Department of Health’s Time Target Recommendations and the American Heart Association/American Stroke Association’s “Get With the Guidelines – Stroke”, CT imaging should be completed within 25 minutes of arrival to the hospital, and IV thrombolytic (“tPA”) treatment should begin within one hour of patient arrival.

beneficiaries. AJH asserts its commitment to serving the community regardless of an individual's ability to pay and does not discriminate based on payor source. The Applicant states that AJH has ongoing efforts in Language Accessibility and Data Collection to facilitate equitable access to its services.

Language Accessibility: Interpretation services are available at no charge. Services are offered in person, by video, and by telephone, are available for over 300 different languages, and can be used 24 hours a day. AJH has one per diem interpreter, and 6 video remote interpreting (VRI) devices across in-patient/outpatient settings. AJH has a designated Spanish interpreter available on site as well as in-person interpretation through the vendor. Trained interpreters assist during hospitalization and inform patients and their families about procedures, medication, and other important information. AJH has two language vendors providing 24/7 phone interpretation and document translation as well as video interpretation for specific languages. Services are also available to facilitate communication for deaf and hard of hearing patients. A Certified Deaf Interpreter (CDI) is available on-call when needed in-person. American Sign Language interpreters are available 24/7 on the VRIs and Assistive Devices are available to patients. The Hospital's Telecommunications Device for the Deaf (TDD) is available for patients 24 hours a day.

Data Collection: BILH is working to reduce health inequities through the collection of demographic data (Race, Ethnicity and Language (REAL) data). BILH launched a new initiative to request more detailed and complete demographic information from patients and created a multidisciplinary team of representatives from across the System to develop best practices and processes to support consistent capture of data in the electronic medical record (EMR).

Analysis: Health Equity and SDoH

The DoN Staff reviewed the Applicant's efforts to ensure equitable care. The Applicant demonstrates efforts to achieve health equity through language accessibility, and data collection that provides a more accurate understanding of the race, ethnicity, and language of their patient population. Staff finds that the Applicant has sufficiently outlined ongoing efforts to achieve health equity. As a result, Staff finds that the Applicant meets the requirements of the Public Health Value: Health Equity part of Factor 1b.

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

The Applicant states that the Proposed Project promotes continuity and coordination of care for its patients through timely access to CT imaging, utilization of technology infrastructure, and MassHealth ACO Program.

Timely Access to CT Imaging: As noted in previous sections, the Proposed Project allows capacity expansion for the AJH Patient Panel. AJH currently has only one CT unit and cannot perform CT- guided procedures without impeding access to CT imaging for urgent stroke and emergency department patients. In addition, downtime to perform CT maintenance leaves AJH without CT capability and

patients may be rescheduled or transported to another facility, further delaying timely treatment. The addition of a second CT unit will provide the Patient Panel with uninterrupted and increased local access to CT imaging and CT-guided procedures.

Technology Infrastructure: The technology infrastructure for the Proposed Project streamlines access for patients and facilitates improved coordination of care among physicians and other professionals on a patient's care team. AJH's EMR serves as the primary link between Radiology, AJH's specialists, and community primary care providers. The EMR provides AJH radiologists with real-time access to a patient's comprehensive medical information, including medical history, lab results, and clinical notes while they are protocoling or reading a CT study. Once the radiologist's report is complete, the EMR enables CT imaging results and information to be available to primary care and specialty physicians across the system and integrated into the patient's EMR. The EMR also allows authorized providers outside of AJH to view patient records and send progress notes back for continuity of care.

MassHealth ACO Program: AJH participates in the MassHealth ACO Program through Beth Israel Deaconess Care Organization (BIDCO), part of Beth Israel Lahey Health Performance Network (BILHPN) and its clinically integrated network. BIDCO strives to increase access to high quality care for members who are more likely to have unmet SDoH needs than the commercially insured population. The Applicant notes that a significant portion of BIDCO's efforts to improve health care are accomplished through care coordination. Specifically, BIDCO's data analysis and risk management tools are provided to AJH providers, including a Population Health Management Tool that helps primary care physicians monitor patients' health and manage chronic conditions. These primary care linkages will continue to enhance care for AJH's patients, including timely access to radiology services that will be achieved through the Proposed Project.

Analysis

Staff finds that timely access to CT imaging and use of technology infrastructure will contribute positively to efficiency, continuity, and coordination of care. The Applicant sufficiently demonstrates the need for a second CT unit to expand the Hospital's capacity to serve both urgent and routine CT imaging needs without interruption. Review of the literature points to evidence which suggests access to integrated health information technology systems directly impacts health outcomes through reducing fragmentation and improving coordination among care providers.^k Similarly, other studies show that integrated health information technology systems directly affect health outcomes, as access to a single, integrated health record, can reduce errors, improve patient safety, and support better patient outcomes.^l AJH's EMR supports communication between the patient, physician, and all care team members that can foster better collaboration. As a result, Staff finds that the Proposed Project meets the requirements of Factor 1c.

Factor 1: d) Consultation

The Applicant has provided evidence of consultation, both prior to and after the Filing Date, with the following government agencies that have licensure, certification, or other regulatory oversight:

- Director, Determination of Need Program, Department of Public Health
- Office of Community Health Planning and Engagement, Department of Public Health
- Center for Health Information and Analysis
- The Centers for Medicare & Medicaid Services

As a result, Staff finds that the Proposed Project meets the requirements of Factor 1d.

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

The Department's Guideline¹⁹ for community engagement defines "community" as the Patient Panel and requires that, at minimum, the Applicant must "consult" with groups representative of the Applicant's Patient Panel. Regulations state that efforts in such consultation should consist of engaging "community coalitions statistically representative of the Patient Panel."²⁰

The Applicant presented the Proposed Project presented to the following groups:

- The Hospital's Community Benefits Advisory Council (CBAC)
- The Hospital's Patient Family Advisory Council (PFAC)
- Community Meeting

The presentations reviewed the purpose of the Proposed Project, what it would mean for patients and the community, and provided a general overview of the Proposed Project's process.

- 1) **The Hospital's Community Benefits Advisory Council (CBAC):** The Proposed Project was presented a AJH's CBAC in March 2023 with 11 individuals in attendance.
- 2) **The Hospital's Patient Family Advisory Council (PFAC):** The Proposed Project was presented to the AJH's PFAC in February 2023 with 16 individuals in attendance.
- 3) **Community Meeting:** The Proposed Project was presented to a Community Meeting in March 2023 with 11 individuals in attendance.

At each of the presentations, the feedback was resolute in the need for a second CT unit and unanimously recognized that lack of redundancy is leading to increased patient access concerns. There was also a significant concern about the overall perception of care that could be provided by AJH given the limitations of having one CT unit at AJH.

Analysis

Staff reviewed the information on the Applicant's community engagement and finds that the Applicant has met the required community engagement standard of Consult in the planning phase of the Proposed Project. As a result, Staff finds that the Proposed Project meets the requirements of Factor 1e.

¹⁹ [Community Engagement Standards for Community Health Planning Guideline.](#)

²⁰ [DoN Regulation 100.210 \(A\)\(1\)\(e\).](#)

Factor 1: f) Competition on price, total medical expenses (TME), costs and other measures of health care spending

The Applicant states that the Proposed Project will compete on the basis of price, total medical expenses (TME), provider costs, and other recognized measures of health care spending by ensuring timely access to CT services. The Applicant expects that with a second CT unit, the Hospital will always be able to provide access to CT, eliminating ambulance transport costs that occur when a patient is sent to another facility during AJH's CT downtime. The new CT unit will be reimbursed at the same rate as the existing scanner and will not impact costs for payers or patients.

The Applicant notes that the Hospital and its physicians follow the American College of Radiology's Appropriateness Criteria. AJH physicians are encouraged to consult the Appropriateness Criteria as well as the radiologist on-call anytime there is a question of whether CT is the most appropriate tool. The Hospital adheres to all regulatory requirements regarding Appropriate Use Criteria (AUC). The Applicant notes that Medicare does not currently require implementation AUC programs.

Analysis

The Proposed Project has the potential to reduce costs by providing CT imaging services on site at AJH, saving the expense of transporting to another facility to complete imaging services. While advanced imaging improves clinical care, it is also the source of overuse and added healthcare costs.^m Staff notes that the Applicant and Hospital follow Appropriate Use Criteria for CT imaging to minimize overuse. Staff finds that, on balance, the Proposed Project will likely compete on the basis of price, TME provider costs, and other measures of health care spending and meets the requirements for Factor 1f.

Summary, FACTOR 1

As a result of the information provided by the Applicant and additional analysis, staff finds that the Applicant has demonstrated that the Proposed Project meets Factor 1.

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

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

Cost Containment

The Applicant asserts that the Proposed Project will contribute to the Commonwealth's goals for cost containment by reducing costs through increased efficiencies in operations. The Applicant anticipates that timely access to CT imaging services will reduce wait-times for CT, potentially saving costs through

the gained efficiencies of earlier diagnosis and treatment. The Applicant states that the Proposed Project ensures that the Patient Panel has prompt and equitable access to CT imaging services. The Applicant asserts that there will be no change in AJH's contracted rates for CT services, and no impact on costs, while ensuring timely access to care.

Analysis: Cost Containment

Staff finds that the Applicant has adequately explained how it aligns with cost containment goals through the expansion of imaging services provided on site at AJH with no change in contracted rates. Therefore, DoN Staff can conclude that the Proposed Project will likely meet the cost containment component of Factor 2.

Improved Public Health Outcomes

The Applicant anticipates the Proposed Project will improve public health outcomes by ensuring timely emergency access to CT imaging. Early intervention CT imaging is essential for trauma, stroke, cardiac and other emergency patients. A second CT unit will provide AJH with adequate capacity to provide CT imaging for both emergency and non-emergency circumstances. The Applicant predicts that the Patient Panel will achieve better health outcomes by eliminating the delay in diagnosis and intervention for those requiring CT. The second unit will also allow an expansion of the preventative LDCT services, which has the potential to improve Patient Panel outcomes through early detection of lung cancer.

Analysis: Public Health Outcomes

Staff finds that the Proposed Project will provide the Patient Population more timely access to imaging services that has the potential to improve health outcomes. Timely access can reduce delays in diagnosis and treatment that can adversely impact health outcomes. With ample access to CT services, AJH will be able to simultaneously provide emergency CT scans as well as routine diagnostic and preventative scans. Therefore, DoN Staff can conclude that the Proposed Project will likely meet the Public Health Outcomes component of Factor 2.

Delivery System Transformation

AJH screens patients for the following SDoH needs during each encounter: Housing, Interpersonal Safety, Social Support, Health Behaviors (e.g., alcohol consumption, smoking, drug use, etc.), and Financial Stability. Employment and Transportation are also screened on a case-by-case basis as determined by the patient's care team. Additionally, certain patient characteristics, such as specific diseases (e.g., diabetes) and high intensity resource utilization may also prompt a needs screening. If a need is identified, a referral is made to a community-based organization or to a resource within the Hospital and/or BILH. Within the emergency department, direct referrals are made for behavioral health and substance use to embedded community partners, such as Recovery Coaches and LinkHouse.

In addition, the Applicant's Beth Israel Lahey Healthcare primary care practice locations in Amesbury, Haverhill, Newburyport, and Seabrook, screen all patients for Social Determinants of Health as part of their annual wellness exam. The screener form is modified from the Protocols for Responding to and Assessing Patients' Assets, Risks, and Experiences (PRAPARE). The screener is filled out before the

patient's visit on a tablet or paper. If a safety concern is flagged through the screener, the provider is notified immediately to address the issue during the visit.

Analysis: Delivery System Transformation

Central to the goal of Delivery System Transformation is the integration of social services and community-based expertise. The Applicant screens patients on relevant SDoH factors and demonstrates a variety of methods for linking patients to needed community resources. Staff notes that AJH has embedded screenings and referrals into their patient care procedures, ensuring that necessary connections occur. Therefore, DoN Staff can conclude that the Proposed Project will likely meet the Delivery System Transformation component of Factor 2.

Summary, FACTOR 2

As a result of information provided, staff finds that the Proposed Project has sufficiently met the requirements of Factor 2.

Factor 3: Relevant Licensure/Oversight Compliance

The Applicant has provided evidence of compliance and good standing with federal, state, and local laws and regulations and this Factor will not be addressed further in this report. As a result of information provided by the Applicant, staff finds the Applicant has reasonably met the standards of Factor 3.

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

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

The Applicant submitted a CPA report compiled by Meyers Brothers Kalicka. The scope of the analysis included review of the audited financial statements of BILH, Inc for the fiscal years ended 2021 and 2022, the five-year financial projections and income statements prepared by BILH, Inc. including detailed assumptions and supporting documentation for the fiscal years 2024 through 2028, an analysis of existing results of the current CT scanner for FY2020 through FY2022, and the related supporting documentation. The CPA assessed the reasonableness²¹ of assumptions used in the preparation and feasibility²² of the projections with regards to the Proposed Project.

Revenues

The CPA Report analyzed the net operating revenues in the historical and projected financial information. The CPA analyzed the projected/pro-forma revenue for FY2024 through FY2028 using historical results of one existing CT scanner at AJH for FY2021-FY2022, the Medicare OPPS Addendum B

²¹ Reasonableness is defined within the context of this report as supportable and proper, given the underlying information.

²² Feasibility is defined as based on the assumptions used, the plan is not likely to result in insufficient funds available for capital and ongoing operating costs necessary to support the proposed project without negative impacts or consequences to existing Patient Panel.

Report and the corresponding Outpatient CT Schedule Report, and historical average reimbursements for all other insurance providers. The CPA stated that the revenue projected by Management is a reasonable estimation and conservative based primarily upon historical volume of operations. The CPA also stated that the pro-forma operating revenues were reasonable.

Operating Expenses

The CPA Report analyzed each of the categorized operating expenses for reasonableness and feasibility related to the projections. The operating expenses in the analysis include salary and wages, fringe benefits, other expenses²³, equipment lease and maintenance, construction costs and depreciation. Salaries and wages in fiscal year 2023 include the addition of 2 full-time equivalents (FTE) to operate the second CT scanner. Based on the CPA's analysis of the projected/pro-forma expenses for FY2024 through FY2028, the CPA finds that the pro-forma total expenses are reasonable.

Capital Expenditures and Cash Flows

The CPA reviewed the total capital expenditures and the cash flows for the project. The total capital expenditures for the project excluding the lease will be funded by available capital funds of the Applicant. The CPA determined that the capital needs and ongoing operating costs required to support the addition of a second CT scanner are not likely to result in a scenario where there is negative cash flow and states that the Applicant has the financial resources to fund the initial capital requirements.

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

We determined that the projections were not likely to result in insufficient funds available for ongoing operating costs necessary to support the Project. Based upon our review of the projections and relevant supporting documentation, we determined the Project and its projected operating revenue, expenses and cash flow are reasonable and based upon feasible financial assumptions. Therefore, the addition of a second CT scanner at AJH and the capital needs associated with this service is financially feasible and within the financial capability of BILH.

Factor 4 Analysis

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

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

Evaluation of 105 CMR 100.210(A)(5) shall take into account, at a minimum, the quality, efficiency, and capital and operating costs of the Proposed Project relative to potential alternatives or substitutes, including alternative evidence-based strategies and public health interventions.

The Applicant considered and rejected one alternative to the Proposed Project.

Alternative Option: Do not acquire a second CT unit and continue to serve patients with a single CT unit. This alternative was rejected because it does not address the need of AJH's patient population to have

²³ Other expenses include supplies, miscellaneous equipment, and purchased services.

timely access to CT imaging, both currently and as demand increases in the future. This option carries no capital expenses or additional operating costs. However, AJH resources will continue to be strained under this alternative, which will result in delays in diagnosis and treatment, and could adversely impact patient outcomes and quality of life.

Analysis

Staff finds that the Applicant has appropriately considered the quality, efficiency, and capital and operating costs of the Proposed Project relative to the potential alternative. As a result of information provided by the Applicant, staff finds the Applicant has reasonably met the standards of Factor 5.

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

Summary and relevant background and context for this application: This is a DoN project that will result in a Tier 1 Community-based Health Initiative (CHI). The Applicant, Beth Israel Lahey Health at Anna Jaques Hospital (AJH) Newburyport, plans to acquire a computed tomography (CT) machine. This project constitutes as DoN-Required Equipment obtained by a hospital. Standard practice is to contribute the CHI dollars to a local CHI project and the Statewide Community Health and Healthy Aging Funds.

To fulfill Factor 6 requirements, the Applicant submitted a CHI Narrative, its 2022 Community Health Needs Assessment, a Self-Assessment, and Stakeholder Assessments.

The 2022 Community Health Needs Assessment (CHNA) engaged over 800 people across the Community Benefits primary service areas of Amesbury, Haverhill, Merrimac, Newburyport, and Salisbury. The assessment included extensive data collection and the engagement of AJH's community partners and residents through interviews, surveys and focus groups. The Applicant prioritized community engagement efforts to include voices of community members who have been historically underserved, such as individuals who experience housing instability and/or experience health inequities due to race, ethnicity, gender identity, age, disability status or other characteristics.

The CHNA identified priority areas and described key findings and themes from the participating communities. AJH's priority populations include youth, underserved communities, older adults, individuals living with disabilities and racially, ethnically, and linguistically diverse populations.

Key health-related social needs identified in the 2022 CHNA that AJH hopes to address in their 2023-2025 Implementation Strategy (IS) include: housing issues, food insecurity, transportation, economic insecurity, capacity of workforce, navigation of healthcare system, linguistic access/barriers, cost and insurance barriers, care giver support, school-based services, youth mental health, stress, anxiety, depression, isolation, mental health stigma, racism/discrimination, diversifying leadership, outreach/education/prevention, services to support long-term recovery, substance use, information sharing, and cross sector collaboration.

The Self-Assessment provided a summary of community engagement processes and socio-demographic information, data and highlights related to topics and themes of community needs.

Through data analysis, surveys, focus groups and key informant interviews, the Applicant and participating community groups and residents identified the key priorities and strategies also highlighted in the 2022 CHNA. With support from the CHI team, the Applicant will be working to identify additional CAB members for missing constituencies.

Stakeholder Assessments submitted provided information on the individuals' engagement levels (e.g., their personal participation and role) and their analysis of how the Applicant engaged the community in community health improvement planning processes. The information provided in these forms were consistent with the self-assessment conducted by the Applicant.

The CHI Narrative provided information on the Applicant's decision-making structure and governing body for the CHI funding decisions. The Applicant reported that the CHI Advisory Committee will begin meeting and identifying CHI Health Priorities at 3-4 months post-project approval. Within 13 months of approval, the Applicant plans to disburse the funds, and complete final evaluations of funded project(s) within two years of approval. Administrative monies will support the promotion of meetings, interpretation/translation services and overall community engagement efforts.

DPH will work with the Applicant to ensure ongoing community engagement, a feasible project timeline and appropriate stewardship of the administrative allowance. Administrative allowances are used to address barriers to participation for community to engage in the community health planning process.

Analysis

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

Findings and Recommendations

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

Other Conditions

CHI Contribution

1. Of the total required CHI contribution of \$105,024.80
 - a. \$10,082.38 will be directed to the CHI Statewide Initiative
 - b. \$90,741.43 will be dedicated to local approaches to the DoN Health Priorities
 - c. \$4,200.99 may be designated as the administrative allowance.
2. To comply with the Holder's obligation to contribute to the Statewide CHI Initiative, the Holder must submit a check for \$10,082.38 to Health Resources in Action (the fiscal agent for the CHI Statewide Initiative).

- i. The Holder must submit the funds to HRiA within 30 days from the date of the Notice of Approval.
- ii. The Holder must promptly notify DPH (CHI contact staff) when the payment has been made.

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

Appendix I: Measures for Annual Reporting

Outcome Measures

To assess the impact of the Proposed Project, the Applicant has developed the following outcome measures. The Applicant will report this information to the Department's DoN Program staff as part of its annual report required by 105 CMR 100.310(A)(12) following implementation of the Proposed Project. For all measures, the Applicant will provide to the program a baseline upon implementation of each project component, along with updated projections, which the program will use for comparison with the annual data submitted. Reporting will include a description of numerators and denominators.

1. **Access – Reduce Downtime:** The Proposed Project seeks to reduce the downtime hours to increase access to CT services for ED, inpatients, and outpatients.
Measure: Downtime hours per year due to maintenance and interventional radiology procedures.
Baseline: Total Downtime hours: 331.3 hours.
Projections: Year 1: 75 hours; Year 2: 50 hours; and Year 3: 25 hours
2. **Access – Door to CT for Stroke Patients:** Adding a second CT unit will likely decrease time from door to CT for stroke patients. As a result, stroke patients will receive a timely diagnosis that will direct subsequent medical treatment. Through the Proposed Project AJH seeks to maintain and improve average door to CT time.
Measure: Length of time between when patient reaches the Hospital to when a CT scan begins.
Baseline: Average door to CT scan time: 23 minutes
Projections: Year 1: 22 minutes; Year 2: 21 minutes; and Year 3: 20 minutes

REFERENCES

^a Center for Health Information and Analysis. Massachusetts Hospital Profiles. Technical Appendix.
<https://www.chiamass.gov/assets/docs/r/hospital-profiles/2021/FY21-Massachusetts-Hospital-Profiles-Technical-Appendix.pdf>

-
- ^b Center for Health Information and Analysis (CHIA). Beth Israel Lahey Health. <https://www.chiamass.gov/assets/docs/r/hospital-profiles/2021/hospital-health-systems/Beth-Israel-Lahey.pdf>
- ^c See *Primary Stroke Services Time Target Recommendations* (6/2009), <https://www.mass.gov/doc/pss-time-target-recommendations-0/download> ; Get With the Guidelines – Stroke Fact Sheet. https://www.heart.org/-/media/Files/Professional/Quality-Improvement/Get-With-the-Guidelines/Get-With-The-Guidelines-Stroke/Stroke-Fact-Sheet -FINAL UCM_501842.pdf.
- ^d Mass Donahue Institute MassDOT Vintage 2018 Population Projections, *Massachusetts Population Projections*, September 2018, <http://www.pep.donahue-institute.org/> .
- ^e *Id.*
- ^f See U.S. Department of Health & Human, <https://www.nibib.nih.gov/science-education/science-topics/computed-tomography-ct> (last visited Feb. 24, 2022); Mayo Clinic, <https://www.mayoclinic.org/tests-procedures/ct-scan/about/pac-20393675> (last visited Feb. 24, 2022).
- ^g See *How Does a CT or CAT scan work?*, MedicalNewsToday, <https://www.medicalnewstoday.com/articles/153201#procedure> (last modified June 23, 2017).
- ^h See *How CT scans and MRIs are Used to Diagnose Strokes*, <https://www.envrad.com/how-ct-scans-mris-used-to-diagnose-strokes/> (last visited Feb. 24, 2022).
- ⁱ See *Lung Cancer Fact Sheet*, American Lung Association, <https://www.lung.org/lung-health-diseases/lung-disease-lookup/lung-cancer/resource-library/lung-cancer-fact-sheet> (last modified May 27, 2020).
- ^j *Id.*
- ^k HealthIT.gov. Improve Care Coordination. Available: <https://www.healthit.gov/topic/health-it-and-health-information-exchange-basics/improve-care-coordination>.
Alain Pinsonneault, Shamel Addas, Christina Qian, Vijay Dakshinamoorthy & Robyn Tamblyn (2017) Integrated Health Information Technology and the Quality of Patient Care: A Natural Experiment, *Journal of Management Information Systems*, 34:2, 457-486, DOI: 10.1080/07421222.2017.1334477 Available: <https://www.tandfonline.com/doi/abs/10.1080/07421222.2017.1334477>
- ^l HealthIT.gov, <https://www.healthit.gov/topic/health-it-and-health-information-exchange-basics/improved-diagnostics-patient-outcomes>.
- ^m Hendee WR, Becker GJ, Borgstede JP, Bosma J, Casarella WJ, Erickson BA, Maynard CD, Thrall JH, Wallner PE. Addressing overutilization in medical imaging. *Radiology*. 2010 Oct;257(1):240-5. doi: 10.1148/radiol.10100063. Epub 2010 Aug 24. PMID: 20736333.imaging