

STAFF REPORT TO THE COMMISSIONER FOR A DETERMINATION OF NEED

Applicant Name	Baystate Health, Inc.
Applicant Address	759 Chestnut Street, Springfield, MA 01199
Filing Date	January 21, 2025
Type of DoN Application	Required Equipment
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Project Number	BH-23102416-RE
Ten Taxpayer Groups (TTG)	None
Community Health Initiative (CHI)	\$49,723.35
Staff Recommendation	Approval
Delegated Review	May 21, 2025

Project Summary and Regulatory Review

Baystate Health, Inc. (“Baystate Health” or the “Applicant”), with a principal place of business at 759 Chestnut Street, Springfield, MA 01199, is filing a Notice of Determination of Need with the Massachusetts Department of Public Health (“Department”) to acquire one computed tomography (“CT”) unit for operation by Baystate Radiology and Imaging (“BRI”) at Baystate Health and Wellness Center - Longmeadow (“Baystate Longmeadow”), located at 21 Dwight Road, Longmeadow, MA 01106.

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.

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Applicant Background and Application Overview

Baystate Health is a not-for-profit, integrated healthcare system serving over 800,000 patients throughout western New England. Baystate Health is comprised of Baystate Medical Center, an academic medical center (AMC), three (3) community hospitals¹ – Baystate Noble Hospital, Baystate Franklin Medical Center, and Baystate Wing Hospital and a network of more than 80 medical practices, including Baystate Radiology and Imaging (“BRI”) and the physicians at Baystate Health and Wellness Center – Longmeadow (Baystate Longmeadow).²

BRI provides a full spectrum of inpatient and outpatient radiology services for adults and children. BRI performs more than 360,000 imaging exams each year. Currently, BRI offers mammography and X-ray at Baystate Longmeadow. Baystate Longmeadow’s clinical services include primary care, pulmonary, cardiology, endocrinology, gastroenterology, neurology, and oncology.

Proposed Project

BRI currently provides mammography and X-Ray at Baystate Longmeadow; the location does not currently operate computed tomography (CT) imaging services. The Applicant seeks to acquire a CT unit for operation by BRI at Baystate Longmeadow within the existing radiology practice currently offering other diagnostic imaging services. The new CT unit is sought in response to increased need for CT services at other Baystate Health locations, in particular utilization at Baystate Medical Center’s outpatient satellite (“Satellite”)³. The Satellite is currently approaching 100% utilization resulting in longer patient wait times for CT services. The Applicant asserts that the Proposed Project will provide timely access to high-quality imaging for patients in a region with insufficient CT services to support population growth and current patient need. Access to CT services supports earlier diagnosis and treatment and, thereby, improved health outcomes.

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 Required Equipment application.

Patient Panel⁴

Table 1 shows the Baystate Health Patient Panel for Fiscal Years (FY) 2021-2024;⁵ Over that four-year timeframe the Patient Panel grew 8.6%.

¹ Baystate Noble Hospital, Baystate Franklin Medical Center, and Baystate Wing Hospital.

² Baystate Health also includes Health New England, a health insurance provider; home care and hospice services; and comprehensive regional and laboratory diagnostic services.

³ The satellite offers clinical services in multiple specialties including Cardiology, Neurology, Gastroenterology, Gynecologic Oncology, and ancillary services such as Pulmonary Rehabilitation, clinical laboratory, and Specialty Pharmacy.

⁴ 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. (1) If the Applicant or Holder has no Patient Panel itself, the Patient Panel includes the Patient Panel of the health care facilities affiliated with the Applicant.

⁵ For purposes of the Patient Panel, the fiscal year is defined as October 1 through September 30.

Table 1: Baystate Health's Patient Panel

Baystate Health	FY 2021	FY 2022	FY 2023	FY 2024
Total Unique Patients	317,791	318,763	340,223	345,226

Baystate Health Patient Panel Demographic Measure	FY22 Percent of Total	FY23 Percent of Total	FY24 Percent of Total
Total Count	318,763	340,223	345,225
Age: 0 to 18	17.95%	18.18%	17.81%
Age: 19 to 45	28.52%	28.32%	27.96%
Age: 46 to 64	27.51%	26.80%	26.14%
Age: 65+	26.03%	26.70%	28.09%
Gender: Female	58.15%	58.15%	58.24%
Gender: Male	41.85%	41.85%	41.76%
Gender: Unknown	0.00%	0.00%	0.00%
Race/Ethnicity: American Indian or Alaska Native	0.10%	0.09%	0.09%
Race/Ethnicity: Asian	1.35%	1.32%	1.37%
Race/Ethnicity: Black or African American	7.11%	6.97%	7.29%
Race/Ethnicity: Hispanic	20.91%	20.69%	17.57%
Race/Ethnicity: Native Hawaiian or Other Pacific Islander	0.07%	0.09%	0.13%
Race/Ethnicity: Other	0.00%	0.08%	0.11%
Race/Ethnicity: Refuse to Answer	0.25%	0.32%	0.44%
Race/Ethnicity: Unknown	4.02%	3.74%	3.79%
Race/Ethnicity: White	66.19%	66.71%	69.20%
Payer	FY2022	FY2023	FY2024
Commercial PPO/Indemnity	15.8%	14.9%	14.2%
Commercial HMO/POS	10.5%	10.4%	10.3%
Total Commercial	26.2%	25.3%	24.5%
MassHealth	9.1%	8.4%	7.1%
Managed Medicaid	14.2%	15.0%	15.7%
Commercial Medicare	16.7%	18.4%	19.6%
Medicare FFS	28.6%	27.9%	27.7%
Total Public Payer	68.6%	69.6%	70.0%
Other	5.2%	5.1%	5.5%
Totals	100.0%	100.0%	100.0%

In the timeframe sampled, although the total number of unique patients has increased, the percentages of Baystate Health’s Patient Panel’s key demographics has remained relatively unchanged

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 CT at Baystate Longmeadow to the following:

- 1. Historical Utilization;
- 2. Improved Access and Patient Experience; and
- 3. Projected Growth and Future Demand.

Upon review, staff has determined the need for a CT at Baystate Longmeadow is attributable to the following:

- 1. High current and historic utilization at the Applicant’s satellite site;
- 2. Insufficient patient access to Low Dose CT (“LDCT”) screens; and
- 3. Projected volume growth, including in the 65+ age cohort

1. High Historic Utilization at the Applicant’s Satellite Site

The Applicant states the majority of outpatient CT patients within its patient panel are from Springfield and the adjacent communities, including Longmeadow, East Longmeadow, and Wilbraham with approximately 10,000 CT scans performed at the Satellite in FY2024. Additionally, CT Volume at the Satellite grew 21.5% over the four-year period of 2021-2024, including large increase in utilization during 2023. In FY2024, the CT service at the Satellite operated at 94% capacity while the applicant asserts ideal utilization is between 75% and 85%.⁶ Table 2 shows annual growth in historical CT utilization at the Satellite over four years.

Table 2: Satellite Outpatient CT Volume

Metric	FY2021	FY2022	FY2023	FY2024
CT volume	8,263	8,531	9,651	10,036
Year over year change	N/A	3.24%	13.13%	3.99%
Utilization Capacity	78%	80%	91%	94%

The Applicant asserts high utilization of available CT services at the Satellite have resulted in current average wait time of ten (10) days and that wait times may become longer as the patient population in the primary service area grows. The Applicant asserts a target wait time of three to four days more appropriately supports patient need and timely diagnosis. The Applicant anticipates establishing BRI operated CT services at Baystate Longmeadow will both decompress the demand at the Satellite location and create needed local access to imaging in an appropriate care setting for the Applicant’s existing Patient Panel that is co-located with many of

⁶ While the Department currently has no optimal utilization standards for CT; historically, utilization of services that is over 90% has been considered to be operating at capacity.

their current providers. For example, Baystate Longmeadow will be able to improve the accessibility of diagnostic imaging for patients of Baystate Surgical Oncology & Breast Specialists whereby breast cancer patients can receive CT scans in the same building as their oncologist.

Further, approximately 50% of CT scans operated by BRI require contrast. The Applicant proposes the new CT unit at Baystate Longmeadow would also have contrast capacity supporting access to those services within the community south of Springfield.

The Applicant asserts approximately 14% of existing Satellite patients will shift to Baystate Longmeadow (located within 7 miles of Satellite) due to patient preference for that location. The Applicant anticipates establishing the new CT unit will result in approximately 80% utilization and wait times of three to four days at both the Satellite and the Baystate Longmeadow locations by year four following implementation.

2. Insufficient Access to Low Dose CT (“LDCT”)

In addition, the Applicant states the Proposed Project aligns with Baystate Longmeadow’s mission to increase lung cancer awareness by expanding existing low-dose CT lung cancer screening capabilities in the primary service area. Early identification can lead to treatment when the disease can be more easily treated at lower costs than advanced disease, ultimately improving health outcomes, as discussed in Factor 1b.ⁱ By providing improved access to CT in the community, Baystate anticipates more people will comply with lung cancer screening recommendations and referrals. Table 3 details historic low-dose CT lung cancer screening at the Satellite and BRI’s Northampton location.

Table 3: Current Low-Dose Lung Cancer Screening Volume

Location	FY2021	FY2022	FY2023	FY2024
Satellite	1,862	1,995	2,448	2354
BRI Northampton	338	371	479	569

Massachusetts is currently a national leader in lung cancer screening, with some of the highest rates of LDCT utilization in the country.⁷ As more residents become eligible for screening, existing CT facilities will face a growing need for lung cancer screenings without increased capacity to perform them. Currently, access to LDCT screenings is not evenly distributed across the state, with more facilities concentrated in and around Boston. This geographic imbalance amplifies challenges for patients in southwest Massachusetts, where Baystate Hospital serves as a critical healthcare access point. By adding a new CT unit, Baystate Health can better serve the region’s residents, addressing both current and future needs while reducing the burden on patients who might otherwise face delays or need to travel longer distances for LDCT services. Table 4 depicts locations within a 30 minute drive from Baystate Longmeadow designated by the American College of

⁷ Stacey A Fedewa et al, State Variation in Low-Dose Computed Tomography Scanning for Lung Cancer Screening in the United States, Journal of the National Cancer Institute (Nov. 2020), <https://pmc.ncbi.nlm.nih.gov/articles/PMC8328984/>.

Jennifer Solomon, Massachusetts Ranks Among Best States for Screening, Early-Stage Diagnosis, and Surgery for Lung Cancer According to New Report, American Lung Association (Nov. 15, 2022), <https://www.lung.org/media/press-releases/solc-ma-2022>.

Radiology to provide lung cancer screening.⁸ The Satellite is the closest Baystate Health location to Baystate Longmeadow for CT units designated to provide lung cancer screening.

Table 4: Additional Sites Designated by American College of Radiology to Provide Lung Cancer Screening

Facility	Distance from Baystate Longmeadow	Driving Time
Baystate Radiology & Imaging, Enfield	8.1 miles	18 minutes
Mercy Medical Center, Springfield	11.7 miles	19 minutes
Holyoke Medical Center, Holyoke	14.2 miles	19 minutes
Baystate Wing Hospital, Palmer	14.9 miles	30 minutes

The Applicant states 76% of Baystate Longmeadow’s primary care patients originate from East Longmeadow, Longmeadow, Springfield, Wilbraham, West Springfield, Hampden, Agawam, Chicopee, Enfield, Ludlow, and Westfield. More than 80% of LDCT patients at the Satellite originate from these cities and towns.

3. Growing Population including the 65+ Age Cohort

The Springfield/Longmeadow area’s overall population is projected to increase by 4.5% between 2020 to 2040,⁹ with the population aged 65 and older expected to grow by 34% during this same period.¹⁰ Accordingly, the Applicant expects demand for CT services to grow proportionally as area’s population grows and ages, including screens among the older adults who face a heightened risk of the disease¹¹ as CT screens support earlier diagnoses and treatment.

The following are examples of age-related conditions where access to CT is beneficial for diagnosis and treatment:

- Alzheimer’s Disease (“AD”) - The incidence increases exponentially with age, until 85 years.ⁱⁱ The prevalence of people with AD increases with age: 3% of people age 65-74, 17% of people age 75-84 and 32% of people age 85 or older have AD.ⁱⁱⁱ In Massachusetts, 130,000 people have AD or another form of dementia and the number is projected to increase to 150,000 by 2025.^{iv} The number of people age 65 and older living with AD is projected to increase 15.4% between 2020 and 2025.^v
- Cancer - Advanced age is the most important risk factor for cancer; according to the National Cancer Institute (NCI), 83.2% of new cancer cases are diagnosed in people aged 45-84, with one quarter of new cancer cases being diagnosed in people aged 65-74.^{vi} The median age for a cancer diagnosis is 66 years.^{vii}

⁸ Patients could also chose the BRI location in Enfield, Connecticut.

⁹ UMass Donahue Institute MassDOT Vintage 2018 Population Projections, [Massachusetts Population Projections](http://www.pep.donahue-institute.org/), September 2018, <http://www.pep.donahue-institute.org/>.

¹⁰ *Id.*

¹¹ UMass Donahue Institute MassDOT Vintage 2024 Population Projections, Massachusetts Population Projections, (last accessed Jan. 30, 2025) <https://donahue.umass.edu/business-groups/economic-public-policy-research/massachusetts-population-estimates-program/population-projections>.

- Musculoskeletal Disease - Age is a leading risk factor for musculoskeletal disease; data show that three-quarters of those aged 65 and older suffer from a musculoskeletal disease.^{viii} The most prevalent musculoskeletal conditions include Arthritis and Related Conditions; Back and Neck Pain; Injuries: Traumatic, Falls; Workplace; Sports; Military; and Osteoporosis.^{ix}
- Heart Disease - From 2013-2015, adults diagnosed with myocardial infarction annually ranged from 5.2-5.7%, and those diagnosed with angina/coronary heart disease from 4.7-5.8%.^x In 2018, 10.2% of the 65+ age cohort in Massachusetts had coronary artery disease; nearly double the rate of the overall population.^{xi}

Projections

The Applicant anticipates the Proposed Project will result in shifting approximately 14% of CT volume from the Satellite to Baystate Longmeadow. This shift in volume will significantly relieve capacity constraints at the Satellite and reduce wait-times. The anticipated CT utilization at Baystate Longmeadow is expected to reflect approximately 50% of patients shifting from Satellite to the new CT unit for services, with the remaining 50% of patients being newly established following referrals from existing medical practices co-located at Baystate Longmeadow and elsewhere in the local community. Table 5 illustrates CT projections at Baystate Longmeadow.

Table 5: Projected CT Volume at Baystate Longmeadow

	2026	2027	2028	2029	2030
Shift from the Satellite	1,512	1,663	1,830	1,921	2,017
Total New CT Volume	1,616	1,777	1,955	2,052	2,155
- Low Dose Lung Cancer Screening Volume	104	114	125	131	138
- Pulmonary, non LDCT	529	582	640	672	706
- Abdomen/pelvis	529	582	640	672	706
- Orthopedics	151	166	183	192	202
- Head	151	166	183	192	202
- Other	151	166	183	192	202
Total CT Volume	3,128	3,440	3,784	3,973	4,172
Year over year change	n/a	10%	10%	5%	5%
Utilization¹²	75%	77%	79%	80%	81%

The Applicant states the Proposed Project will require 1.0 full-time employee which will be staffed by Baystate Health through its ongoing recruitment and hiring efforts.

Analysis

¹² For the Longmeadow CT unit, the Applicant expects to average 20 scans per day. It will operate 5 days per week and will be closed for seven (7) holidays per year. Therefore, maximum capacity is 20 scans per day x 254 open days per year = 5,080 scans per year.

Staff finds that the historic and projected growth in CT scan utilization data at the Satellite and Baystate Longmeadow demonstrate sufficient need for a new CT unit operated by BRI at Baystate Longmeadow. The proposed location of the new CT unit within the Baystate Longmeadow location supports appropriate access for the Patient Panel based on the projected growth in the number of patients needing CT scans among the patient panel as the population in the primary service area expands. Additionally, the anticipated aging population in primary service area further reinforces the need for access to imaging services to aid in the diagnosis and treatment of diseases that are more prevalent in advancing age cohorts including lung, breast and other cancers, orthopedic and neurologic conditions. Locating the CT unit at Baystate Longmeadow supports local access to imaging services as well as access to co-located services. Resultingly, Staff finds 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, Health Outcomes, and Quality of Life

The Applicant asserts that the use of diagnostic imaging, such as CT scans, has significantly increased over the last several decades to support timely diagnosis and treatment. The Applicant states that establishing a new CT unit at Baystate Longmeadow will advance and support the health needs of Baystate Health's Patient Panel and reduce barriers to access through the availability of CT services in multiple locations in the primary service area.

The Applicant relies on a large body of evidence-based literature that routine and diagnostic CT imaging is an essential component of health care delivery, enables clinicians to appropriately diagnose and develop the most effective treatment plans early in the disease process across a growing number of specialties including neurology, oncology, orthopedics and cardiology.^{xii, xiii, xiv} For example, CT scans widely used to help diagnose circulatory (blood) system diseases and conditions, such as coronary artery disease (atherosclerosis), blood vessel aneurysms, and blood clots; spinal conditions; kidney and bladder stones; abscesses; inflammatory diseases, such as ulcerative colitis and sinusitis; injuries to the head, skeletal system, and internal organs; and to detect abnormal brain function or deposits in adult patients with cognitive impairment who are being evaluated for Alzheimer's disease and other causes of cognitive decline.^{xv}

General Lung Diagnostics and Low-dose Lung Cancer Screening

CT scans are used to detect pulmonary nodules, screen for malignant neoplasm of respiratory organs, and identify other respiratory abnormalities or disorders such as pneumonia, tuberculosis, or cystic fibrosis.^{xvi} CT also allows for low-dose lung cancer screening, which is an essential tool in reducing lung-cancer deaths.^{xvii, xviii}

Lung cancer is the leading cause of cancer-related deaths for men and women in the United States.^{xix} Screening high-risk individuals with low dose CT ("LDCT") can decrease lung cancer mortality up to 20%.^{xx} Approximately 8 million Americans qualify as high risk for lung cancer and are recommended to receive annual

screening with low-dose CT (“LDCT”) scans,^{xxi} while just 16.0% were screened.^{xxii} The screening rate in Massachusetts is 24.2%.^{xxiii}

Per the United States Preventive Services Task Force (“USPSTF”), high-risk individuals include those who:

- Have a 20 pack-year¹³ or more smoking history, *and*
- Currently smoke or quit within the past 15 years,¹⁴ *and*
- Are between the ages of 50 and 80 years old.^{xxiv}

Orthopedics

The three-dimensional internal view offered by CT allows for detailed images of bones, soft tissues, organs, muscles, and blood vessels which helps to assess injuries and complex fractures, diagnose soft tissue damage, examine blood vessels, tumors, and foreign bodies,^{xxv} making CT the preferred modality for joint replacement planning.^{xxvi}

Health Equity and Social Determinants of Health (SDoH)

The Applicant states that, “Baystate Health’s mission is to improve the health of the people in its communities every day with quality and compassion. Diversity, Equity, & Inclusion is critical to achieving our organizational mission.” The Applicant states that they have several areas of focus for health equity, including reducing health disparities, growing a more diverse work force, and ensuring language accessibility, as well as other initiatives.

1. Reducing Health Disparities: The Applicant noted its efforts to reduce health disparities by closely examining quality, safety, and patient experience through an equity lens and making necessary changes in protocols and practices. For example, Applicant notes that Baystate Health signed the American Hospital Association’s #123forEquity pledge campaign to eliminate health disparities. The pledge asks hospital and health system leaders to begin taking action to accelerate progress on the following areas:

- Increasing the collection and use of race, ethnicity, language preference and other socio-demographic data
- Increasing cultural competency training
- Increasing diversity in leadership and governance
- Improve and strengthen community partnerships

As part of the cultural transformation strategy to advance DEI practice, the Applicant has further launched enterprise-wide education strategies for staff at all levels, including piloting the *Dignity in Action: Creating an inclusive culture of respect and trust* program for employees to introduce a framework to reduce bias, foster inclusive culture with a DEI lens, and understand intersectionality.

¹³ A pack-year is defined as 20 cigarettes smoked every day for one year, or 40 cigarettes smoked every day for 6-months.

¹⁴ The American Cancer Society beginning in 2023 now recommends against using any duration of years since quitting smoking (YSQ) as a criterion. <https://acsjournals.onlinelibrary.wiley.com/doi/10.3322/caac.21811>

2. **Growing a More Diverse Workforce:** The Applicant states that a diverse workforce provides representation and leads to innovative thinking. The Applicant noted its commitment to equity in the hiring, promotion, and retention of Black and Brown employees. Baystate Health cited internal hiring demographic data showing that they have achieved a 7% increase in Underrepresented in Medicine (URiM) leaders, a 5% increase in URiM providers and a 8% increase in URiM Direct Care Registered Nurses. In addition to diverse hiring and staff retention, the Applicant stated “Equity and Belonging” is a core competency for all staff.
3. **Ensuring Language Accessibility:** The Applicant, including its BRI locations, provides all patients with interpreter and translation services for each encounter. Language and communication services are available via telephone and video service in a majority of languages. Patients may also request in-person assistance during appointment scheduling. These services are also available for patients that are deaf and hard of hearing. The Applicant and BRI continue to ensure that patients not only can access health care services, but that patients and their caregivers can meaningfully engage with their providers.
4. **Other Initiatives:**
 - a. Anchor Collaborative: The Applicant states it is one of 13 health systems nationwide that signed an “Impact Purchasing Commitment” in June 2021 to align purchasing power with clinical and community efforts to improve societal health, well-being, and to advance prosperity for all bolstering its commitment to racial justice and community health equity.
 - b. Alliance for Digital Equity: The Applicant is part of a regional collaboration implementing systemwide and localized interventions to support digital connectivity as a social determinant of health. Health Quality and Equity Learning Collaborative: The Applicant launched a learning collaborative for hospital teams to build capability and skills in performance improvement to address health disparities in clinical outcomes.
 - c. BeHealthy Partnership ACO Data Analysis: The Applicant collects and uses BeHealthy Partnership data to ensure its programs are equitable by analyzing the populations accessing services at each of the Applicant’s programs in to relation to the general patient population of the BeHealthy Partnership.

Analysis

Generally, CT use has increased over the years because of technological advancements that include higher spatial resolution and shorter scanning times which have led to expanded clinical applications, *e.g.*, CT colonography, CT angiography, CT urography, *etc.*^{xxvii, xxviii} Since its introduction in the 1970s, the advantages that CT has over other imaging modalities, enables physicians to confirm or rule out a diagnosis less invasively, with speed and accuracy by quickly diagnosing emergent conditions such as strokes so as to reduce the chances of brain damage and disability.^{xxix} One study showed that it decreased the need for exploratory emergency surgery from 13% to 5%,^{xxx} in another, its use has decreased the proportion of patients requiring inpatient admission.^{xxxi} Consequently, eliminating the need for many admissions and more invasive procedures and surgeries has significantly improved outcomes and public health value.

Staff concurs that providing timely access to imaging services contributes to improved health outcomes. Advanced imaging can improve disease detection and allow for earlier diagnosis and treatment.¹⁵ Inadequate access or barriers to access to advanced imaging leads to delays in diagnosis and treatment, which could negatively affect health outcomes. Staff confirms that access to CT services in the primary services area is a necessary component in diagnosing and treating the growing and aging population.

Staff reviewed the Applicant efforts to ensure equitable care. The Applicant demonstrates long-standing focus on health equity and was able to provide examples of using data, staff development and language access to continue their efforts toward health equity goals. Staff finds that the Applicant has sufficiently demonstrated efforts to achieve health equity. As a result, Staff finds that the Applicant meets the requirements of the Public Health Value: Factor 1(b).

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

The Applicant states that the Proposed Project will ensure continuity and coordination of care for patients by providing timely, co-located services for patients in their community, which is supported by integrated medical records. As a member of Baystate Health, Baystate Longmeadow is affiliated with both its tertiary and community hospitals, primary care offices, specialists, and urgent care centers. Integrated records across all of these settings is an essential component of communication across the continuum leading to more effective coordination of care, improving quality of care and public health outcomes.

Baystate Longmeadow's electronic medical record ("EMR") serves as the primary linkage between the radiology practice and referring providers. The EMR provides Baystate Longmeadow radiologists' 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 and entered into the EMR, imaging results become available to primary care and specialty physicians across the Baystate Health System. The EMR has a critical results system to provide immediate results for critical findings automatically to referring physicians. Further, authorized providers who practice outside of the Applicant's system, are also able to view their patients' records within the EMR and send progress notes back for continuity of care.

Analysis

Staff finds that use of integrated medical records and co-location of the CT unit with other services will contribute positively to efficiency, continuity, and coordination of care. Review of literature shows that access to integrated EMR systems directly impacts health outcomes reducing fragmentation and improving coordination among care providers.^{xxxii} Similarly other studies show that integrated health information technology systems directly affect health outcomes, as access to a single integrated EMR can reduce errors, improve patient safety, and support better patient outcomes.^{xxxiii} EMR supports communication among the patients and all clinical care team members that can foster improved communications and 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 all government agencies that have licensure, certification, or other regulatory oversight, which has been done and will not be addressed further in this report. 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 Guideline for community engagement¹⁶ defines "community" as the Patient Panel and requires that, at minimum, the Applicant 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."¹⁷

The Applicant sought to engage the community to elicit feedback from patients and families regarding the Proposed Project. The Proposed Project was presented to current patients at an BRI-hosted information table at Baystate Longmeadow on August 29th and August 30th as well as three presentations to various stakeholders: 1) Baystate Medical Center's Community Benefits Advisory Council ("CBAC") on September 12, 2024; 2) Baystate Medical Center's Hospital Patient Family Advisory Council ("PFAC") September 18, 2024; and 3) Elected officials on October 8, 2024.

During information table hours and presentations, representatives from BRI spoke about the need for additional CT capacity. Community members asked for more information about why the Baystate Longmeadow location was chosen and how wait times will be impacted. Patients were excited at the prospect of CT being provided at Baystate Longmeadow due to the increased convenience of the location compared to other Baystate Health locations.

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.

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

The Applicant asserts the Proposed Project will compete on the basis of price, TME, provider costs, and other recognized measures of health care spending because of its low cost to implement and operate since reimbursement costs for CT at Baystate Longmeadow will be lower than current outpatient alternatives in the community.

¹⁶ [Community Engagement Standards for Community Health Planning Guideline](#).

¹⁷ [DoN Regulation 105 CMR 100.210 \(A\)\(1\)\(e\)](#).

Further the Applicant states the Proposed Project will efficiently expand CT access for the Patient Panel since Baystate Longmeadow is able to expand into adjacent space with minimal renovation costs. The total cost of this construction is \$251,339. Also, by renovating adjacent space, existing services will not be interrupted, thereby avoiding any disruption to patient care delivery.

Importantly, the Applicant reports that the average commercial reimbursement for CT screens performed at BRI's Northampton location is \$291.97. This is 53% of the average commercial reimbursement for CT screens performed at the Satellite. The Applicant asserts establishing a CT unit at Baystate Longmeadow supports cost savings to commercial payers and patients through reduced out of pocket costs.

Analysis

Staff finds that, on balance, the Applicant has met the requirements of Factor 1(f), that the Proposed Project will likely compete on the basis of price, TME, provider costs, and other measures of health care spending have been met through the provision of the CT services at a lower cost site than where most of their patients are currently going.

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. The Applicant proposed specific outcome and process measures to track the impact of the Proposed Project which Staff has reviewed, and which will become a part of the reporting requirements.

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 the Proposed Project will meaningfully contribute to the Commonwealth's goals for cost containment by expanding access to high-quality CT imaging services in a lower-cost setting. The Proposed Project will offer payers and patients office-based prices at significantly less cost than hospital-based CT services, and those provided at the Satellite; this lower reimbursement will result in savings as patient CT volume is shifted to Baystate Longmeadow.

Further, the Applicant asserts that improved CT access supports earlier diagnosis and treatment, resulting in reduced long-term healthcare costs for patients related to disease progression. Earlier diagnosis improves a patient's chance of receiving timely treatment thereby preventing the need for higher cost services. Timely access to care through increased availability of, and access to CT services supports cost containment goals, including reducing costs to patients.

Analysis

Staff finds that the Applicant has adequately explained how the Proposed Project aligns with cost containment goals through the expansion of access to lower cost CT services. 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 providing CT imaging at multiple locations and care settings, offsetting patient barriers to access including transportation and cost considerations. The Applicant anticipates establishing the CT scans within a medical center will further support timely access to care due to the co-location of the CT scans alongside existing primary care, urgent care, and specialty care services.

Analysis

Staff finds that the Proposed Project will likely improve health outcomes through timely access to imaging services and result in improved patient satisfaction. Timely access can reduce delays in diagnosis and treatment that can adversely impact health outcomes. Therefore, DoN Staff can conclude that the Proposed Project meets the Public Health Outcomes component of Factor 2.

Delivery System Transformation

The Applicant asserts they maintain a robust system regarding social determinants of health (SDoH) for patients. The Applicant notes the patients are referred to community services as identified through the Health-Related Social Needs Screening Tool as well as the MassHealth ACO Flexible Services program criteria. The Applicant states that referrals and connections to social services are a part of the natural daily routine by Care Teams. Each program has unique criteria for participation and involves referrals to unique organizations.

These screening tools are available in the EMR used by Baystate Longmeadow and across the Baystate Health System. The goal is for patients to be screened at least annually. When a need is identified, the patient may be referred to a community health worker (CHW) for assistance or may be given information directly from the primary care team. CHWs will usually continue to work with a patient to ensure that connections with community services are made.

Further, in 2019, the BeHealthy Partnership (a MassHealth ACO plan formed in a partnership between Baystate Health Care Alliance and Health New England) Social Determinants of Health Committee developed Health Equity Goals that were approved by the Joint Operating Committee as follows:

- Establish protocols and procedures for collecting, using, and monitoring demographic data to address health disparities and population health outcomes.
- Establish training and development that is required for all staff to meet a baseline standard for cultural humility.
- Intentionally include people who have lived experience and who reflect/represent the population being served to improve the likelihood that their voices will be included.

- Recognize and appreciate Baystate Health’s community partnerships and work to deepen and expand these as opportunities arise.

Analysis

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. Therefore, DoN Staff can conclude that the Proposed Project meets the Delivery System Transformation component of Factor 2.

Summary, FACTOR 2

As a result of the 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 a finding must be supported by an analysis by an independent CPA.

The Applicant submitted a CPA report compiled by Meyers Brothers Kalicka. The CPA assessed the reasonableness¹⁸ of assumptions used in the preparation and feasibility¹⁹ of the projections with regards to the Proposed Project. The CPA concluded that projections were reasonable, and that the Applicant 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.

Conclusion

The acquisition of a CT unit is projected to have positive overall cash flows. The impact of the proposed acquisition of a CT unit for operation by BRI, which is the subject of this DoN application, represents an insignificant component of actual operating revenues (approximately 0.03%) and actual financial position

¹⁸ Reasonableness is defined within the context of this report as supportable and proper, given the underlying information.

¹⁹ 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 the existing Patient Panel.

(approximately 0.04%) of the Applicant's fiscal year 2023 financial statements. Furthermore, the Applicant has the resources to fund the capital needs and ongoing operating costs of the acquisition of a CT unit.

Therefore, the CPA determined that the projections were not likely to result in a scenario where there are insufficient funds available for the ongoing operating costs required to support the acquisition of a CT unit. It is the CPA's conclusion that the projections are financially feasible, not likely to have a negative impact of the existing patient panel of the Applicant and is within the financial capability of the Applicant.

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 two alternatives to the Proposed Project.

Alternative Option 1: Placement of an additional CT unit at the Satellite

Quality:

The Applicant asserts that adding a second CT unit in the Satellite may address some current utilization needs but ignores the patients who rely on Baystate Longmeadow for their outpatient healthcare, and does not support the same quality of patient care and access achieved through availability of services at multiple locations in various settings within the primary service area. The Applicant asserts that establishing a location at Baystate Longmeadow supports availability of CT services in multiple locations can offset factors impacting patient access to services, including travel and accessibility considerations.

Further, continuing to only offer CT in Springfield at the Satellite does not provide patients with co-located services, whereas the Proposed Project seeks to place CT alongside existing services including primary and urgent care, and specialty practices such as neurology, oncology, and pulmonary. By co-locating CT services with the existing practices at Baystate Longmeadow, many Baystate patients will be able to receive imaging in the same location as their other health care providers, making them much more likely to receive the required imaging tests and increasing their quality of care.²⁰

²⁰ M. Bonciani et al., *The Benefits of Co-Location in Primary Care Practices: The Perspectives of General Practitioners and Patients in 34 Countries*, BMC HEALTH SERVICES RESEARCH (2018), <https://bmchealthservres.biomedcentral.com/articles/10.1186/s12913-018-2913-4>; see also *Could Colocation of Healthcare Services Improve Patient Outcomes?*, KENAN INSTITUTE OF PRIVATE ENTERPRISE (Oct. 27, 2021), <https://kenaninstitute.unc.edu/kenan-insight/could-colocation-of-healthcare-services-improve-patient-outcomes/>.

Services, such as those that require long travel or wait times, can impact patient access and lead to delays in diagnosis and treatment, which can adversely impact patient outcomes and quality of life.²¹ Patient and payer costs are less at the Baystate Longmeadow site than at the Satellite which could impact a patient's decision whether or not to receive CT imaging.²² The average commercial reimbursement for CT is higher for the hospital-based Satellite than it would be at Baystate Longmeadow. As discussed in Factor 2 CT services offered by BRI are, on average, 53% of the cost of the same service when performed at the Satellite; accordingly offering patients a lower-cost alternative, will improve access to CT for its Patient Panel through the Proposed Project.

Efficiency:

This alternative would leverage existing resources, such as the waiting room and registration staff, however, the cost of CT would continue to be hospital-based and does not provide any cost savings for patients or payers compared to the Proposed Project, as discussed above and in Factor 2.

Capital Expense:

This alternative of adding an additional CT unit at the Satellite would not offer considerable savings and would be similar in cost to the Proposed Project due to the renovation needed to accommodate another CT unit.

Operating Costs:

While operating costs would be similar to the Proposed Project under this alternative, recruitment and staffing would be more challenging because as an outpatient only location that operates from 8 AM to 5 PM Monday-Friday, Longmeadow is a more desirable work location. Current challenges that Baystate has with recruiting technologists at BMC and the Satellite would persist with this alternative, potentially increasing operating costs due to the potential to use more traveling technologists.

Alternative Option 2: Expand hours at the Satellite**Quality:**

The Applicant states that this option does not promote quality because it is not preferred by patients or staff due to the location of the Satellite; Baystate Health has previously tried extending hours at the Satellite and patients declined to accept after-hours appointments. Also, as noted above, Baystate Health continues to face staffing shortages and is most challenged by second shift placements.

Efficiency:

When Baystate Health previously sought to expand hours at the Satellite, it was unable to book appointments during the extended hours with patients choosing to wait longer rather than to come to the Satellite after 5:00pm. Also, Baystate Health would not be able to cost-effectively staff on-site radiologist for after-hours appointments. Therefore, imaging would be limited to CT without IV contrast (which in FY2024 accounted for

²¹ Samina T. Syed et al, *Traveling Towards Disease: Transportation Barriers to Health Care Access*, JOURNAL OF COMMUNITY HEALTH (Dec. 13, 2014), <https://pmc.ncbi.nlm.nih.gov/articles/PMC4265215/> ("Transportation barriers lead to rescheduled or missed appointments, delayed care, and missed or delayed medication use.")

²² See generally: *Hospital Outpatient Prices Far Higher, Rising Faster Than Physician Sites*, BLUECROSS BLUESHIELD (Dec. 14, 2023), <https://www.bcbs.com/news-and-insights/white-paper/ambulatory-payment-classifications-site-neutral-analysis>; see also Frank Diamond, *Outpatient Hospital Care Costs Much More Than Care At Doctors' Offices, Surgery Centers: Blues Research*, Fierce Healthcare (Sep. 14, 2023), <https://www.fiercehealthcare.com/payers/outpatient-hospital-care-costs-much-more-care-doc-offices-surgery-centers-blues-research>.

50% of all CT scans administered by BRI) as a radiologist must be on-site for scans with IV contrast. Furthermore, due to staffing challenges, Baystate Health would likely need to pull resources from the CT service at Baystate Medical Center to ensure coverage for these after-hours CT services at the Satellite.

Under the Proposed Project, Baystate Longmeadow will have a radiologist on-site during operating hours. In addition, because Baystate Longmeadow offers diagnostic mammography, the radiologist at Baystate Longmeadow will be able to oversee both diagnostic mammography and CT scans, promoting efficiency of a valuable resources and staff. Currently, diagnostic mammography is not offered at the Satellite.

Lastly, extended hours will only provide a limited amount of additional CT capacity. The only way to extend hours would be to operate the existing machines from 7:00 AM to 7:30 PM. This would provide 3 and a half additional hours of scan time per machine, resulting in ~12 additional scans per day or 2,496 scans per year.

Accordingly, assuming patients utilize these early and late openings, this alternative provides not only less overall volume than the Proposed Project, but it will not increase access to CT with IV contrast do to the inability to staff a radiologist after hours.

Capital Expense:

There would be no additional capital expense under this alternative.

Operating Costs:

The Applicant states that this alternative would have higher operating expenses than the Proposed Project due to the resources needed to ensure staffing for early and late appointments. Administrative staff, such as registration, would be solely for the CT unit, while currently Baystate Longmeadow assists with ultrasound and X-ray registration for patients needing those scans or studies. Further, the cost of a staffing a CT unit with a radiologist after 5:00 PM would come with a 65% pay premium.

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

The Applicant, Baystate Health at Baystate Medical Center (BMC), will pool the local CHI funding with an existing DoN project ([# BNEOS21122916-AS](#)).

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 has 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, subject to all applicable Standard and Other Conditions.

Other Conditions

To comply with the Holder's obligation to contribute to the Statewide CHI Initiative, the Holder must submit a check for \$49,723.35 to the Health Resources in Action (HRiA), the fiscal agent for the CHI Statewide Initiative.

1. The Holder must submit funds to the HRiA within 30 days from the date of the Notice of Approval. Payments should be made out to:

Health Resources in Action, Inc. (HRiA)
2 Boylston Street, 4th Floor
Boston, MA 02116 Attn: MACHHAF c/o Bora Toro
DoN project #: # BH-23102416-RE
2. The Holder must promptly notify DPH (CHI contact staff) when the payment has been made by sending a PDF image of the check or **confirmation of payment** to DONCHI@Mass.gov and dongrants@hria.org. Questions or concerns regarding the payment may be addressed to CHI team at DONCHI@Mass.gov

Appendix I

Satellite Outpatient CT Patient Demographic Measure	FY22	FY23	FY24
	<i>Percent of Total</i>	<i>Percent of Total</i>	<i>Percent of Total</i>
Total Count	6,252	6,949	7,136
Age: 0 to 18	0.2%	0.1%	0.2%
Age: 19 to 45	8.8%	8.2%	7.9%
Age: 46 to 64	37.3%	42.1%	39.8%
Age: 65+	53.7%	49.6%	52.1%
Gender: Female	51.4%	53.0%	53.7%
Gender: Male	48.6%	47.0%	46.3%
Race/Ethnicity: American Indian or Alaska Native	0.0%	0.0%	0.1%
Race/Ethnicity: Asian	1.2%	1.0%	1.0%
Race/Ethnicity: Black or African American	8.3%	7.5%	8.1%
Race/Ethnicity: Hispanic	20.3%	19.6%	15.4%
Race/Ethnicity: Native Hawaiian/ Other Pacific Islander	0.2%	0.2%	0.1%
Race/Ethnicity: Refuse to Answer	0.3%	0.2%	0.3%
Race/Ethnicity: Unknown	0.8%	1.1%	2.4%
Race/Ethnicity: White	69.0%	70.4%	72.7%

Appendix II: Measures for Annual Reporting

Outcome Measures

To assess the impact of the Proposed Project, the Applicant will report on 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 – Lung Cancer Screening:** Increased access to screening services is likely to increase the number of patients who receive lung cancer screening as recommended.

Measure: The number of low-dose CT scans provided at Baystate Longmeadow annually

Projections: As described in Table 5, Baystate Longmeadow will provide approximately 100 low-dose lung cancer screenings in Year 1 and will increase the number of scans each year.

2. **Patient Satisfaction:** Patients that are satisfied with care are more likely to seek additional treatment when necessary. The Applicant will review patient satisfaction levels with the CT imaging service. To ensure a service-excellence approach, patient satisfaction surveys will be distributed to all patients receiving imaging services with specific questions around a) satisfaction levels with pre-appointment communication; and b) satisfaction around the wait time for services.

Numerator: Average patient score

Denominator: Highest possible score

Projections: As a new service, a baseline measure will be provided following the Proposed Project's first year of operation.

3. **Quality of Care – Critical Value Reporting:** When critical values or abnormal test results are registered within an electronic medical record for a patient, the referring physician is notified via electronic communication.

Numerator: Number of critical values reported timely.

Denominator: Total number of critical value findings.

Projections: As a new service, a baseline measure will be provided following the Proposed Project's first year of operation.

4. **Quality of Care – Quality of CT scan:** The quality of a CT scan is imperative to its interpretation. Accordingly, the Applicant will evaluate the number of scans that need to be repeated to ensure radiology technicians are performing appropriate scans.

Numerator: Number of CT scans repeated due to image quality

Denominator: Total number of CTs ordered (not including repeat orders)

Projections: As a new service, a baseline measure will be provided following the Proposed Project's first year of operation.

- ⁱ Crosby D, Lyons N, Greenwood E, Harrison S, Hiom S, Moffat J, Quallo T, Samuel E, Walker I; Early Detection and Diagnosis Roadmap Steering Group. A roadmap for the early detection and diagnosis of cancer. *Lancet Oncol.* 2020 Nov;21(11):1397-1399. doi: 10.1016/S1470-2045(20)30593-3. Epub 2020 Oct 5. PMID: 33031732; PMCID: PMC7535618.
- ⁱⁱ Robinson M, Lee BY, Hane FT. Recent Progress in Alzheimer's Disease Research, Part 2: Genetics and Epidemiology [published correction appears in *J Alzheimers Dis.* 2018;61(1):459]. *J Alzheimers Dis.* 2017;57(2):317–330. doi:10.3233/JAD-161149. Available: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5366246/pdf/jad-57-jad161149.pdf>
- ⁱⁱⁱ Alzheimer's Association Report. Available: <https://www.alz.org/media/Documents/alzheimers-facts-and-figures.pdf>
- ^{iv} Alzheimer's Association. Massachusetts Alzheimer's Statistics. Available: <https://www.alz.org/getmedia/bf50b298-2bc6-4b8d-bc3c-5915c512d209/massachusetts-alzheimers-facts-figures>
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